

# INSTITUTIONAL CATALOGUE

2021



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## HISTORY

Universidad de las Américas Puebla was founded in 1940, in the nation's capital and was named Mexico City College. To clearly reflect the brotherhood between the United States and Latin American countries, at the start of the 60s, it changed its name to University of the Americas. By then, the prestige of its professors and research projects, as well as the understood Archeology program in Oaxaca, positioned it abroad and in Mexico as one of the best options for young people who wanted an excellent education with a bi-cultural vision.

In 1966, the Fundación Mary Street Jenkins provided the funds to move the university to Cholula, in the Santa Catarina Mártir hacienda, with over 80 hectares, located between the Popocatepetl and Iztaccíhuatl volcanos. Under its new name, Universidad de las Américas Puebla, with an innovative educational project that included opening not only the School of Art and Science, but the School of Engineering, and the School of Business, it received the support and official recognition of the federal Secretary of Public Education, the Southern Association of Colleges and Schools Commission on Colleges - SACSCOC, as well as business and government sectors of the region.

In 1985, the Universidad legally and ideologically separated from the Civil Association in Mexico City, and was now known as: Fundación Universidad de las Américas Puebla. It was established with the philosophy: education with humanistic, scientific and universal spirit, as well as academic excellence and teaching freedom. It consolidated as the most important private education institution in the country.

At UDLAP, history has taught us that an active conscience and community participation is important to guarantee success in every member. Therefore, each of its accomplishments in different areas and fields of knowledge position it as a leading institution. In this sense, we cannot think of Universidad de las Américas Puebla without recalling, at the same time, the great accomplishments of its Aztecas representative teams, who have prevailed, since its foundation, in the following areas: football, soccer, taekwondo, basketball, tennis, female and male athletics. Its participations have made it the leading institution in CONADEIP's Premiere League.

Aztecas have also performed in the cultural environment, offering society shows of impeccable artistic execution, such as: traditional dance, dance, chamber music, opera, theater, cinema, fine arts, to name some of the most relevant activities within its installations and cultural extensions, such as Chapel of Art in downtown Puebla.

The classrooms of the five UDLAP Schools (Social Science, Humanities, Engineering, Science, and Business and Economics) that have in the last years modernized in the last years to meet the technological and scientific advances have housed, since then, seventy-seven generations who have stood out in the world because of their achievements in research, diffusion and consulting. The modern labs, classrooms, sports facilities, library, information technologies, and residential colleges have created a favorable and privileged environment to study and develop.

## PROFILE OF THE INSTITUTION

### ORGANIZATIONAL STRUCTURE

Fundación Universidad de las Américas Puebla’s governability is defined in its Organic Statutes, which recognizes the Board of Trustees as the authority to guard the University’s heritage. This Board also has the final say in the selection of the president.

The Business Council is a collegiate entity that decides, cares for and guards the institution’s integrity and the adequate use of resources. This Council follows the strategic plan, and the actions and goals reached by UDLAP, understanding the impact they have in meeting the university’s mission and safekeeping ethical and financial interests.

The Academic Council is a legislative entity on academic issues, and the Administrative Council is a legislative entity regarding administration. Both are recognized by Fundación Universidad de las Américas Puebla’s Board of Trustees



### UDLAP INSTITUTIONAL ORGANIZATION CHART

The institution has developed its organizational structure to create a university identity and philosophy with which to reach its objectives, regulate the influence of individuals on the organization, and define decision-making within the structure. Therefore, the university has the following organization chart:

The Business Council will propose candidates to the Board of Trustees, who will name the President on whom the authority and faculty to carry out activities as Chief Executive will be delegated.



NAME	POSITION
Luis Ernesto Derbez Bautista	President
Cecilia Anaya Berríos	Academic Vice-President
Martha Laura Ramirez Dorantes	School of Arts and Humanities Dean
Jose Daniel Lozada Ramirez	School of Science Dean
Juan Antonio Le Clercq Ortega	School of Social Sciences Dean
René Alejandro Lara Diaz	School of Engineering Dean
Sergio Picazo Vela	School of Business and Economics Dean
Monica Ruiz Huerta	Administrative Vice-President
Ma. del Carmen Palafox Ramos	Student Affairs Vice-President
Mario Vallejo Perez	Finance and Institutional Development Vice-President
Fernando Thompson de la Rosa	Information Technology Director
Lorena Martinez Gomez	Institutional Planning and Management Director
Mayra Ortiz Prida	President's Office Director
Sergio Arturo Castro Medina	Cultural Director
Consuelo Cristina García Gil	Medical Services and Sports Rehabilitation Director
Samuel Kim Mun	Security Director

## PHILOSOPHY

UDLAP's mission and vision are the framework that guides the university following the values that sustain it. They invite to transform to achieve positive and progressive change through their own identity determined through clear, creative, challenging and innovative actions that benefit the university community.

### MISSION

To participate in the development of society by training critical, creative and innovative professionals who are highly trained and driven to perform relevant research. All of this with the social conscience that demands an equitable distribution of globalization's benefits

### VISION

To be the leading university in Latin America in study programs and scientific, cultural, sports and public policy programs, that answer the challenges presented by globalization.

### VALUES

These determine how UDLAP community members should act, and are mentioned in the organic statute and described in the code of ethics:

#### A. FREEDOM WITH RESPONSIBILITY

University members will act with independence and creativity, responsibly practicing freedom of thought, research and expression. The university community will promote research and teaching freedom as pillars to create knowledge.

#### B. TOLERANCE AND NON-DISCRIMINATION

Genuine knowledge is created and shared only in an environment of respect for others, their opinions and diversity. Therefore, the university community will seek plurality in an atmosphere of respect, strictly rejecting any type of discrimination motivated by ethnic or national origin, gender, age, disabilities, social or economic condition, health conditions, religion, opinions, preferences, marital status or any other that violates human dignity.

### GUIDELINES

The guidelines that support the mission and the institutional vision are:

- Relevant study programs
- Prestigious faculty
- Research and artistic creation
- Excellent students
- Outreach
- Administrative efficiency
- Vanguard facilities

### PRINCIPLES

These guide the objectives, actions and goals:

### **A. QUALITY PHILOSOPHY**

Objectives consider our quality philosophy, whose execution is characterized by service, promoting a continuous improvement culture that reaches the established goals in each strategic guideline.

### **B. INTERNATIONALIZATION**

The focus of the objectives contemplates global actions to promote multiculturalism and strengthen the university's prestige beyond its borders.

### **C. SOCIAL RESPONSIBILITY**

Objectives are defined around ethics, social commitment, and environmental responsibility.

## **OUR CAMPUS**

Our campus is known for being one of the most diverse and green in the area. To date, it has 80 hectares, of which, 50.61 are green areas. Not only that, in UDLAP we have spaces so you can develop your activities safely.

Since its foundation Universidad de las Américas Puebla has been a meeting place of notable personalities of the academic, artistic, political, cultural and business world, who have found in UDLAP the ideal place to teach, create, study, learn and share.

Universidad de las Américas Puebla has great international prestige in different areas such as: science, engineering, scenic and fine arts, humanities, business and economics, among others.

At UDLAP, students and professors join the continuous change of the times. The true way to experience this is visiting our campus, walking in its gardens, talking with students and professors, and visiting the classrooms, labs, residential colleges, sports facilities, libraries, computer rooms and cafeterias.

### **BUILDINGS**

Our campus is known for being one of the most diverse and green in the area. To date, it has 73.2 hectares, of which, 50.61 are green areas.

Not only that, in UDLAP we have spaces so you can develop your activities safely. Among these you will find:

### **PERFORMING ARTS ROOM**

This expression area includes audio and lighting, seating, a stage, dressing rooms, storage, ticket office, and workshop.

### **LIBRARY**

For your days and nights of studying, our library, as well as comfortable, fuses the traditional with on campus and online information services. There are 4 multimedia collaboration rooms and 3 bibliographical teaching rooms with computers, as well as cubicles for individual and group studies.

### **LABS**

As part of your academic formation, we have science, health science, mechanical and industrial engineering, electronic engineering, telecommunication and water treatment labs. We also have a language learning complex, oral hearing room, financial simulation room, projection room, qualitative and innovation research labs, marketing and retail qualitative research rooms, a Gesell chamber, a mobile app lab as well as photography, television, dance and music labs and a 3D printer. We also have a lodging lab better known as San Andrés Hostel, open to the UDLAP community and overseen by students of the corresponding areas.

### **AUDITORIUM**

The best place for congresses, plays and other events. Located in the center of campus, it is the most popular meeting area. It will be difficult for you to not find activities in it.

### **COMPUTER ROOMS**

UDLAP has macro computer rooms with latest generation equipment at your service, with specialized software according to your needs. You may use these rooms 24 hours a day, 7 days a week.

You can locate them in:

- Business and Economics: NE-137
- Arts and Humanities: HU-224
- Science: CN-106

### **MEDICAL SERVICES**

To assure your wellbeing and physical health, we have a clinical analysis center and medical services that provide free service to community members who need it.

UDLAP has a comprehensive rehabilitation center (CIR), which provides medical care in orthopedics, joint surgery, sports medicine, rehabilitation medicine, physiotherapy, nutrition and physical preparation, with the latest in scientific and technological knowledge, always looking for innovation.

### **STUDENT CENTER**

This is the preferred meeting place for the UDLAP community. It has services and activities that will keep you busy during your free time.

Here you will find from food services to office supplies, projection rooms or student organization offices.

### **SPORTS FACILITIES**

Concerned with your academic and physical development, we have sports facilities that you may access daily to care for your physical wellbeing.

You will find:

- Pool
- Baseball field
- Futsal field
- Basketball courts
- Tennis courts
- Integral Rehabilitation Center
- Basketball court at the Moe Williams Gym

- Weight room
- Track and field
- American football field, Templo del Dolor
- Soccer fields

### **RESIDENTIAL COLLEGES**

Equipped with dorms, projection rooms, auditoriums, cafeterias, among others, we have designed these spaces so you can live comfortably on campus. You may choose one of the four colleges, Cain-Murray, Ray Lindley, Ignacio Bernal, José Gaos.

### **GREEN AREAS**

Ideal to relax, share with your friends and carry out activities, which make it some of the favorite areas for the UDLAP community.

Among them you will find: the lake, the bonfire and meditation gardens, the couple's garden, the main fountain, and Flag Plaza. All these areas are meeting and coexistence points for the university community.

## **2021 STRATEGIC PLAN**

Universidad de las Américas Puebla's strategic plan for the 2013-2023 period is defined from its vision, thus giving life to its current mission. This mission unfolds into strategic guidelines whose objectives and actions are focused on the key principles, promoting a behavior based on institutional values.

The 2021 yearly plan is to maintain UDLAP's academic excellence through processes and a sustainable structure, that meets the challenges created by the COVID-19 pandemic. These include physical health and financial stability, providing the UDLAP community a stable environment that is flexible and continues to meet the institutional mission.

This year we reinforced the financial stability focus, so the objectives are aligned in maintaining healthy finances through savings, increasing income and institutional prestige, prioritizing academic excellence and maintaining our quality and service culture. During this period it is important to maintain academic prestige, adjusting support processes in order to provide the necessary requirements to guarantee that UDLAP continues with its accreditations and national and international rankings, which sustains the institutional prestige.

A flexible, creative and innovative focus allows us to find different society outreach proposals. It is clear that the previous paradigms have changed, and the digital era and its requirements are adapting, which is why this year's planning reflects our commitment to continue being an ally to graduates, organizations and society, understanding their current needs.

The university's spirit is maintained by its organization, which is why in this period we will continue with the development and growth of its collaborators through training and internal development projects that will require an agile organizational culture that facilitates learning and proactive answers.

The 2021 yearly plan contemplates only collective goals defined with measurable, reachable and realistic indicators that, when evaluated, can be adjusted.

### OBJECTIVES OF THE 2021 ANNUAL PLAN

Starting in 2019 we defined 5 priority objectives, which complement the strategic plan and determine the collective 2021 goals.



#### 1. FINANCIAL STABILITY

The pandemic has resulted in the challenge of maintaining financial stability, so actions were proposed to diversify and efficiently use resources, in order to attract and retain human resources, maintain the technology, facilities and financial aid investments that have a social impact. This by following indicators, process quality improvement and decreasing risk.

#### FINANCIAL STABILITY INDICATORS

- Invest \$10 million pesos for training and consulting.
- Obtain \$10 million pesos in sponsorship.
- Increase to more than \$200,000 pesos the income from events such as the Professional Development, Sponsorships, Graduation and Benefits Plan.
- Increase by 5% in sponsorships in the UDLAP Race.
- Increase by 10% the income of sports and cultural programs.
- Process 80% of scheduled payments through the new tools for electronic payments, check transition and interbank transfer.
- Strengthen the Quality Management System.
- Audit 90% of the areas that generate income to validate their correct registration, through reconciliations between the internal control and what is reported in the institutional financial information.
- Develop campaigns to promote COVID-19 health, hygiene measures and self-care.

- Evaluate the infrastructure conditioning plan of UDLAP buildings with prevention measures for COVID-19.
- Increase the mobile capabilities so users can interact and create information.

## **PROJECTS, PLANS AND PROGRAMS**

We will implement:

- The 2021 Technological Master Plan.
- Automatic billing system for customer service.
- The educational scholarship administration system that includes financial and delinquent interest calculation, as well as the budget transfer platform and the platform to obtain the medical insurance policy.
- The Preventive Maintenance Program.

We will meet:

- More than 80% of the consulting and data engineering program.
- 98% of the annual food safety inspection program.
- More than 80% progress in the electronic bank payment system modernization plan.
- 50% progress of the financial management system.
- 90% of an instrument that measures the capacity of the wireless network to identify annual growth trends.
- 90% of the network monitoring system during the first half of 2021.
- Improve 75% the implementation speed new systems derived from the contingency.

## **2. ACADEMIC PRESTIGE**

Strengthening academic excellence is momentous in a year that brings challenges in teaching and the integral formation of students. That is why, we proposed actions to guarantee UDLAP's quality, thus achieving a faculty that has the credentials and experience both professionally and in teaching and research. In the same way, academic programs will be accredited nationally and internationally, responding to the global environment, all through a state-of-the-art infrastructure.

### **ACADEMIC PRESTIGE INDICATORS**

- Maintain national accreditation of creditable undergraduate academic programs.
- Accredite graduate programs before CONACYT.
- Meet the requirements of the Southern Association of Colleges and Schools Commission on Colleges (SACSCOC) y Quality Enhancement Plans (QEP) regarding the 5 year report.
- Complete 95% of the process of updating all master's degree curricula.
- Accredite 15% of licenciatura programs before international organizations.
- Reach 40% of full-time professors in the National Researchers of.
- Disseminate achievements in research and artistic creation.
- Maintain the student-to-teacher ratio.
- Have 20 visiting professors a year.

- Achieve 80 points of evaluation in the quality of distance and mixed courses according to international standards.
- Increase to 30% the offer of courses in English.
- Maintain 58% of courses taught by full-time teachers.
- Increase by 6% the number of full-time professors who participate in research projects with external funding.
- Continue with teacher updates in mixed and distance modality for to integrate technology and improve their teaching processes and strategies.
- Achieve the participation of 90% of students and teachers of mixed and distance programs in activities, modules, support resources and comprehensive training.
- Maintain the ratio of 6 students per professor in the honors program.
- Achieve that more than 30% of students attend Academic Tutoring.
- Maintain the 70% annual students who complete the Academic Advising program.
- Get 4,000 students to participate in the activities offered by Student Development that impact their integral formation.
- Reach 20% of school residents participating in activities to generate a sense of belonging.

### **PROJECTS, PLANS AND PROGRAMS**

The following will be met:

- Investment plan and maintenance of equipment in laboratories, workshops, academic software and bibliographic resources.

### **3. INSTITUTIONAL PRESTIGE**

Universidad de las Américas Puebla, has positioned itself as one of the best private institutions in Mexico and Latin America due to its academic excellence, creation of relevant research, and as an opinion leader in various current issues, as well as in sports, art and culture. That is why by 2021, strategies and actions will be carried out to strengthen UDLAP's prestige.

#### **INSTITUTIONAL PRESTIGE INDICATORS**

- Incorporate 2,181 undergraduate students (includes full-time bachelor), 455 master's degree students, 11 international programs (Exchanges) and 21 dual bachelor's degree students.
- Increase 40 students from foreign high schools.
- Strengthen the exchange program with incoming and outgoing students
- Increase by 10% of nationalities represented by students on campus.
- Increase by 10% international master's students.
- Remain in the top 10 of private universities in Mexico in national and international rankings.
- Get more than 2,200 graduates to participate in university activities.
- Reach 80 thousand visits annually to the digital skills webpage.
- Increase webpage traffic by more than 5% compared to 2020.
- Rating of 60 in Google's PageSpeed Insights improving the usability and experience of the webpage.
- Generate press releases that consolidate UDLAP's presence.

- Maintain more than 500 positive media impacts per month.
- Publish 18 academic or outreach books.

## **PROJECTS, PLANS AND PROGRAMS**

The following will be implemented:

- 90 instruments to guide and control the operation of virtual events.

We will meet:

- The laws, regulations, requirements, and standards established by the U.S. Department of Education for the Federal Student Aid Program.

## **4. OUTREACH WITH SOCIETY AND COMPANIES**

This objective will increase UDLAP's outreach with graduates, companies, academic colleagues and society. This year has made the institution propose innovative collaboration strategies that meet social problems and allow the development and growth of each of the parties.

### **OUTREACH INDICATORS**

- Update the information of the 23,139 graduates.
- Reach 800 graduates using the Link UDLAP platform.
- Have more than 80 companies in recruitment events.
- Increase to more than 800 companies registered on the job placement office.
- Increase the professional practice offers by more than 10%.
- Increase Capilla del Arte's original projects by 20%, including presence in digital media.
- Reach 2,200 visitors to the Franciscan Library's virtual exhibits.
- Carry out the Cultural Summer with the participation of 3 countries.
- Create 2 summer and special courses for foreign institutions.
- Publish 3 issues of Entorno and CNX magazines.
- Create 52 business topic programs on Canal TV UDLAP.
- Increase TV UDLAP's social network indicators by 20%.
- Have 50% of the Sports Department's student athletes participate as Azteca Volunteers.
- Increase participation by 10% in social projects.

## **PROJECTS, PLANS AND PROGRAMS**

We will meet:

- UDLAP's positioning plan with impact on reputation and prestige indicators between the business and academic sectors.
- The work plan to link art with society, creating artistic content.

## **5. ORGANIZATIONAL CAPITAL**

The 2021 annual plan maintains the importance of strengthening organizational capital despite current challenges. The institution prioritizes the integral well-being of academic, administrative and union personnel, fostering a flexible, agile organizational culture that promotes learning, thus achieving that UDLAP employees have the technical competencies and skills to fulfill the mission and achieve the institutional vision.

### **ORGANIZATIONAL CAPITAL INDICATORS**

- Maintain the proportion of Full-Time Professors with PhD or Terminal Degree.
- Comply with the provisions of NOM 035 - STPS through actions to prevent psychosocial risk factors and promote a favorable organizational environment.
- Get 100% of full-time professors to do the academic assessment.
- Achieve more than 75% participation of employees in workshops to strengthen identity and continuous improvement.
- Execute the plan to recognize collaborators who implement improvements.
- Strengthen the individual goal program by aligning it to the annual plan.

### **TRAINING PLAN**

The Institutional Training Plan will continue, and some areas will focus on more technical training according to the activities carried out by personnel such as:

- Reach 85% of teachers participating in mixed and distance training to integrate technology and improve teaching processes and strategies.
- Have 25% of courses offered to teachers focus on mixed education strategies that meet current requirements (approximately 30 courses).
- Develop 75% of academic training courses on Professional Practice Blackboard.
- Advise and train UDLAP community members on of legal issues.
- Achieve 80% of the Systems Architecture and Mobile Solutions training plan.
- Achieve at least 70% of the governance management and administrative solutions training plan.
- Complete 2 professionalization courses for the Head of IT Resource Management and Mobile Communication.
- Have 80% of staff pass 9 courses of the Residential Colleges catalogue.
- Have 85% of the staff to pass the courses established by the Sports Department.
- Train 80% construction employees in the first 6 months.
- Monthly training on pandemic protocols for General Service employees.
- Teach 2 technical training courses in Infrastructure Maintenance.

### **QUALITY WITH WARMTH**

A priority is to continue with academic quality standards in services provided to the UDLAP community so we will maintain or improve the evaluation of their service.

### **QUALITY INDICATORS**

Get a score of:

- Between 8.3 and 8.5 in the evaluation of International Affairs granted by the students.
- 4 points on the Likert scale in the customer satisfaction evaluation in Food Services.
- 4 points on the Likert scale in the user June-December satisfaction evaluation of the Transportation.
- 4.4 points in Likert scale in the satisfaction of internal customer service of the Institutional Development area.
- Maintain the 9.3 score in the Credit and Collection area.
- Quality Program.
- Follow up on the program to update instruments to measure satisfaction for services provided by UDLAP.

## ACCREDITATIONS

Universidad de las Américas Puebla teaches study programs with excellent academic quality through its faculty, that consists of 300 full-time professors, 95% of whom have graduate degrees, and 4 of 10 professors belong to the National Researcher System.

UDLAP gears its efforts in providing high quality educational services, through an integral formation of its students in a multicultural environment based on respect and international understanding.

All study programs have Official Validity (Reconocimiento de Validez Oficial - RVOE) granted by the Secretary of Public Education and are recognized by different universities in Latin America, Europe and the US educational system.

Our students may study abroad and widen their horizons or do professional practices in other countries, making their formation and professional development wider and more varied.

Also, we have Licenciatura Accreditation from COPAES (Consejo para la Acreditación de la Educación Superior, A.C.), CIEES (Comités Interinstitucionales para la Evaluación de la Educación Superior, A.C.) and other international agencies.



### SACSCOC

Fundación Universidad de las Américas, Puebla is accredited by the Southern Association of Colleges and Schools - Commission on Colleges to grant licenciatura, master and doctorate degrees. Contact the Commission on Colleges by mail (1866 Southern Lane, Decatur, Georgia 30033-4097, EUA) or by phone (+1 404 679 4500) to request more information on Fundación

Universidad de las Américas Puebla's accreditation.



**FIMPES**

Fundación Universidad de las Américas, Puebla has, before the admission and permanence system of FIMPES through institutional development, accredited affiliation, for its campus located in Ex Hacienda Santa Catarina Mártir, 72820 San Andrés Cholula, Puebla.

**ACCREDITATIONS OF THE COUNCIL FOR THE ACCREDITATION OF HIGHER EDUCATION (COPAES)**

ACCREDITATION AGENCY	ACCREDITED PROGRAMS	
	Consejo de Acreditación en la Enseñanza de la Contaduría y Administración. CACECA	Licenciatura in Business Administration Licenciatura in Marketing Licenciatura in International Business Licenciatura in Financial Strategies and Public Accounting
	Acreditadora Nacional de Programas de Arquitectura y Disciplinas de Espacio Habitable A.C. ANPADEH	Licenciatura in Architecture Licenciatura in Architecture in Interiors
	Consejo de Acreditación de la Enseñanza de la Ingeniería, A.C. CACEI	Licenciatura in Food Engineering Licenciatura in Industrial Engineering Licenciatura in Engineering in Electronics Licenciatura in Chemical Engineering Licenciatura in Mechanical Engineering Licenciatura in Mechatronics Engineering Licenciatura in in Civil Engineering Licenciatura in Computer Systems Engineering Licenciatura in Environmental Engineering Licenciatura in Biomedical Engineering Licenciatura in Logistics Engineering
	Consejo Nacional para la Enseñanza e Investigación en Psicología, A. C. CNEIP	Licenciatura in Clinical Psychology Licenciatura in Organizational Psychology
	Consejo Nacional de la Enseñanza y del Ejercicio Profesional de las Ciencias Químicas A.C. CONAECQ	Licenciatura in Clinical Biochemistry Licenciatura in Nanotechnology and Molecular Engineering

	Consejo de Acreditación de la Comunicación y Ciencias Sociales A.C. CONAC	Licenciatura in Communications and Image Licenciatura in Media Communication and Production
	Asociación para la Acreditación y Certificación en Ciencias Sociales. ACCECISO	Licenciatura in Cultural Anthropology Licenciatura in Political Science Licenciatura in Educational Innovations Licenciatura in International Relations Licenciatura in Multicultural Relations
	Consejo Nacional para la Calidad de la Educación Turística. CONAET	Licenciatura in Hotel and Restaurant Management Licenciatura in Culinary Arts
	Comité de Acreditación y Certificación de la Licenciatura en Biología, A. C. CACEB	Licenciatura in Biology
	Consejo Mexicano para la Acreditación de la Educación Farmacéutica, A. C. COMAEF	Licenciatura in Pharmaceutical Sciences
	Consejo Mexicano para la Acreditación de Programas de Diseño. COMAPROD	Licenciatura in Digital Animation Licenciatura in Visual Information Design
	Consejo para la Acreditación de la Enseñanza del Derecho. CONAED	Licenciatura in Law
	Consejo para la Acreditación de la Educación Superior de las Artes. CAESA	Licenciatura in Dance Licenciatura in Music Licenciatura in Arts Licenciatura in Plastic Arts
	Consejo para la Acreditación de Programas Educativos en Humanidades. COAPEHUM	Licenciatura in Art History and Curatorship Licenciatura in Language Licenciatura in Arts in Literature
	Consejo Nacional de Acreditación de la Ciencia Económica, A.C. CONACE	Licenciatura in Banking and Investment Licenciatura in Economics

	Consejo de Acreditación de Programas Educativos en Física, A.C. CAPEF	Licenciatura in Physics
	Consejo Mexicano para la Acreditación de la Educación Médica, A. C. COMAEM	Licenciatura in Medical Surgeon
	Consejo Nacional para la Calidad de los Programas Educativos en Nutriología A.C. CONCAPREN	Licenciatura in Nutritional Science

**RECOGNITION OF GOOD QUALITY PROGRAMS BY COMITÉS INTERINSTITUCIONALES PARA EVALUACIÓN DE LA EDUCACIÓN SUPERIOR, A.C. (CIEES)**



**COMITÉS INTERINSTITUCIONALES PARA EVALUACIÓN DE LA EDUCACIÓN SUPERIOR, A. C. CIEES**

**EVALUATED PROGRAMS**

- Licenciatura in Actuarial Science
- Licenciatura in Nursing

**ACCREDITED PROGRAMS**

- Master in Clinical Psychology
- Master in Construction Project Management
- Master in Information Design
- Master in Health Services Administration
- Master in Tax Law
- Master in Communication and Digital Media
- Master in Governance and Globalization
- Master in Basic Education
- Master in Secondary Education
- Master in Business Administration
- Master in Manufacturing Administration
- Master in Business Administration
- Master in Energy Management
- Master in Corporate Finance
- Master in Marketing

- Master in International Business

### INTERNATIONAL ACCREDITATIONS

ACCREDITATION AGENCY	ACCREDITED PROGRAMS	
	Engineering Accreditation Commission of ABET. ABET	Licenciatura in Food Engineering Licenciatura in Chemical Engineering Licenciatura in Civil Engineering Licenciatura in Industrial Engineering Licenciatura in Mechanical Engineering Licenciatura in Mechatronics Engineering
	Institute Food Technology. IFT	Licenciatura in Food Engineering
	Honor Program accredited by The Royal Society of Biology. RSB	Licenciatura in Biology
	The Royal Society of Chemistry. RSC	Licenciatura in Nanotechnology and Molecular Engineering

### GRADUATE PROGRAMS IN THE NATIONAL REGISTER OF QUALITY POSTGRADUATES (PNPC) OF CONSEJO NACIONAL DE CIENCIA Y TECNOLOGÍA (CONACYT)



Consejo Nacional de Ciencia y Tecnología. (CONACYT)

#### ACCREDITED PROGRAMS

- PhD in Creation and Culture Theory
- PhD in Molecular Biomedicine
- PhD in Food Science
- PhD in Water Sciences

- PhD in Intelligent Systems

## FACULTY

### SCHOOL OF ARTS AND HUMANITIES

Name	Position
Martha Laura Ramirez Dorantes	School of Arts and Humanities Dean
Anne Kristiina Kurjenoja Lunch Island	Architecture Academic Director
Jesus Mario Lozano Alamilla	Arts Academic Director
Brita Banitz	Languages Academic Director
Martin Sanchez Camargo	Letters, Humanities and Art History Academic Director
Victor Alejandro Brizuela Garcia	Design Academic Director

### SCHOOL OF SCIENCE

Name	Position
Jose Daniel Lozada Ramirez	School of Science Dean
Mauricio Rodriguez Abreu	Actuarial Science, Physics and Mathematics Academic Director
Eugenio Sánchez Arreola	Biological Chemical Sciences Academic Director
Roberto Carlos Mares Morales	Health Sciences Academic Director

### SCHOOL OF SOCIAL SCIENCES

Name	Position
Juan Antonio Le Clercq Ortega	School of Social Sciences Dean
Laura Elena Romero Lopez	Anthropology Academic Director
Gerardo Rodríguez Sánchez Lara	International Relations and Political Science Academic Director
Valeria Leal Ramirez	Communication Sciences Academic Director
Marcela Corro Priego	Law Academic Director
Claudia María Ramírez Culebro	Education Sciences Academic Director
Juan Antonio González Puente	Psychology Academic Director

### SCHOOL OF ENGINEERING

Name	Position
René Alejandro Lara Diaz	School of Engineering Dean
Rafael Carrera Espinoza	Industrial and Mechanical Engineering Academic Director
Benito Corona Vasquez	Civil and Environmental Engineering Academic Director
José Luis Vázquez González	Computer, Electronics and Mechatronics Engineering Academic Director
María Teresa Jiménez Munguía	Chemical and Food Engineering Academic Director

### SCHOOL OF BUSINESS AND ECONOMICS

Name	Position
Sergio Picazo Vela	School of Business and Economics Dean

Luis Alberto Barroso Moreno	Business Graduate Studies Academic Director
Juana Cecilia Trujillo Reyes	Business Administration Academic Director
Erika Galindo Bello	Marketing Academic Director
Manuel Francisco Suarez Barraza	International Business Administration Academic Director
Nicolás Gutiérrez Garza	Economics Academic Director
Felipe De Jesús Bello Gómez	Banking and Investments Academic Director
Guillermo Einar Moreno Quezada	Finance and Accounting Academic Director
Ma Del Carmen Milagros Morfin Herrera	Tourism Academic Director

## INTEGRAL STUDENT DEVELOPMENT

### ART AND CULTURE

We promote all kinds of culture! From theater, dance and painting, as well as singing, music and sculpture. UDLAP offers its community and the public, numerous presentations and artistic shows throughout the year, always looking to highlight different cultures and customs that coexist on campus.

### SPORTS

Our sports students are an example of discipline, attitude, strength and work. The six sports representative teams that make up our university are always in the first places in their competitions, showing the meaning of being an UDLAP Azteca.

### STUDENT LIFE

The university is not only a place to go to school. The experience and learning of coexisting with different lines of thought and participating in integration and recreation activities, contributes to the integral development of the university community. UDLAP offers academic and cultural trips, business visits, bike tours, cinema club, and student organizations.

### SOCIAL COMMITMENT

It is in university life that one builds knowledge, and therefore, at UDLAP, daily life is also constant learning. We want our students to be good citizens who are humanistic and tolerant of leadership and success, with equal opportunities in their environment.

### INTERNATIONAL EXPERIENCE

UDLAP offers the opportunity to live an international experience through our diverse programs: academic exchanges, dual programs, language summers, academic summers and professional practices abroad.

### OUTREACH WITH BUSINESSES (PROFESSIONAL PRACTICES)

The Department of Professional Practices promotes and supervises the relationship between the UDLAP student and organizations that offer professional practice projects in Mexico. Their main functions are:

- Establish agreements and collaborations.

- Promote professional practices projects with the university community.
- Manage and supervise student-organization outreach.
- Mediate and solve conflicts.

## ADMISSIONS

### ADMISSION PROCESS

#### 1.- Create your profile

Create your unique user account and start your admission process.

#### 2.- Present your entrance exam

Know the dates of the entrance exam on campus and register on the date you want to attend, or check the dates on which we will visit your city and schedule your appointment. See the guide to present it.

#### 3.- First delivery of admission documents

Once you have passed the entrance exam, you can continue with the admission process and obtain your student number. To do this, you must fill out the application and submit a simple copy of your birth certificate or CURP; as well as an original transcript of your licenciatura or equivalent.

#### Licenciatura with additional admission requirements

If you plan to study the licenciaturas in International Business Administration, Dance or Medical Surgeon, there are additional requirements that you must meet.

Consult the requirements at: <https://udlap.mx/eligeudlap/requisitos-adicionales.aspx>

#### 4.- Make your first payment and you will receive your class schedule\*

Make the payment of 6 units (in the cases that apply).

*\* You will receive your course schedule one the early registration period begins.*

### STUDY EQUIVALENCY AND REVALIDATION

Equivalency is an educational authority's administrative act or ruling that the institution's studies are equivalent to studies carried out in the National Education System.

Revalidation is the administrative act before an authorized educational authority, that grants official validity to studies done abroad, if they are comparable with studies in the National Education System and correspond to courses in the university's study program.

A comparison study determines which courses are accredited in the study program through equivalence or revalidation. This process has a fee for the student, which you can find on the university's webpage.

You may accredit courses with passing grades according to what is indicated by the education authorities.

The student has a maximum of 80 days from having started their first term at the university to hand in the required documents.

Equivalencies (national institutions) at the licenciatura level, deliver the following documents:

- A. Study program of the licenciatura, duly sealed.
- B. Syllabus of each of the courses considered for equivalency, duly sealed.
- C. Original certificate of the partial studies at the university.

Equivalencies (national institutions) for master's program, deliver the following documents:

- A. Graduate study program, duly sealed.
- B. Syllabus of each course considered for equivalency, duly sealed.
- C. Original certificate of partial studies at the university.
- D. Notarized licenciatura professional license.
- E. Certificate of licenciatura studies.

Revalidations (foreign institutions) at the licenciatura level, deliver the following documents:

- A. Transcript or university certificate, physical or electronic, duly sealed.
- B. Study program, duly sealed.
- C. Syllabus of each of the courses considered for revalidation, duly sealed.

In case the documents are not in Spanish, you must deliver a simple translation of them.

Revalidations (foreign institutions) at the master's level, deliver the following documents:

- A. Transcript or university certificate, physical or electronic, duly sealed. In case the documents are not in Spanish, you must deliver a simple translation of them.
- B. Study program, duly sealed.
- C. Syllabus of each of the courses considered for revalidation, duly sealed.
- D. Notarized licenciatura professional license.
- E. Certificate of licenciatura studies.

In case the documents are not in Spanish, you must deliver a simple translation of them.

## SCHOOL CALENDAR

You can consult the school calendar here: <http://www.udlap.mx/calendario/default.aspx>

## SCHOOL SERVICES

The Department of School Services is an area to attend students, from their admission process, during their studies and until the graduation process.

Hours of operation: Monday to Friday from 8:30 to 17:00.

For extended hours request an appointment 24 hours in advance to the following email: [serviciosescolares.posgrado@udlap.mx](mailto:serviciosescolares.posgrado@udlap.mx)

More information: [www.udlap.mx/serviciosescolares](http://www.udlap.mx/serviciosescolares)

## INSTITUTIONAL SCHOLARSHIPS

These are financial aid granted to students who request it, considering academic, sports, art performance with no retribution for UDLAP (they are not credit loans).

It is indispensable to hand in the scholarship application in the dates established and enroll in the “early registration” period, according to the semester you are entering (January or August 2020), if you meet the requirements.

The main student commitment is to maintain their academic quality.

It is important to understand and meet the general and specific guidelines, as well as the scope, benefits and obligations of the scholarship you are interested in.

## T I P O S D E B E C A



### ACADÉMICA

- Promedio 8.5
- Examen nuevo ingreso ≥ 1200 puntos
- Pago de \$1,230 por estudio socioeconómico (costo sujeto a cambios sin previo aviso, no reembolsable) en Unicaja, depósito o transferencia electrónica en: Banorte (Núm. de cuenta 0650071838 / CLABE 072 650 0065 00718384) Bancomer (Núm. de cuenta 0443569470 / CLABE 012 650 0044 35694700)



### COMUNIDAD UDLAP

- Beneficios directos cumpliendo con los requisitos establecidos



### CONVENIO PREPARATORIAS

- Beneficio para egresados de preparatorias con convenio vigente
- [www.udlap.mx/eligeudlap/preparatorias-convenio.aspx](http://www.udlap.mx/eligeudlap/preparatorias-convenio.aspx)



### DEPORTIVA

- Formar parte de los Equipos Representativos Deportivos
- Informes: Edificio GB · Oficina 207 Tel.: 222 229 23 78 / 222 229 20 00 ext. 6533 / 2381 [reclutamiento.aztecas@udlap.mx](mailto:reclutamiento.aztecas@udlap.mx)



### SOCIOS ESTRATÉGICOS

- Asociaciones y cámaras
- Empresas
- Instituciones financieras
- Gobierno



### ARTÍSTICA

- Formar parte de los Equipos Representativos Culturales (ingreso 2020)
- Informes: Edificio CI · Oficina 212 Tel.: 222 229 31 55 [equipos.culturales@udlap.mx](mailto:equipos.culturales@udlap.mx)

## IMPORTANT ASPECTS

The scholarships only apply to new students.

Scholarships are not cumulative.

The scholarship application process does not guarantee that you will receive it, as it is subject to the corresponding valuation by UDLAP.

Late applications will not be accepted, nor incomplete documentation or that which does not meet with the requirements of the corresponding scholarship.

When you receive the scholarship, it is mandatory to meet what is indicated in the Institutional Scholarship regulations.

More information: [www.udlap.mx/becas](http://www.udlap.mx/becas)

## GRADUATION AND DIPLOMAS

### GRADUATION

Steps to follow

- Enter: [aplicaciones.udlap.mx/Graduacionestudiante/](http://aplicaciones.udlap.mx/Graduacionestudiante/) on the dates published in the current school calendar.
- Upload the proof graduation fee payment, which must correspond to the current cost.
- Deliver photographs, for total certificate of studies and minutes of examination or exemption
- Upload through the address: [aplicaciones.udlap.mx/Graduacionestudiante/](http://aplicaciones.udlap.mx/Graduacionestudiante/), a digital color photograph, for the graphic version of the electronic title.
- Conclude the Social Service (bachelor's degree only).
- Do not have debts (tuition, UDLAP draw, library, laboratories, hours of scholarship service, etc. ).

### DIPLOMA

- Once graduated, the UDLAP will prepare and send the XML files with the electronic titles, to the Educational Authorities who authenticate and register them, to later make the delivery to the interested parties.
- The processing of the professional card is already personal, and can be done once they have their electronic title.

## COSTS

### TUITION

For students to enroll they must pay the tuition.

- Licenciatura - 6 units at the current cost.
- Trimester graduate studies - 4 units at the current cost.

The tuition cost is determined by multiplying the number of enrolled academic units by the current cost per unit. Each course has a defined number of units.

All information regarding payments and tuition is found at: <https://www.udlap.mx/pagosycolegiaturas/>

## REFUNDS

If you have a credit balance, you may request the refund if said balance is due to excess payments.

For refunds you must go to Unicaja in the Treasury Department, located in building 1 office 109 to deliver the necessary documentation in the dates established in: <https://www.udlap.mx/pagosycolegiaturas/reembolsos.aspx>

The procedure is as follows:

### 1. Refund application, for which you must meet the following requirements:

- Letter to the Treasury Department that specifies the reason why there is a credit balance.
- Request the application (only the shaded lines, also available at Unicaja).
- Copy of official identification (Credencial de Elector or passport), present original for comparison.
- For refunds greater than \$20,000.00 pesos, you must present a letter of authorization from the parent or guardian who is registered in School Services, copy of their identification and contact information.
- For refunds greater than \$100,000 pesos, you must present a letter of resource provenance.
- If the student cannot do this process personally, the person who represents them must have a simple proxy letter and copy of identifications of both parties.

### 2. Refunds.

- Once your refund has been authorized and after 15 working days at most, you may go to the cashier located in building I, office 109, from 8:00 to 13:00 and 15:00 to 16:00.
- If your refund is less than the equivalent of one unit at the current fee, it will be given in cash. Please bring your official ID.
- Amounts larger than the amount stated above will be issued a cashier's check, which means you must deposit it in your account.
- If you cannot go personally for your refund, you may request direct deposit, sending a copy of your account statement that includes the account number under your name.
- If the refund is due to application of study units (JDES) or future student units (UFES), the refund will have a 10% administration fee.
- If the refund is due to scholarships, education credits or lottery incentives, it will not apply.

## WITHDRAWING FROM UDLAP

In case of temporary or definitive withdrawal from UDLAP, the student must cover the total tuition cost of the enrolled period, unless the withdrawal is in the times specified below. The withdrawal procedure must be done in the Student Community Attention. Center

The number of days to calculate the waiver considers the first official day of classes of the academic period, and the date the process is started in the Center of Student Community Attention.

## SEMESTER TERM

<b>From the 1<sup>st</sup> to the 5<sup>th</sup> day of classes</b>	<b>100% Waiver</b>
<b>From the 6<sup>th</sup> to the 10<sup>th</sup> day of classes</b>	<b>70% Waiver</b>
<b>From the 11<sup>th</sup> to the 14<sup>th</sup> day of classes</b>	<b>40% Waiver</b>
<b>After the 15<sup>th</sup> day of classes</b>	<b>0% Waiver</b>

**TRIMESTER OR SUMMER**

<b>From the 1<sup>st</sup> to the 2<sup>nd</sup> day of classes</b>	<b>100% Waiver</b>
<b>From the 3<sup>rd</sup> to the 5<sup>th</sup> day of classes</b>	<b>70% Waiver</b>
<b>From the 6<sup>th</sup> to the 7<sup>th</sup> day of classes</b>	<b>40% Waiver</b>
<b>From the 8<sup>th</sup> day of classes</b>	<b>0% Waiver</b>

*\* Applicable only for tuition.*

*\* New students must meet the current regulations.*

## REGULATIONS

At the University of the Americas Puebla Foundation, we have policies, regulations and procedures that any member of the UDLAP Community must observe to create an environment of healthy coexistence, respect and collaboration to benefit personal and professional growth, in congruence with the institutional mission.

Students at Fundación Universidad de las Américas Puebla have the obligation to direct in their actions with responsibility in the achievement of a comprehensive training and academic excellence.

Student regulations: <https://www.udlap.mx/serviciosescolares/normatividad.aspx>

## ALUMNI COMMUNITY

The Alumni Department's objective is outreach with the largest UDLAP community, which are its over 30,000 alumni. They are fundamental, as they represent the university in the work force. They also support the creation of new spaces in professional and social fields, that contribute to the positioning of Universidad de las Américas Puebla.

The Office of Alumni Outreach works with other UDLAP areas to receive suggestions from alumni and the public. We are focused on providing a service to all graduates, from licenciatura and graduate studies. We want to strengthen, consolidate and stimulate relations with UDLAP graduates, while we promote their integration and sense of belonging, to promote their personal and professional development.

We let them know the benefits of being UDLAP alumni and maintain and consolidate a graduate-institution link. We keep their information regarding workplace and activities updated, promoting their participation in events or inviting them to publish a research article in Contexto or current interest articles in (Visión ExaUDLAP).

### **VISIÓN EXAUDLAP MAGAZINE**

A university's prestige comes from its alumni. It is they who, through their actions, reflect the result of work and effort. Being a graduate from Universidad de las Américas Puebla, you acquire the commitment to strengthen what for generations has understood the university: graduates with critical thinking who can face problems and compete in a global environment. Bringing our graduates closer to their alma mater and building a community requires efforts from everyone. Being exaudlap means being an active part of the university community. Having our graduates close strengthens us and contributes to consolidating our university and thus transform the country.

UDLAP will continue working on making our alma mater a center of integral development, shaping young people's future and educating critical individuals who benefit the immediate social context.

We reiterate our interest in keeping you close to your alma mater and invite you to participate in the different outreach spaces we have. We thank you for your enthusiastic participation in making this magazine possible, and for allowing us to share with you the achievements, successes and challenges of the alumni community.



EDUCATIONAL OFFER

2021

## DIGITAL ANIMATION

### LAP1012 ANALYSIS AND REPRESENTATION

Understand spatial representations through 2D exercises to identify the fundamental elements of drawing.

### LIV1012 VISUAL MESSAGE ELEMENTS

Identify the elements of the visual alphabet using tools and design to configure visual messages considering the syntax of the image.

### LLI1022 FUNDAMENTALS OF LITERARY WRITING

Identify the theoretical concepts of literary discourse by analyzing literature in contemporary society to accurately learn the meaning of studies and literary writing.

### LIV1022 FUNDAMENTALS OF DIGITAL IMAGING

Reproduce simple vector images or bitmaps using specialized digital image creation software to design projects both on screen and in print.

### LEX0112 FOREIGN LANGUAGE I\*

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### INF0012 INFORMATION TECHNOLOGIES IN THE CONSTRUCTION OF KNOWLEDGE\*

Understand relevant information using Information and Communication Technologies (ICT) to document an economic, political, cultural and/or social problem.

### LAR1052 ANALYSIS AND VISUALIZATION

Relate the elements of a design problem through diagrams, sketches or three-dimensional models to draw conclusions and creative proposals.

### ESP0012 ACADEMIC REASONING \*

Express academic arguments orally and in writing within your discipline by developing and presenting persuasive speeches, using the rudiments of communication to interact effectively in a specific academic context.

### LIV1052 DIGITAL IMAGE EDITING

Design digital images to relate a visual message to a given audience by applying advanced knowledge of the use of specialized software in the production of images and thus effectively define the appropriate technical parameters of the medium in which they are reproduced.

### LIV1072 PHOTOGRAPHY

Identify the components of a photograph by using techniques and equipment to produce images.

### LEX0122 FOREIGN LANGUAGE II \*

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### **LPM1022 LANGUAGE OF CINEMA I**

Identify the main milestones in the first sixty years of film history through a written analysis of a film in accordance with the evolution and use of narrative and cinematic language techniques until the late 1950s to understand the most representative authors and their contributions to the cinematographic language.

### **LAR1032 SPATIAL MODELS**

Identify basic architectural concepts by drafting and constructing models to express their own ideas about three-dimensional architectural space.

### **LAP2022 DRAWING AND FORM**

Understand graphic language through direct observation and drawing of proportions and symmetry of natural and anthropomorphic models to compare different ways to present forms.

### **ESP0022 ACADEMIC WRITING \***

Develop academic articles of your discipline through the administration of specialized information and the application of academic and scientific conventions, for the dissemination of academic and scientific knowledge.

### **LND2012 DIGITAL ILLUSTRATION**

Identify digital illustration techniques using tablets and direct capture screens, to create illustration pieces that are applied in a design or artistic project.

### **LEX0132 FOREIGN LANGUAGE III \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### **LIV2032 SEMIOTICS AND VISUAL RHETORIC**

Identify the main contributions of semiotics and rhetoric to study visual messages, analyzing relevant theories and examples to make visual information design decisions.

### **LND2022 ANIMATION TECHNIQUES**

Identify the basic concepts of animation and traditional production processes applying different techniques to develop moving images.

### **LND2042 2D DIGITAL ANIMATION**

Apply different 2D digital animation techniques and a suitable workflow using specialized software to produce animation projects in two dimensions.

### **LND2032 MODELING AND DIGITAL TEXTURE**

Identify the fundamental principles of modeling and texturing of 3D objects, using different techniques to apply them to a three-dimensional digital production.

### **LLI2042 LITERARY MODELS - FICTION**

Identify structural and thematic differences between the epic, the novel and the story, comparing the various quantitative, qualitative and narrative enunciation elements that make up a story, to analyze

paradigmatic works from the epic to the most recent stories and novels of the Western world in their printed and audiovisual representations.

#### **LND2052 PRE-PRODUCTION AND PREVIEW**

Create a digital animation using previewing techniques, developing a narrative structure such as storyboarding, to express an appropriate use of audiovisual language.

#### **LND3052 ACTING FOR ANIMATION**

Identify the basic elements of Stanislavski's acting system through basic acting exercises to apply in character animation.

#### **LND3032 ADVANCED 2D DIGITAL ANIMATION**

Identify advanced 2D digital animation tools to create different characters and scenarios by using specialized software.

#### **LND3042 ANIMATION SOUND DESIGN**

Create soundtracks using different recording techniques and tools to include in an animation project, understanding the synchronization process between image and sound.

#### **LND3012 ADVANCED DIGITAL MODELING**

Learn advanced modeling techniques, using surface manipulation and texturing processes, to apply them to a three-dimensional production.

#### **LND3022 PROFESSIONAL PRACTICE 1**

Understand appropriate and competent digital animation solutions in a company or organization to meet the communication objectives of clients, by performing internships under the tutelage of a mentor.

#### **LND3082 3D DIGITAL ANIMATION**

Produce 3D digital animation by practicing principles, techniques and workflows to design an animated short film.

#### **LND3072 MOTION CAPTURE AND CHARACTER ANIMATION**

Understand workflow in motion capture by using cameras and special equipment, as well as the effective direction of motion capture sessions, to create characters that are part of a 3D production.

#### **LND3102 PROJECT MANAGEMENT AND CREATIVE TEAMS**

Learn the process of managing projects and creative teams, implementing research tools, analysis, diagnosis, planning, realization and measurement of results, to create a viable design proposal.

#### **LND3062 LIGHTING AND DIGITAL COMPOSITION**

Understand lighting processes in digital animation, rendering and composition, by defining and applying lighting on an object or scene, as well as global lighting techniques, to create specific effects.

#### **LAI3082 DIGITAL MODELING AND MANUFACTURING**

Develop digital models of innovative product and object prototypes in inner space and future space scenarios, using CAD-CAM-CNC (Computer Aided Design – Computer Aided Manufacturing) technology to create them digitally.

### **LND3092 SELECT TOPICS 1**

Analyze current issues related to the production of 2D animations through the use of tools and techniques to develop interactive games, training videos, animated infographics and tutorials.

### **LND4032 ADVANCED 3D DIGITAL ANIMATION**

Learn advanced 3D digital animation techniques, using specialized software to produce animated characters and their 3D staging.

### **LND4052 EXPERIMENTAL ANIMATION**

Develop different animation techniques and styles by creating an animated short film with a personal visual and artistic proposal to describe a story with an appropriate visual narrative.

### **LAP4052 DIGITAL ART AND TECHNOLOGY**

Investigate the different contemporary digital artistic practices by applying the most important methodologies of interactive computer-based technologies, to evaluate the potential of digital technology in its creative and artistic practice.

### **LND4012 CHARACTER CREATION**

Design characters that fulfill a certain purpose in the narrative structure of an animation through formalist and psychological techniques and strategies to be used in animations aimed at different audiences and viewers.

### **LND4022 PROFESSIONAL PRACTICE 2**

Identify professional and effective digital animation proposals to create solutions to communication and design problems within a company or organization, analyzing the specific conditions of the client.

### **LND4042 SELECT TOPICS 2**

Examine current methods and techniques in the development of 3D animations to be applied in the field of entertainment, through the design of products such as video games, commercials, movies and videos.

### **LND4072 ANIMATION FOR THE WEB AND MOBILE DEVICES**

Develop digital animations by using different software and platforms to create digital interaction projects.

### **LIV4112 ART DIRECTION**

Develop a comprehensive vision based on the interpretation of the art direction process, to identify the contextual reality of the management, negotiation and commercialization of design proposals.

### **LND4082 VIRTUAL ENVIRONMENT DESIGN**

Build virtual environments using modeling techniques, lighting, textures and interaction to develop a high-quality virtual environment for animated scenes.

### **LND4062 VISUAL EFFECTS**

Identify the production processes of visual effects applying different image composition and manipulation techniques to develop complex digital animation projects.

### **LND4092 SELECT TOPICS 3**

Examine current issues related to visual storytelling by creating scripts, characters, and storyboards to identify the latest trends in the area.

### GENERAL ART ELECTIVE\*

- **ART0022 ART AND CULTURE OF THE AMERICAS**  
 Identify sociocultural development in the Americas through their artistic expressions to establish an active dialogue with this past and its identity context.
- **ART0012 ART, HISTORY AND CULTURE**  
 Identify how human beings define reality and express it for themselves and the world from the emergence of Western modernity, by explaining the reciprocal relationship between art, history and culture to critically argue artistic representation and expression topics.

### GENERAL MATH ELECTIVE\*

- **MAT0012 MATH FOR THINKING**  
 Apply various approaches to mathematical thinking by modeling and analyzing hypothetical and real-world phenomena, to design solutions to problems related to your studies and your physical environment.
- **MAT0022 MATH AND CULTURE**  
 Develop a project that integrates math with any of the expressions of culture, by modeling phenomena or indicators to make decisions that benefit society.

### GENERAL BEHAVIORAL SCIENCE ELECTIVE\*

- **COM0012 ETHICS, SOCIETY AND THE ENVIRONMENT**  
 Discuss global problems and their local implications by integrating socio-economic, environmental and ethical aspects to create proposals for a tolerant society.
- **COM0022 BEHAVIOR AND HUMAN DEVELOPMENT**  
 Identify human development's bio-psycho-social factors, by analyzing the variables that affect individual and social behavior and use this knowledge in their academic and professional life.

### GENERAL NATURAL SCIENCE ELECTIVE\*

- **CNE0012 FOOD AND LIFE**  
 Identify the relationship between food and health through research that provides data on eating habits to choose an informed diet for your daily life.
- **CNE0022 EVOLUTION AND BIODIVERSITY**  
 Describe the origin of diseases through causal factors to assess human health information sources.

### GENERAL HUMANITIES ELECTIVE\*

- **HUM0012 ECOSOPHY**  
Compare world representation systems, analyzing different epistemological proposals to reposition the current Being-Man relationship with their environment and other beings from a fundamentally ecological philosophical dimension.
- **HUM0022 HUMANISTIC THINKING**  
Study humanist thought from a socio-historical cultural perspective, based on the analysis of its different historical nuances to understand its relevance in contemporary culture.

*\*Courses that are part of the UDLAP General Education component*

## ARCHITECTURE

### LAP1012 ANALYSIS AND REPRESENTATION

Understand spatial representations through 2D exercises to identify the fundamental elements of drawing.

### LAR1012 CONTEXT, SPACE AND TIME

Identify the dialectical relationship between inhabiting and projecting historical places and moments by analyzing theoretical concepts, to relate the complementary, reflective and productive ways of operating in the discipline.

### LEX0112 FOREIGN LANGUAGE I \*

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### LAR1022 DESIGN PROCESS WORKSHOP I

Identify the relationships between elements in a design problem, using diagrams, sketches or three-dimensional models to develop supported solution proposals.

### INF0012 INFORMATION TECHNOLOGIES IN THE CONSTRUCTION OF KNOWLEDGE \*

Understand relevant information using Information and Communication Technologies (ICT) to document an economic, political, cultural and/or social problem.

### LAR1052 ANALYSIS AND VISUALIZATION

Relate the elements of a design problem through diagrams, sketches or three-dimensional models to draw conclusions and creative proposals.

### ESP0012 ACADEMIC REASONING\*

Express academic arguments orally and in writing within your discipline by developing and presenting persuasive speeches, using the rudiments of communication to interact effectively in a specific academic context.

### LAR1042 GEOMETRY I

Describe architectural space by using manual and digital tools to analyze and interpret the architectural space.

**LEX0122 FOREIGN LANGUAGE II \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**MAT1012 UNIVERSITY MATH**

Learn algebraic language to interpret and use mathematical expressions, including their corresponding graphics, to formulate and solve problems.

**LAR1032 SPATIAL MODELS**

Identify basic architectural concepts by drafting and constructing models to express their own ideas about three-dimensional architectural space.

**LAR1062 DESIGN PROCESS WORKSHOP II**

Design spaces by reconceptualizing components, forms and materials present in previously constructed spaces to identify the process of reorientation of a pre-existing building.

**ESP0022 ACADEMIC WRITING \***

Develop academic articles of your discipline through the administration of specialized information and the application of academic and scientific conventions, for the dissemination of academic and scientific knowledge.

**LAR2022 GEOMETRY II**

Learn algebraic language to interpret and use mathematical expressions, including their corresponding graphics, to formulate and solve problems.

**LIC2022 BUILDING MATERIALS LAB**

Identify the mechanical properties of building materials by running destructive, non-destructive and other quality control tests to understand their relationship and function in a construction site.

**LEX0132 FOREIGN LANGUAGE III \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**LAR2012 CONSTRUCTION MATERIALS AND PROCEDURES**

Identify construction materials as fundamental elements, through the relationship of their properties and characteristics to understand optimization mechanisms of a building's construction procedure.

**LAR2032 ARCHITECTURAL DESIGN WORKSHOP I**

Understand the elements included in morphoecology through environmental and physical analysis, to develop architectural design projects.

#### **LAI2072 ARCHITECTURAL COMMUNICATION**

Identify the most appropriate manual and digital representation techniques and tools through the elaboration of graphic, audiovisual and digital material to understand the communication, presentation and promotion processes of architectural and interior projects.

#### **LAR2042 STRUCTURAL PRINCIPLES**

Identify the logic of support by analyzing different structural systems, to give integrity to the architectural object.

#### **LAR2052 ARCHITECTURAL DESIGN WORKSHOP II**

Relate the complexity of the urban condition by analyzing its fields of action and scopes to design living spaces.

#### **LAR3012 ARCHITECTURE FROM ANTIQUITY TO THE BAROQUE**

Describe the design intentions present in the Western world from classical antiquity to the Baroque, by analyzing the relationship between city, architectural object and means of insertion, to identify how it shapes urban-architectural proposals.

#### **LAR3022 STRUCTURAL STABILITY I**

Apply free-body diagrams and formulate equilibrium equations in two and three dimensions by identifying the principles and conditions of equilibrium, to understand those that give structural stability to the architectural object.

#### **LIC3042 BASIC INSTALLATIONS**

Establish the relevant installations by applying standardized procedures, regulations and representation elements.

#### **LAR3032 PROFESSIONAL PRACTICE 1**

Apply the theoretical knowledge and disciplinary skills acquired during their architecture studies by collaborating in offices and construction companies through supervised professional practices to recommend solutions to real architectural, urban and construction design problems.

#### **LAR3042 ARCHITECTURAL DESIGN WORKSHOP III**

Interpret the differences between urban and rural by operating design processes to redefine the conditions of the rural space and landscape and develop architectural projects that are integrated into the environment.

#### **LAI3022 3D VISUALIZATION**

Create three-dimensional representations through modeling and digital visualization techniques to produce architectural and interior projects.

### **LAR3052 NEW SPAIN ARCHITECTURE**

Examine the architecture used between the sixteenth and nineteenth centuries in New Spain, analyzing the society that produced it to identify the relationship between historical facts and architectural production.

### **LAI3052 COMFORT AND ENERGY IN THE INTERIOR SPACE I**

Identify the use of resources in a construction by analyzing environmental and human factors to develop a sustainable and bioclimatic architectural project.

### **LAR3072 CONSTRUCTION COSTS**

Understand the methodology used to determine the cost of a work, applying it when elaborating a construction budget, using the main existing manual and computerized systems.

### **LAR3062 STRUCTURAL STABILITY II**

Evaluate the structural elements subjected to forces, according to the properties and characteristics of the flat sections to infer the various internal structural effects within the permissible values of a specific material.

### **LAI3082 DIGITAL MODELING AND MANUFACTURING**

Develop digital models of innovative product and object prototypes in inner space and future space scenarios, using CAD-CAM-CNC (Computer Aided Design – Computer Aided Manufacturing) technology to create them digitally.

### **LAR3082 ARCHITECTURAL DESIGN WORKSHOP IV**

Discover the relationship between territory, history and culture by applying intervention strategies in historically relevant contexts to develop proposals for public spaces.

### **LAR4022 MODERN ARCHITECTURE**

Explain how a global movement like the modern one was expressed in different countries, studying different architectural projects to identify the causes and consequences of this movement.

### **LAI4012 COMFORT AND ENERGY IN THE INTERIOR SPACE II**

Recommend interior comfort strategies in a construction by analyzing environmental and human factors to develop a sustainable and bioclimatic architectural project.

### **LAR4042 PARAMETRIC DESIGN**

Discover 3D visualization to apply creative thinking through experimentation and implementation of digital design processes.

### **LAR4012 CONSTRUCTION INFORMATION MODELING**

Create 3D designs and their corresponding documentation under a coordinated environment, based on models and digital media to develop architectural designs that visualize, communicate and coordinate with different disciplines, such as construction and structural engineering.

#### **LAR4032 PROFESSIONAL PRACTICE 2**

Analyze a real case architectural project through collaborative discussion with different groups of professionals to identify possible design strategies in supervised professional practices.

#### **LAR4052 INTEGRAL ARCHITECTURAL DESIGN WORKSHOP I**

Relate the components of the sustainable design buildings speculating on their relationships to create an environment that promotes energy efficiency and improvement in the health conditions of those who inhabit it.

#### **LAR4062 CONSTRUCTION MANAGEMENT**

Evaluate the different processes of organizing and planning construction through the development of architectural projects for the best management of the construction process.

#### **LAR4072 CONTEMPORARY ARCHITECTURE**

Explain the pluralistic condition that characterizes architecture today by analyzing historical events to develop architectural project proposals with a contemporary stance.

#### **LAR4082 CITY I**

Explain the relationships that are established between an architectural project and its environment, through the analysis of the landscape, urban structure and existing regulations, to develop urban-architectural proposals that consider the value of the space.

#### **LAR4102 INTEGRAL ARCHITECTURAL DESIGN WORKSHOP II**

Create complex integral components, systems and processes by establishing strategies to develop solutions to architectural spatial problems.

#### **LAR4092 SELECT TOPICS 1**

Analyze current issues in urbanism through the construction of strategies and design actions to develop urban-architectural proposals.

#### **LAR4122 STRUCTURAL ANALYSIS**

Evaluate the various mechanical elements of a support system, identifying the properties and characteristics of the different structural typologies to determine if there is congruence with the architectural project.

#### **LAR4132 CITY II**

Analyze the relationship between the construction of the urban space and the elements that articulate the territory, identifying the different models of urban morphology, landscape, agglomerations and fragments of city, to apply them in urban practice.

#### **LAR4112 ARCHITECTURAL HERITAGE**

Evaluate the natural and built heritage through the physical analysis of the historical architectural production that is inserted in these media, to seek its conservation and the improvement.

### **LAR4152 INTEGRAL ARCHITECTURAL DESIGN WORKSHOP III**

Recommend new spatial typologies through the hybridization of conventional uses, activities and customs to develop responses to new ways of inhabiting and producing.

### **LAR4142 SELECT TOPICS 2**

Examine the current issues of the city by researching the main theories and manifestos to develop positions to current architectural scenarios.

### **LAR4172 STRUCTURE DESIGN**

Select different structural components through their design to develop housing projects.

### **LAR4182 SUSTAINABILITY IN ARCHITECTURE**

Evaluate an architectural project by analyzing design, environmental and human factors to define whether the project is sustainable and bioclimatic.

### **LAR4202 INTEGRATIVE WORKSHOP**

Define the conditions and performance of the socio-environmental responsive design by analyzing the change and transformation needs of the architectural project to develop a spatial response that considers the impermanence of man, their complex needs and the environment where he develops.

### **LAR4192 SELECT TOPICS 3**

Analyze different cutting-edge technologies, applying them to their projects and architectural proposals to develop constant innovation in their profession.

### **LAR4162 THEORY AND CRITICISM OF ARCHITECTURE**

Apply critical thinking, through the practice of reading and writing, to develop an intellectual posture with which to value recent architectural works and their epistemological currents.

### **GENERAL ART ELECTIVE\***

- **ART0022 ART AND CULTURE OF THE AMERICAS**  
Identify sociocultural development in the Americas through their artistic expressions to establish an active dialogue with this past and its identity context.
- **ART0012 ART, HISTORY AND CULTURE**  
Identify how human beings define reality and express it for themselves and the world from the emergence of Western modernity, by explaining the reciprocal relationship between art, history and culture to critically argue artistic representation and expression topics.

### **GENERAL MATH ELECTIVE\***

- **MAT0012 MATH FOR THINKING**

Apply various approaches to mathematical thinking by modeling and analyzing hypothetical and real-world phenomena, to design solutions to problems related to your studies and your physical environment.

- **MAT0022 MATH AND CULTURE**  
Develop a project that integrates math with any of the expressions of culture, by modeling phenomena or indicators to make decisions that benefit society.

**GENERAL BEHAVIORAL SCIENCE ELECTIVE\***

- **COM0012 ETHICS, SOCIETY AND THE ENVIRONMENT**  
Discuss global problems and their local implications by integrating socio-economic, environmental and ethical aspects to create proposals for a tolerant society.
- **COM0022 BEHAVIOR AND HUMAN DEVELOPMENT**  
Identify human development’s bio-psycho-social factors, by analyzing the variables that affect individual and social behavior and use this knowledge in their academic and professional life.

**GENERAL NATURAL SCIENCE ELECTIVE\***

- **CNE0012 FOOD AND LIFE**  
Identify the relationship between food and health through research that provides data on eating habits to choose an informed diet for your daily life.
- **CNE0022 EVOLUTION AND BIODIVERSITY**  
Describe the origin of diseases through causal factors to assess human health information sources.

**GENERAL HUMANITIES ELECTIVE\***

- **HUM0012 ECOSOPHY**  
Compare world representation systems, analyzing different epistemological proposals to reposition the current Being-Man relationship with their environment and other beings from a fundamentally ecological philosophical dimension.
- **HUM0022 HUMANISTIC THINKING**  
Study humanist thought from a socio-historical cultural perspective, based on the analysis of its different historical nuances to understand its relevance in contemporary culture.

***\*Courses that are part of the UDLAP General Education component***

## INTERIOR ARCHITECTURE

### LAP1012 ANALYSIS AND REPRESENTATION

Understand spatial representations through 2D exercises to identify the fundamental elements of drawing.

### LAR1012 CONTEXT, SPACE AND TIME

Identify the dialectical relationship between inhabiting and projecting historical places and moments by analyzing theoretical concepts, to relate the complementary, reflective and productive ways of operating in the discipline.

### LAI1012 QUALITIES OF THE INTERIOR SPACE I

Identify how the interior space modifies human perception, through the analysis of sensorially and lighting concepts to create interior architecture projects that are comfortable and environmentally appropriate.

### LEX0112 FOREIGN LANGUAGE I \*

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### LAI1022 INTERIOR DESIGN PROCESS WORKSHOP I

Identify the basic elements and concepts of interior architectural design by analyzing properties that make up space to apply them in elementary spatial developments.

### INF0012 INFORMATION TECHNOLOGIES IN THE CONSTRUCTION OF KNOWLEDGE \*

Understand relevant information using Information and Communication Technologies (ICT) to document an economic, political, cultural and/or social problem.

### LAR1052 ANALYSIS AND VISUALIZATION

Relate the elements of a design problem through diagrams, sketches or three-dimensional models to draw conclusions and creative proposals.

### ESP0012 ACADEMIC REASONING\*

Express academic arguments orally and in writing within your discipline by developing and presenting persuasive speeches, using the rudiments of communication to interact effectively in a specific academic context.

### LAR1042 GEOMETRY I

Describe architectural space by using manual and digital tools to analyze and interpret the architectural space.

### LEX0122 FOREIGN LANGUAGE II \*

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### LAR1032 SPATIAL MODELS

Identify basic architectural concepts by drafting and constructing models to express their own ideas about three-dimensional architectural space.

**LAI1032 INTERIOR DESIGN PROCESS WORKSHOP II**

Develop solutions to basic interior space problems through the concept of microspace, to create environments that respond to the fundamental conditions of human living.

**LAI2042 QUALITIES OF INTERIOR SPACE II**

Relate the conditions of the interior environment, space and human behavior, by analyzing habitability to optimize interior environments.

**ESP0022 ACADEMIC WRITING \***

Develop academic articles of your discipline through the administration of specialized information and the application of academic and scientific conventions, for the dissemination of academic and scientific knowledge.

**LAR2022 GEOMETRY II**

Learn algebraic language to interpret and use mathematical expressions, including their corresponding graphics, to formulate and solve problems.

**LEX0132 FOREIGN LANGUAGE III \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**LAI2022 INDOOR CONSTRUCTION MATERIALS AND PROCEDURES I**

Understand the characteristics of classic materials as finishes of interior architecture according to the properties that characterize them, their historical evolution and the needs that the architectural space requires, identifying their manufacturing, placement and maintenance processes to define their impact on the quality of the space and interior comfort.

**LAI2012 BASIC STRUCTURAL SYSTEMS**

Identify the structural logic in different support systems, from the analysis of different formal typological languages that grant integrity, as well as the way in which forces are absorbed and transmitted in a project to apply them in interior architecture proposals.

**LAI2032 INTERIOR ARCHITECTURE WORKSHOP I**

Define basic domestic spaces, through the identification of human needs and demands to experiment with the concepts of habitability and user **profile**.

**LAI2072 ARCHITECTURAL COMMUNICATION**

Identify the most appropriate manual and digital representation techniques and tools through the elaboration of graphic, audiovisual and digital material to understand the communication, presentation and promotion processes of architectural and interior projects.

**LAI2052 BASIC INDOOR INSTALLATIONS**

Apply in an interior architectural project electrical, hydraulic, sanitary and gas installations, as well as the methods to calculate their characteristics and conditions to develop interior comfort proposals of a new or remodeled building.

**LAI2062 INDOOR CONSTRUCTION MATERIALS AND PROCEDURES II**

Understand the characteristics of classic materials as finishes of interior architecture according to the properties that characterize them, their historical evolution and the needs that the architectural space requires, identifying their manufacturing, placement and maintenance processes to define their impact on the quality of the space and interior comfort.

**LAI2082 INTERIOR ARCHITECTURE WORKSHOP II**

Identify the concept of Branding, through project applications and the use of environmental elements associated with spaces, to recommend interior architectural solutions to commercial, corporate and cultural problems in an innovative way.

**LAR3012 ARCHITECTURE FROM ANTIQUITY TO THE BAROQUE**

Describe the design intentions present in the Western world from classical antiquity to the Baroque, by analyzing the relationship between city, architectural object and means of insertion, to identify how it shapes urban-architectural proposals.

**LAI3012 STANDARDS AND DETAILS IN INTERIOR DESIGN**

Develop solutions in terms of the constructive details of the different elements of interiors and conventional joints through the design of drawings and plans, to apply them in interior work projects.

**LAI3042 PROFESSIONAL PRACTICE 1**

Apply the theoretical knowledge and disciplinary skills acquired during their interior architecture studies collaborating in offices and design workshops under supervised professional practices to identify solutions to real problems related to the design of the interior space.

**LAI3032 INTERIOR ARCHITECTURE WORKSHOP III**

Design interior production and workspaces, integrating cultural and technological conditions to the design process, to identify solutions to the spatial requirements related to the current way of life that impact spaces and work environments.

**LAI3022 3D VISUALIZATION**

Create three-dimensional representations through modeling and digital visualization techniques to produce architectural and interior projects.

**LAR3052 NEW SPAIN ARCHITECTURE**

Examine the architecture used between the sixteenth and nineteenth centuries in New Spain, analyzing the society that produced it to identify the relationship between historical facts and architectural production.

**LAI3052 COMFORT AND ENERGY IN THE INTERIOR SPACE I**

Identify the use of resources in a construction by analyzing environmental and human factors to develop a sustainable and bioclimatic architectural project.

**LAI3072 INDOOR COSTS**

Analyze the factors that make up the cost of an interior work identifying the methodology to be used in the costing of an interior architecture project to define its final price and prepare the corresponding documentation.

#### **LAI3062 INDOOR LIGHTING**

Identify the relationship that exists between the technical and perceptual aspects of light, both natural and electrical, through the analysis of physical, mathematical and environmental concepts, to understand the elements of light design of interior spaces.

#### **LAI3082 DIGITAL MODELING AND MANUFACTURING**

Develop digital models of innovative product and object prototypes in inner space and future space scenarios, using CAD-CAM-CNC (Computer Aided Design – Computer Aided Manufacturing) technology to create them digitally.

#### **LAI3092 INTERIOR ARCHITECTURE WORKSHOP IV**

Develop proposals for prototypical temporary spaces using digital manufacturing strategies to identify spatial needs such as exposure, shelter or offering different services to diverse audiences.

#### **LAI4012 COMFORT AND ENERGY IN THE INTERIOR SPACE II**

Recommend interior comfort strategies in a construction by analyzing environmental and human factors to develop a sustainable and bioclimatic architectural project.

#### **LAR4042 PARAMETRIC DESIGN**

Discover 3D visualization to apply creative thinking through experimentation and implementation of digital design processes.

#### **LAI4022 INTERIOR PROJECT MANAGEMENT**

Identify the processes and actions involved in the management of an interior project, through planning, control, evaluation and maintenance processes, to understand its application in the preparation of the required documentation and manuals.

#### **LAI4032 INTERVENTION OF THE INTERIOR SPACE**

Identify the need to conserve the built heritage by analyzing constructive practice in historical contexts to interpret the present conditions as a framework in the elaboration of proposals for sensitive interior interventions that preserve spatial and cultural values and improve existing environmental qualities.

#### **LAI4052 PROFESSIONAL PRACTICE 2**

Analyze real architectural interior projects through collaboration with different groups of professionals to identify possible design strategies under supervised professional practices.

#### **LAI4042 INTEGRAL INTERIOR ARCHITECTURE WORKSHOP I**

Design interiors and carry out the specifications of an executive project by solving specific spatial problems of the infrastructure and environment to recommend spatial solutions that respond to the emerging needs of contemporary societies regarding the health care and well-being of the population.

#### **LAI4092 MODERN AND CONTEMPORARY INTERIORS**

Evaluate the impact of ideological positions on spatial solutions of representative interior design works from the nineteenth century to the present by analyzing the context in which they have been developed. Develop interior architecture proposals.

#### **LAI4102 INTEGRAL INTERIOR ARCHITECTURE WORKSHOP II**

Evaluate cultural contexts from the social, economic and political demands of the moment and their impact on the meaning of an interior space, through the development of creative solutions for reuse, revitalization and recovery of spaces in which contemporary needs are fused with the cultural and historical meanings and values, to make economic, aesthetic, functional and environmentally sustainable design proposals that respond to the emerging requirements of the environment.

#### **LAI4062 SELECT TOPICS 1**

Analyze current issues in lighting by building strategies and actions to develop proposals for light interior design.

#### **LAI4072 SELECT TOPICS 2**

Examine cutting-edge topics related to technologies and inner space by analyzing the main theories to create environments that respond to the fundamental needs of human habitability.

#### **LAI4082 SELECT TOPICS 3**

Analyze cutting-edge topics in special installations by examining the different current technologies to apply them to interior architectural projects and proposals.

### **GENERAL ART ELECTIVE\***

- **ART0022 ART AND CULTURE OF THE AMERICAS**  
Identify sociocultural development in the Americas through their artistic expressions to establish an active dialogue with this past and its identity context.
- **ART0012 ART, HISTORY AND CULTURE**  
Identify how human beings define reality and express it for themselves and the world from the emergence of Western modernity, by explaining the reciprocal relationship between art, history and culture to critically argue artistic representation and expression topics.

### **GENERAL MATH ELECTIVE\***

- **MAT0012 MATH FOR THINKING**  
Apply various approaches to mathematical thinking by modeling and analyzing hypothetical and real-world phenomena, to design solutions to problems related to your studies and your physical environment.
- **MAT0022 MATH AND CULTURE**  
Develop a project that integrates math with any of the expressions of culture, by modeling phenomena or indicators to make decisions that benefit society.

### **GENERAL BEHAVIORAL SCIENCE ELECTIVE\***

- **COM0012 ETHICS, SOCIETY AND THE ENVIRONMENT**  
 Discuss global problems and their local implications by integrating socio-economic, environmental and ethical aspects to create proposals for a tolerant society.
- **COM0022 BEHAVIOR AND HUMAN DEVELOPMENT**  
 Identify human development's bio-psycho-social factors, by analyzing the variables that affect individual and social behavior and use this knowledge in their academic and professional life.

**GENERAL NATURAL SCIENCE ELECTIVE\***

- **CNE0012 FOOD AND LIFE**  
 Identify the relationship between food and health through research that provides data on eating habits to choose an informed diet for your daily life.
- **CNE0022 EVOLUTION AND BIODIVERSITY**  
 Describe the origin of diseases through causal factors to assess human health information sources.

**GENERAL HUMANITIES ELECTIVE\***

- **HUM0012 ECOSOPHY**  
 Compare world representation systems, analyzing different epistemological proposals to reposition the current Being-Man relationship with their environment and other beings from a fundamentally ecological philosophical dimension.
- **HUM0022 HUMANISTIC THINKING**  
 Study humanist thought from a socio-historical cultural perspective, based on the analysis of its different historical nuances to understand its relevance in contemporary culture.

*\*Courses that are part of the UDLAP General Education component*

## FINE ARTS

**LAP1012 ANALYSIS AND REPRESENTATION**

Understand spatial representations through 2D exercises to identify the fundamental elements of drawing.

**LHC1022 ART AND ITS DISCOURSES**

Describe the socio-historical-cultural contexts that led to make art a specific field of objects with symbolic value, identifying the progressive transition that occurred from the Greek era to the Enlightenment, to understand its specifics and its punctually limited apprehension to objects with similar characteristics outside the Westernized world.

**LAP1022 THREE-DIMENSIONAL SCANNING**

Identify three-dimensional space by describing basic sculptural concepts to define constructive compositions in three dimensions.

**LAP1032 PICTORIAL FOUNDATIONS**

Understand the different materials and physical components used in the basic two-dimensional representation techniques with painting exercises to identify the diversity of their uses.

**LEX0112 FOREIGN LANGUAGE I \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**INF0012 INFORMATION TECHNOLOGIES IN THE CONSTRUCTION OF KNOWLEDGE \***

Understand relevant information using Information and Communication Technologies (ICT) to document an economic, political, cultural and/or social problem.

**ESP0012 ACADEMIC REASONING\***

Express academic arguments orally and in writing within your discipline by developing and presenting persuasive speeches, using the rudiments of communication to interact effectively in a specific academic context.

**LAP1052 DRAWING AND SPACE**

Understand one's own graphic language by observing material forms and their environment to compare different possibilities in spatial representation.

**LIV1072 PHOTOGRAPHY**

Identify the components of a photograph by using techniques and equipment to produce images.

**LIV1022 FUNDAMENTALS OF DIGITAL IMAGING**

Reproduce simple vector images or bitmaps using specialized digital image creation software, to design projects both on screen and in print.

**LEX0122 FOREIGN LANGUAGE II \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**LAR1032 SPATIAL MODELS**

Identify basic architectural concepts by drafting and constructing models to express their own ideas about three-dimensional architectural space.

**LAP1042 TWO-DIMENSIONAL REPRESENTATION**

Classify formal two-dimensional representations under criteria established by a system of thought and its perceptible appearances by showing an effective model of space in a pictorial context to identify the seed of a pictorial style.

**LAP2012 DEVELOPMENT OF ARTISTIC THINKING**

Define the basic concepts that sustain the discourse of contemporary art through the analysis of art categories and their current vocabulary to explain the artistic practices that identify the contemporary world.

**LAP2022 DRAWING AND FORM**

Understand graphic language through direct observation and drawing of proportions and symmetry of natural and anthropomorphic models to compare different ways to present forms.

**ESP0022 ACADEMIC WRITING \***

Develop academic articles of your discipline through the administration of specialized information and the application of academic and scientific conventions, for the dissemination of academic and scientific knowledge.

**LAP2032 FUNDAMENTALS OF THREE-DIMENSIONALITY**

Identify the different methods for to produce three-dimensional works by applying tools in workshop practices to compare sculptural results.

**LEX0132 FOREIGN LANGUAGE III \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**LAP2042 TWO-DIMENSIONAL THEMATIC WORKSHOP**

Express different possibilities to represent traditional spatial relationships in painting by analyzing pictorial genres to explain the iconic relationships of space, volume and time on the pictorial plane.

**LAP2052 ART, SPACE AND TIME**

Discover the production of works based on the physical environment, as well as works of art in their spatial dimension, contextualizing site-specific artistic production, to apply it in production.

**LAP2072 TWO-DIMENSIONAL INTEGRATION WORKSHOP**

Examine symbolic relationship through two-dimensional representation in gender representation problems to classify the different perceptible and symbolic appearances in pictorial projects.

**LAP2062 THREE-DIMENSIONAL WORKSHOP**

Analyze three-dimensional forms, identifying qualities in materials, appearances and transformations, to relate space-form.

**LHC2062 POSTSTRUCTURALIST THEORY AND THINKING**

Identify the main nodes that make up one of the dominant Western theoretical stages in recent decades, to understand the post-structuralist thought problem by analyzing the contemporary period.

**LAP3012 AREAS OF CONTEMPORARY ART**

Analyze contemporary movements in the visual arts through critical exercise of contemporary art and visual culture to create a current and contemporary creative practice.

**LAP3042 ARTISTIC RESEARCH**

Analyze the basic concepts that sustain contemporary art by classifying the categories of art and its current vocabulary to evaluate the artistic practices that define the contemporary world.

#### **LAP3022 PROFESSIONAL PRACTICE 1**

Use interdisciplinary analytical tools, learned during their studies through innovative and up-to-date artistic projects, designed to apply the theoretical and practical concepts of the discipline.

#### **LAP3052 DRAWING AND HYPERMEDIA WORKSHOP**

Apply various reflective and technical procedures to create expansive forms of drawing through the relationship of multiple media with variable content according to their viewers, audiences or users.

#### **LAP3032 THREE-DIMENSIONAL THEMATIC WORKSHOP**

Examine space-volume relationships in three-dimensional representations of sculptural genres to identify different volumetric design types, by practicing different constructive strategies.

#### **LAP3082 INTERDISCIPLINARY AREAS**

Analyze the intersection of all forms of visual art through a critical exercise of contemporary art and visual culture to develop current and future creative practice.

#### **LHC3062 ART CRITICISM AND CURATORSHIP**

Explain the development of the highlights of art criticism and curatorial practice to understand art criticism and curatorial discourse in an exhibition through detailed and analytical identification and relationship.

#### **LAP3062 GRAPHIC EXPERIMENTATION**

Identify the different techniques that make up the tradition of engraving by applying engraving techniques to contemporary graphics to infer in the graphic work of workshop.

#### **LAP3072 CONTEMPORARY IMAGE AND MEDIA**

Apply different modes of image production by exploring the non-traditional notions of photography to identify its function and scope in today's world.

#### **LAI3082 DIGITAL MODELING AND MANUFACTURING**

Develop digital models of innovative product and object prototypes in inner space and future space scenarios, using CAD-CAM-CNC (Computer Aided Design – Computer Aided Manufacturing) technology to create them digitally.

#### **LAP3092 SELECT TOPICS 1**

Analyze avant-garde topics in contemporary plastics by evaluating concrete problems in the formal and conceptual relationships between color, light, form, volume and various materials to produce projects that generate different interaction between painting, sculpture and other media.

#### **LAP4012 SCOPES AND NEW MEDIA**

Identify the relationship between art, culture and technology through the development of a theoretical framework to create a critical reflection on the practice of digital arts and the concepts of digital aesthetics.

#### **LAP4052 DIGITAL ART AND TECHNOLOGY**

Investigate the different contemporary digital artistic practices by applying the most important methodologies of interactive computer-based technologies, to evaluate the potential of digital technology in its creative and artistic practice.

**LDA4012 PERFORMANCE STUDIES**

Analyze performance by relating historical, cultural and philosophical contexts from different study areas, to create performance projects.

**LAP4042 CONTEMPORARY GRAPHICS**

Develop graphic workshop work to examine the different techniques that make up the tradition of engraving by relating diverse techniques.

**LAP4022 PROFESSIONAL PRACTICE 2**

Apply interdisciplinary analytical teaching-learning tools acquired during their studies through the planning of complex and enriching artistic projects to develop an active practice of the discipline in the social field.

**LAP4032 SELECT TOPICS 2**

Analyze current topics on contemporary art strategies through the proposal of individual or group productions to create production initiatives different from conventional ones.

**LAP4062 ART AND SOCIAL SPACE**

Relate the different meanings of social space with artistic practices of a different nature to create creative projects that are properly located and contribute to different social contexts through the application of concrete strategies.

**LAP4092 VISUAL EXPERIMENTATION SEMINAR**

Develop artistic production by analyzing the hybrid character of the visual and the visible, to evaluate the scope of the image in contemporary art.

**LAP4072 INTEGRATION OF AREAS SEMINAR**

Criticize the notion of artistic practice to identify the polysemic character of the definition of artist by producing projects in personal work.

**LAP4082 SELECT TOPICS 3**

Relate current issues on the management and distribution of contemporary art to create a cultural project through the comparative analysis of specific cases.

**LHC4082 CONTEMPORARY ART THEORY**

Understand different theoretical frameworks to elaborate a critical analysis of contemporary art by identifying the relationship with the economic, social and political environment in which it is inserted.

**GENERAL ART ELECTIVE\***

- **ART0022 ART AND CULTURE OF THE AMERICAS**  
Identify sociocultural development in the Americas through their artistic expressions to establish an active dialogue with this past and its identity context.

- **ART0012 ART, HISTORY AND CULTURE**

Identify how human beings define reality and express it for themselves and the world from the emergence of Western modernity, by explaining the reciprocal relationship between art, history and culture to critically argue artistic representation and expression topics.

**GENERAL MATH ELECTIVE\***

- **MAT0012 MATH FOR THINKING**

Apply various approaches to mathematical thinking by modeling and analyzing hypothetical and real-world phenomena, to design solutions to problems related to your studies and your physical environment.

- **MAT0022 MATH AND CULTURE**

Develop a project that integrates math with any of the expressions of culture, by modeling phenomena or indicators to make decisions that benefit society.

**GENERAL BEHAVIORAL SCIENCE ELECTIVE\***

- **COM0012 ETHICS, SOCIETY AND THE ENVIRONMENT**

Discuss global problems and their local implications by integrating socio-economic, environmental and ethical aspects to create proposals for a tolerant society.

- **COM0022 BEHAVIOR AND HUMAN DEVELOPMENT**

Identify human development's bio-psycho-social factors, by analyzing the variables that affect individual and social behavior and use this knowledge in their academic and professional life.

**GENERAL NATURAL SCIENCE ELECTIVE\***

- **CNE0012 FOOD AND LIFE**

Identify the relationship between food and health through research that provides data on eating habits to choose an informed diet for your daily life.

- **CNE0022 EVOLUTION AND BIODIVERSITY**

Describe the origin of diseases through causal factors to assess human health information sources.

**GENERAL HUMANITIES ELECTIVE\***

- **HUM0012 ECOSOPHY**

Compare world representation systems, analyzing different epistemological proposals to reposition the current Being-Man relationship with their environment and other beings from a fundamentally ecological philosophical dimension.

- **HUM0022 HUMANISTIC THINKING**

Study humanist thought from a socio-historical cultural perspective, based on the analysis of its different historical nuances to understand its relevance in contemporary culture.

***\*Courses that are part of the UDLAP General Education component***

**OPTIONAL GENERAL STUDY OF HUMANITIES\***

- **HUM0012 ECOSOFÍA**  
 To compare systems of representation of the world, through the analysis of different epistemological proposals, with the purpose of repositioning the current relationship of the Being-Man with his environment and other beings from a fundamentally ecological philosophical dimension.
- **HUM0022 HUMANISTIC THOUGHT**  
 Identify humanist thought from a socio-historical cultural perspective, based on the analysis of its different historical nuances to base its relevance in contemporary culture.

***\*Subjects that are part of the General Education component UDLAP***

## DANCE

**LDA1022 BALLET 1**

Understand the theoretical-practical concepts of ballet to develop the proper execution of the steps and basic positions, through exercises that stimulate internal bodily connections.

**LDA1012 CONTEMPORARY DANCE 1**

Identify the body in the execution of basic specialized movements to apply them in a warm-up, in sequences of choreographic phrases and in the initial development of musicality and rhythm through movement exercises, body awareness and dynamic dancing sequences.

**LTE1012 ACTING IMPROVISATION**

Understand the main acting improvisation techniques and their relevance, through basic exercises to identify the main characteristics of the stage practice of a theatrical actor.

**LEX0112 FOREIGN LANGUAGE I \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**LDA1032 SCENIC DANCE PRACTICE I**

Apply at the body level a broad vocabulary and diverse sequences of choreographic movements, to produce works through group rehearsals under the direction of teachers or guest choreographers.

**INF0012 INFORMATION TECHNOLOGIES IN THE CONSTRUCTION OF KNOWLEDGE \***

Understand relevant information using Information and Communication Technologies (ICT) to document an economic, political, cultural and/or social problem.

**ESP0012 ACADEMIC REASONING\***

Express academic arguments orally and in writing within your discipline by developing and presenting persuasive speeches, using the rudiments of communication to interact effectively in a specific academic context.

**LDA1062 BALLET 2**

Identify the similarities and differences that exist between the steps and movements, through the development of exercises and sequences of movements, to apply them properly in the executions.

**LDA1082 CHOREOGRAPHIC COMPOSITION I**

Identify scenic languages of movement to apply them in the development of expressive and communicative identity using improvisation, explorations in ensemble and compositional studies.

**LDA1052 CONTEMPORARY DANCE 2**

Relate physical flexibility, strength, endurance potential to the efficiency of movement to recognize skills that support neuromuscular coordination, through movement exercises, body awareness and dynamic acoustic sequences.

**LTE1052 MUSICAL AND RHYTHMIC TRAINING**

Identify the basic map of sounds, rhythms and notes, through primary exercises of musical reading and solfege to apply the fundamentals of reading notes and rhythms to an elementary sung repertoire.

**LDA1042 BIODYNAMIC DANCE FOUNDATIONS**

Identify the anatomy of the body applied to dance, to develop its physical potential by improving its flexibility, strength and efficiency of movement through practices of experiential anatomy, conditioning and introduction of the principles of nutrition applied to dance.

**LEX0122 FOREIGN LANGUAGE II \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**LDA2022 BALLET 3**

Understand the appropriate mechanisms to develop exercises with greater balance, muscle power and dexterity, through the application of movements that detonate these abilities.

**LDA2042 DANCE CULTURES**

Apply the fundamental principles of theoretical studies of various styles and genres of dance, through the analysis of the historical, cultural and philosophical contexts of this discipline, to interpret the history of classical, modern and social dance, from its origins until the middle of the twentieth century.

**LDA2012 CONTEMPORARY DANCE 3**

Understand the balance between internal kinesthesia and the execution of external forms, to identify skills that support scenic and expressive practices, through the development of exercises of movement, consciousness, body expression and dynamic dance sequences.

**ESP0022 ACADEMIC WRITING \***

Develop academic articles of your discipline through the administration of specialized information and the application of academic and scientific conventions, for the dissemination of academic and scientific knowledge.

**LEX0132 FOREIGN LANGUAGE III \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**LDA2032 SCENIC DANCE PRACTICE II**

Develop physical, critical and creative skills through the memorization of choreographic repertoire at the intermediate level, as well as the interpretation of choreographic montages of various dance currents to interpret dance performances of pre-professional level in public scenic spaces.

**LDA2062 BALLET 4**

Apply the technique of small turns, to develop promenades and pirouettes, through the execution of exercises and appropriate movements that allow to acquire these skills.

**LDA2052 CONTEMPORARY DANCE 4**

Analyze movement with different qualities, to understand skills that support scenic and expressive practices, through the development of movement exercises, consciousness and body expression and dynamic dance sequences.

**LDA2082 DRAMATURGY OF THE BODY**

Identify the potential of dramaturgy, both in dance criticism and in the choreographic process to analyze the construction of significance and character in works with bases of movement, through choreographic and scenic studies that are based on the language of movement.

**LDA2072 SOMATIC STUDIES**

Apply different somatic movement education methodologies directed to dance to evaluate skills that support scenic and expressive practices through the development of explorations of movement, touch, imagination, voice, breathing, written reflection and awareness.

**LDA3042 BALLET 5**

Combine simple turns and jumps, to express greater technical complexity, by executing exercises and movements that demand the proper use of internal muscle connections.

#### **LDA3052 CHOREOGRAPHIC COMPOSITION II**

Develop choreographic compositions to apply them in the elaboration of scenic discourses using construction methods, experimental contents, explorations of themes in ensemble and in compositional studies.

#### **LDA3032 CONTEMPORARY DANCE 5**

Apply movement awareness with an ability to expand the range of different movements to relate dancing techniques with creative practices, through the development of kinetic exercises, consciousness, body expression and dynamic dance sequences.

#### **LDA3022 DANCE AND THE CAMERA**

Critically analyze the various aspects of the relationship between dance and the camera, which focus on the cinematographic canvas, to develop a perspective and expression of the body mediated by technology, through the creation of studies of movement, image and camera.

#### **LDA3012 PROFESSIONAL PRACTICE 1**

Adequately analyze the theoretical-practical concepts of a specific dance topic identified in the professional environment to develop a practical research project.

#### **LDA3062 BALLET 6**

Apply the technique of braiding the legs, to express greater virtuosity in the sequences of jumps, performing exercises and phrases of movements that allow the development of this ability.

#### **LDA3092 CONTEMPORARY DANCE 6**

Develop the ability to synthesize range and detail in different movements to apply it in the resolution of challenges of form and recommend projection proposals in the dance technique, through the realization of kinetic exercises, consciousness and body expression and dynamic dance sequences.

#### **LDA3082 DANCE IN THE CONTEMPORARY SCENE**

Analyze the fundamental principles of theoretical studies of various styles and genres of contemporary dance, examining the historical, cultural and philosophical contexts of this discipline, to identify the history and culture of contemporary dance from 1980 to today.

#### **LTE3082 SCENIC IMAGE**

Relate the concepts of scenic image through the development of the scenic space and creative exercises to plan scenic image elements.

#### **LDA3072 DANCE TEACHING METHODOLOGIES**

Apply the theoretical-practical concepts of dance pedagogy by analyzing the characteristics of movement in relation to teaching to identify the process of planning and teaching a dance class of basic and intermediate level.

**LDA3102 COMPLEMENTARY DANCE TECHNIQUE**

Apply different dance and movement methodologies to develop skills that support scenic and expressive practices through explorations of movement, action, individual and ensemble work.

**LDA4052 BALLET 7**

Develop the technical potential to properly combine turns in different positions with jumps of medium complexity, starting from exercises and sequences of movements that contain the necessary elements in obtaining high quality results.

**LDA4042 CONTEMPORARY DANCE 7**

Develop the technical potential, through the analysis of the consciousness of the human being in motion as a means of artistic expression, to design solutions proposals to interpretation and physicality challenges in dance technique.

**LDA4012 PERFORMANCE STUDIES**

Analyze performance by relating historical, cultural and philosophical contexts from different study areas, to create performance projects.

**LDA4062 SCENIC PRACTICE IN DANCE III**

Examine integral skills as a dance performer to participate in a dance group or company at the semi-professional level through the establishment of a rigorous commitment to the final performance of repertoire works.

**LDA4022 PROFESSIONAL PRACTICE 2**

Develop solution proposals to real problems in the different dance areas by analyzing the fundamental theoretical concepts seen during their studies to identify their practical application.

**LDA4032 SELECT TOPICS 1**

Analyze cutting-edge dance improvisation topics by examining the human body as a living entity, expressive and in constant movement, to develop a greater knowledge about ensemble and studies of spontaneous composition.

**LDA4102 BALLET 8**

Relate all the steps and movements learned during their studies by understanding the similarities and differences between them and executing exercises and choreographies with high technical and artistic quality.

**LDA4082 CHOREOGRAPHIC COMPOSITION III**

Develop conducting skills of a cast to create dance and performance works to present themselves to audiences through the interpretation of choreographic practice.

**LDA4092 CONTEMPORARY DANCE 8**

Identify the notion of movement as a way of thinking, to understand and reflexively analyze dance with a high degree of technical complexity and the artistic expression required through the development of dynamic dance practices.

### **LDA4072 SELECT TOPICS 2**

Examine cutting-edge topics in writing, discourse, and critical thinking of dance as a profession through the identification of issues of current importance locally and internationally to develop strategies that respond to them.

### **LDA4112 SELECT TOPICS 3**

Analyze cutting-edge topics in movement language through examining significant ideas and practices within current dance trends, to apply various ways of thinking; both verbally and in writing, and in motion in the exploration of scenic studies.

### **GENERAL ART ELECTIVE\***

- **ART0022 ART AND CULTURE OF THE AMERICAS**  
Identify sociocultural development in the Americas through their artistic expressions to establish an active dialogue with this past and its identity context.
- **ART0012 ART, HISTORY AND CULTURE**  
Identify how human beings define reality and express it for themselves and the world from the emergence of Western modernity, by explaining the reciprocal relationship between art, history and culture to critically argue artistic representation and expression topics.

### **GENERAL MATH ELECTIVE\***

- **MAT0012 MATH FOR THINKING**  
Apply various approaches to mathematical thinking by modeling and analyzing hypothetical and real-world phenomena, to design solutions to problems related to your studies and your physical environment.
- **MAT0022 MATH AND CULTURE**  
Develop a project that integrates math with any of the expressions of culture, by modeling phenomena or indicators to make decisions that benefit society.

### **GENERAL BEHAVIORAL SCIENCE ELECTIVE\***

- **COM0012 ETHICS, SOCIETY AND THE ENVIRONMENT**  
Discuss global problems and their local implications by integrating socio-economic, environmental and ethical aspects to create proposals for a tolerant society.
- **COM0022 BEHAVIOR AND HUMAN DEVELOPMENT**  
Identify human development's bio-psycho-social factors, by analyzing the variables that affect individual and social behavior and use this knowledge in their academic and professional life.

### GENERAL NATURAL SCIENCE ELECTIVE\*

- **CNE0012 FOOD AND LIFE**  
Identify the relationship between food and health through research that provides data on eating habits to choose an informed diet for your daily life.
- **CNE0022 EVOLUTION AND BIODIVERSITY**  
Describe the origin of diseases through causal factors to assess human health information sources.

### GENERAL HUMANITIES ELECTIVE\*

- **HUM0012 ECOSOPHY**  
Compare world representation systems, analyzing different epistemological proposals to reposition the current Being-Man relationship with their environment and other beings from a fundamentally ecological philosophical dimension.
- **HUM0022 HUMANISTIC THINKING**  
Study humanist thought from a socio-historical cultural perspective, based on the analysis of its different historical nuances to understand its relevance in contemporary culture.

*\*Courses that are part of the UDLAP General Education component*

## VISUAL INFORMATION DESIGN

### LAP1012 ANALYSIS AND REPRESENTATION

Understand spatial representations through 2D exercises to identify the fundamental elements of drawing.

### LIV1012 VISUAL MESSAGE ELEMENTS

Identify the elements of the visual alphabet using tools and design to configure visual messages considering the syntax of the image.

### LIV1022 FUNDAMENTALS OF DIGITAL IMAGING

Reproduce simple vector images or bitmaps using specialized digital image creation software, to design projects both on screen and in print.

### LEX0112 FOREIGN LANGUAGE I \*

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### LIV1032 VISUAL INFORMATION PRODUCTION

Identify the different styles and visual cultures that have been generated throughout history by analyzing their historical, political and social context to design pieces that have an adequate meaning to a given audience.

**INF0012 INFORMATION TECHNOLOGIES IN THE CONSTRUCTION OF KNOWLEDGE \***

Understand relevant information using Information and Communication Technologies (ICT) to document an economic, political, cultural and/or social problem.

**LAR1052 ANALYSIS AND VISUALIZATION**

Relate the elements of a design problem through diagrams, sketches or three-dimensional models to draw conclusions and creative proposals.

**ESP0012 ACADEMIC REASONING\***

Express academic arguments orally and in writing within your discipline by developing and presenting persuasive speeches, using the rudiments of communication to interact effectively in a specific academic context.

**LIV1042 VISUAL MESSAGE CONFIGURATION**

Understand the process to develop an effective visual message, through the recognition of visual grammar.

**LIV1052 DIGITAL IMAGE EDITING**

Design digital images to relate a visual message to a given audience by applying advanced knowledge of the use of specialized software in the production of images and thus effectively define the appropriate technical parameters of the medium in which they are reproduced.

**LIV1072 PHOTOGRAPHY**

Identify the components of a photograph by using techniques and equipment to produce images.

**LEX0122 FOREIGN LANGUAGE II \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**LIV1062 TYPOGRAPHY**

Design visual messages based on typographic strategies, making use of specialized software to structure graphic proposals that guarantee the reading of information, thus achieving an effective visual communication process to transmit ideas.

**LIV2012 BRAND DESIGN AND VISUAL SYSTEMS**

Describe the mission, vision and values of an institution, organization, company or brand, through a graphic identity manual that serves as a guide to create effective communication with different audiences, both internal and external.

**ESP0022 ACADEMIC WRITING \***

Develop academic articles of your discipline through the administration of specialized information and the application of academic and scientific conventions, for the dissemination of academic and scientific knowledge.

#### **LIV2022 COMPUTER GRAPHICS AND DATA VISUALIZATION**

Design visuals and computer graphics using maps, diagrams, icons or diagrams to explain a fact or phenomenon that is published in a design product, both digital and printed.

#### **LIV2042 EDITORIAL ENGINEERING**

Develop editorial engineering products that include the application, layout and creation of files through the use of information design strategy, to plan the publication of editorial content.

#### **LEX0132 FOREIGN LANGUAGE III \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

#### **LIV2032 SEMIOTICS AND VISUAL RHETORIC**

Identify the main contributions of semiotics and rhetoric to study visual messages, analyzing relevant theories and examples to make visual information design decisions.

#### **LIV2052 ADVERTISING DESIGN**

Identify the elements of an effective advertising campaign, based on the specific conditions of the target audience, the market and the competition, following the principles of semiotics and visual rhetoric to develop communication strategies of an organization or brand.

#### **LLI2042 LITERARY MODELS - FICTION**

Identify structural and thematic differences between the epic, the novel and the story, comparing the various quantitative, qualitative and narrative enunciation elements that make up a story, to analyze paradigmatic works from the epic to the most recent stories and novels of the Western world in their printed and audiovisual representations.

#### **LIV2072 EDITORIAL PRODUCTION**

Create editorial products on a regular basis, through the development of new editorial concepts that can be marketed and that meet information design quality standards to recommend proposals to meet the needs, tastes and preferences of readers and advertisers.

#### **LIV2062 PRINT MEDIA PRODUCTION**

Understand printed media production systems, the types of materials and technical requirements by applying different techniques to identify the relevance of using each system as a solution to a specific production need.

#### **LIV3022 INFORMATION ARCHITECTURE**

Organize complex amounts of information in a systemic way, applying various methodologies to create prototypes that can be tested, and thus obtain optimal navigability in any interactive system proposed.

#### **LIV3042 COLLATERAL MATERIAL DESIGN**

Produce promotional materials for a product or service using brand strategies to establish an emotional connection between the brand and the consumer.

#### **LIV3032 INSTRUCTION AND GUIDANCE DESIGN**

Examine process operation and physical displacements situations to develop operational-cognitive visual solutions, through the analysis of the physical, cultural and social context of each situation.

#### **LIV3052 INNOVATION AND DESIGN METHODS**

Develop innovative design strategies based on the selection of research tools, analysis, ideation and development of interactive experiences to identify information problems in companies and society.

#### **LIV3012 PROFESSIONAL PRACTICE 1**

Prepare appropriate and competent design solutions to develop design skills through professional practices in a company or organization.

#### **LIV3082 EDUCATION DESIGN**

Develop efficient solutions in the design of electronic educational materials, using narrative resources as the main strategy, to promote and motivate the end user towards the autonomous and/or guided development of their learning.

#### **LIV3062 CORPORATE INFORMATION DESIGN**

Develop strategies to identify information dissemination and interaction problems in organizations using appropriate research and design methodologies.

#### **LIV3102 QUALITATIVE DESIGN RESEARCH**

Apply qualitative research techniques through the analysis of social information dissemination problems to understand the characteristics of each technique.

#### **LAI3082 DIGITAL MODELING AND MANUFACTURING**

Develop digital models of innovative product and object prototypes in inner space and future space scenarios, using CAD-CAM-CNC (Computer Aided Design – Computer Aided Manufacturing) technology to create them digitally.

#### **LIV3072 MOTION GRAPHICS I**

Create sequenced images to express a visual message for a specific audience using different types of animations and electronic platforms.

### **LIV3092 SELECT TOPICS 1**

Develop cutting-edge projects in image reproduction by using techniques and creation processes to establish a visual impact that persuades different audiences.

### **LIV4062 DESIGN AND INNOVATION IN BUSINESS**

Apply specific information design methodologies by creating innovative strategies and services to lead organizations to add value in their businesses.

### **LIV4012 INTERACTION DESIGN**

Apply strategies and methodologies to solve interaction problems, through the layout and prototyping of artifacts to establish their functionality and usability.

### **LIV4042 SOCIAL AND CULTURAL PROMOTION DESIGN**

Develop projects, using relevant design methodologies, to solve information communication problems to develop social and cultural promotion strategies.

### **LIV4032 3D IMAGE**

Create three-dimensional static or moving images using specialized 3D software to express a visual message to a given audience.

### **LIV4022 PROFESSIONAL PRACTICE 2**

Identify professional and effective design solutions to solve communication and design problems within a company or organization, considering the specific conditions of the client.

### **LIV4052 SELECT TOPICS 2**

Examine current issues related to the interaction process, digitally and with objects analyzing and describing them, to identify how people relate to both platforms.

### **LIV4112 ART DIRECTION**

Develop a comprehensive vision based on the interpretation of the art direction process, to identify the contextual reality of the management, negotiation and commercialization of design proposals.

### **LIV4092 SERVICE AND EXPERIENCE DESIGN**

Categorize the techniques corresponding to the design of services and experiences, creating service plans and experiential maps, to improve the experiences in people through multiple points of contact.

### **LIV4082 MOTION GRAPHICS II**

Create images and animated graphics using specialized editing and post-production software to express a visual message to a given audience.

### **LIV4072 PROGRAMMING FOR THE WEB**

Design documents to be published on the web (www), applying tools and technologies to develop pages to identify strategies that solve visual communication problems.

### **LIV4102 SELECT TOPICS 3**

Examine issues to creating branding, analyzing and implementing them to explain the strategies that manage to transmit a clear and convincing message to different audiences.

### **GENERAL ART ELECTIVE\***

- **ART0022 ART AND CULTURE OF THE AMERICAS**  
Identify sociocultural development in the Americas through their artistic expressions to establish an active dialogue with this past and its identity context.
- **ART0012 ART, HISTORY AND CULTURE**  
Identify how human beings define reality and express it for themselves and the world from the emergence of Western modernity, by explaining the reciprocal relationship between art, history and culture to critically argue artistic representation and expression topics.

### **GENERAL MATH ELECTIVE\***

- **MAT0012 MATH FOR THINKING**  
Apply various approaches to mathematical thinking by modeling and analyzing hypothetical and real-world phenomena, to design solutions to problems related to your studies and your physical environment.
- **MAT0022 MATH AND CULTURE**  
Develop a project that integrates math with any of the expressions of culture, by modeling phenomena or indicators to make decisions that benefit society.

### **GENERAL BEHAVIORAL SCIENCE ELECTIVE\***

- **COM0012 ETHICS, SOCIETY AND THE ENVIRONMENT**  
Discuss global problems and their local implications by integrating socio-economic, environmental and ethical aspects to create proposals for a tolerant society.
- **COM0022 BEHAVIOR AND HUMAN DEVELOPMENT**  
Identify human development's bio-psycho-social factors, by analyzing the variables that affect individual and social behavior and use this knowledge in their academic and professional life.

### **GENERAL NATURAL SCIENCE ELECTIVE\***

- **CNE0012 FOOD AND LIFE**  
Identify the relationship between food and health through research that provides data on eating habits to choose an informed diet for your daily life.
- **CNE0022 EVOLUTION AND BIODIVERSITY**

Describe the origin of diseases through causal factors to assess human health information sources.

### GENERAL HUMANITIES ELECTIVE\*

- HUM0012 ECOSOPHY**  
 Compare world representation systems, analyzing different epistemological proposals to reposition the current Being-Man relationship with their environment and other beings from a fundamentally ecological philosophical dimension.
- HUM0022 HUMANISTIC THINKING**  
 Study humanist thought from a socio-historical cultural perspective, based on the analysis of its different historical nuances to understand its relevance in contemporary culture.

*\*Courses that are part of the UDLAP General Education component*

## ART HISTORY AND CURATORSHIP

### LHC1032 CLASSICAL ANTIQUITY

Identify the intrinsic values in the classic architectural, sculptural, pictorial works, as well as the minor arts, appreciating their formal characteristics and relating them to the society that gave rise to them and to other manifestations of human activity.

### LHC1022 ART AND ITS DISCOURSES

Describe the socio-historical-cultural contexts that led to make art a specific field of objects with symbolic value, identifying the progressive transition that occurred from the Greek era to the Enlightenment, to understand its specifics and its punctually limited apprehension to objects with similar characteristics outside the Westernized world.

### LEX0112 FOREIGN LANGUAGE I \*

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### LHC1012 FIRST ARTISTIC MANIFESTATIONS

Learn a general overview of art in its beginnings emphasizing the characteristics of its location and production to understand the bases of its specificity both at the iconographic level and in relation to its representation systems.

### INF0012 INFORMATION TECHNOLOGIES IN THE CONSTRUCTION OF KNOWLEDGE\*

Understand relevant information using Information and Communication Technologies (ICT) to document an economic, political, cultural and/or social problem.

### ESP0012 ACADEMIC REASONING\*

Express academic arguments orally and in writing within your discipline by developing and presenting persuasive speeches, using the rudiments of communication to interact effectively in a specific academic context.

#### **LHC1062 MEDIEVAL ART**

Express the complex characteristics of medieval art from the 5<sup>th</sup> to the 14<sup>th</sup> century through the analysis and valuation of artistic works at different times of the period, to compare the changes that occur in the iconography and symbology of images as a result of the development of religious thought, as well as the expansion and thematic variation arising with the birth of cities and the influence of Franciscan humanism.

#### **LHC1052 PREHISPANIC ART FROM CENTRAL MEXICO**

Explain the general panorama of the artistic production of the different cultures that settled and developed in the central area of Mexico by identifying their specific characteristics to understand the uniqueness of pre-Hispanic Mexican art.

#### **LHC1042 CRITICAL AESTHETICS**

Understand the socio-historical-cultural context that led some European philosophers of the 18<sup>th</sup> and 19<sup>th</sup> centuries to develop a specific reflection on art by reviewing classical philosophy works to identify that contemporary art criteria have their roots in previous centuries.

#### **LIV1072 PHOTOGRAPHY**

Identify the components of a photograph by using techniques and equipment to produce images.

#### **LEX0122 FOREIGN LANGUAGE II \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

#### **LPM1022 LANGUAGE OF CINEMA I**

Identify the main milestones in the first sixty years of film history through a written analysis of a film in accordance with the evolution and use of narrative and cinematic language techniques until the late 1950s to understand the most representative authors and their contributions to the cinematographic language.

#### **LHC2022 ISLAMIC AND MUDEJAR ART**

Identify the essential characteristics of Islamic art as well as the appropriation of some of its main ornamental and constructive elements, at first by Spanish Christian art and then by New Spain art through the description of emblematic works to compare the Islamic art with Iberian and American Mudejar art.

#### **ESP0022 ACADEMIC WRITING \***

Develop academic articles of your discipline through the administration of specialized information and the application of academic and scientific conventions, for the dissemination of academic and scientific knowledge.

#### **LEX0132 FOREIGN LANGUAGE III \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### **LPM2012 LANGUAGE OF CINEMA II**

Examine the main milestones of contemporary cinema from 1960 to date by analyzing films according to formal and contextual aspects to identify the historical, political, social and cultural factors that impact them.

### **LHC2012 RENAISSANCE**

Describe the evolution of artistic manifestations of the 15<sup>th</sup> and 16<sup>th</sup> centuries in the historical context of the Renaissance period through iconographic and iconological analysis to relate art to the scientific, economic, philosophical, social and spiritual environment that gave rise to it.

### **LLI2022 THEORIES OF LANGUAGE AND DISCOURSE**

Examine the theories and methods of analysis of the complex processes of contemporary communication through the internal organization of texts and their relationship with other semiotic forms to critically interpret the different languages and discourses of sociocultural interaction in the world.

### **LHC2052 NEW SPAIN ART OF THE 16<sup>TH</sup> CENTURY**

Examine the first stage of positioning and development of New Spain art directed mainly by representatives of the clergy through the identification of the general characteristics of architecture, altarpiece architecture, sculpture and painting to understand an open panorama of art from the post conquest.

### **LHC2032 PREHISPANIC ART OF SOUTHERN MEXICO**

Describe the artistic production of the cultures that developed in the south, including Mexico, Guatemala, Belize and Honduras, recognizing specific formal and plastic characteristics to identify the maya culture beyond its borders.

### **LHC2072 BAROQUE AND ROCOCO**

Understand the different artistic and cultural themes that characterize the Baroque period in Europe, analyzing the importance of rhetoric through the art of persuasion, as a possible unifying element of diverse and contrasting experiences, which occurred during this period.

### **LHC2042 SHAPE AND IMAGE**

Examine the artistic production of art history from the instrument of visual literacy to apply it to the art form and the development of perceptual abilities.

### **LHC2062 POSTSTRUCTURALIST THEORY AND THINKING**

Identify the main nodes that make up one of the dominant Western theoretical stages in recent decades, to understand the post-structuralist thought problem by analyzing the contemporary period.

### **LHC3042 NINETEENTH CENTURY EUROPEAN ART**

Examine the artistic and sociocultural problems that characterized the beginning of modernity in Europe, through the analysis of paradigmatic works, to understand the influence they exerted on art.

### **LHC3032 NEW SPAIN ART OF THE 17<sup>TH</sup> AND 18<sup>TH</sup> CENTURIES**

Analyze the main characteristics of the second stage of development of New Spain art produced in urban workshops and under the guidelines of the clergy, identifying paradigmatic works of different genres, to compare the plastic of this period in frank rupture with the immediately preceding period.

### **LHC3052 ART AND GENRE**

Analyze the relationship between art and gender identity construction processes in the Western socio-historical-cultural context through a tour of art history to identify its possible contributions to gender theories.

### **LHC3022 MUSEUMS HISTORY AND EVOLUTION**

Identify the different aspects related to the specific problems of the history and evolution of museums, mainly in the Western and Mexican scope, through the analysis of different projects to understand the role they have played in the dissemination of art and culture.

### **LHC3012 PROFESSIONAL PRACTICE 1**

Understand the main characteristics faced by a culture manager by identifying tools required in research to classify theory with professional practice.

### **LHC3102 SPANISH ART**

Examine Spanish artistic production from the 15<sup>th</sup> century to the present, through the identification of major works and artists of each period to analyze the notions of the mystical, tragedy and death, and assess the impact of these notions on the process of Spanish construction in national art.

### **LHC3082 EUROPEAN ART OF THE FIRST HALF OF THE 20<sup>TH</sup> CENTURY**

Evaluate the theoretical and methodological elements by understanding the avant-garde contributions in the great works of modern art during the first half of the 20<sup>th</sup> century to critically compare each of its currents, trends and different movements, and link their relationship with other human activity manifestations.

### **LHC3072 19<sup>TH</sup> CENTURY MEXICAN ART**

Classify the main characteristics of 19<sup>th</sup> century Mexican art by identifying the main modalities of architecture, altarpiece architecture, sculpture and painting to understand the artistic production of that period.

### **LHC3062 ART CRITICISM AND CURATORSHIP**

Explain the development of the highlights of art criticism and curatorial practice to understand art criticism and curatorial discourse in an exhibition through detailed and analytical identification and relationship.

### **LEA3072 CULTURAL HERITAGE**

Analyze the social, economic and ideological use of cultural heritage, both material and intangible, evaluating specific cases at a global level to assess their current importance.

#### **LHC3092 SELECT TOPICS 1**

Investigate different problems in art theory by analyzing relevant artistic proposals and practices to analyze the art world today.

#### **LHC4052 EUROPEAN ART OF THE SECOND HALF OF THE 20<sup>th</sup> CENTURY**

Compare the foundations to draw a genealogy of artistic practices of the second half of the 20<sup>th</sup> century, using different theoretical frameworks and methodologies, to analyze their complexity and specifics.

#### **LHC4032 MEXICAN ART OF THE FIRST HALF OF THE 20<sup>th</sup> CENTURY**

Analyze the problems of Mexican art of the first half of the 20<sup>th</sup> century by identifying the main proposals that are inscribed in a dominant way in the search for a nationalist art, to understand the importance of the relationship of art and power in the construction of an artistic identity.

#### **LAP4052 DIGITAL ART AND TECHNOLOGY**

Investigate the different contemporary digital artistic practices by applying the most important methodologies of interactive computer-based technologies, to evaluate the potential of digital technology in its creative and artistic practice.

#### **LHC4022 MUSEOGRAPHY**

Analyze specific problems faced by museography in works that have technical and environmental requirements that respond to recent trends in art and culture through the design and assembly of an exhibition to determine the complexity of the work of the museographer.

#### **LHC4012 PROFESSIONAL PRACTICE 2**

Evaluate strategies to relate the contemporary artistic discourse through the design of curatorial projects and production proposals of an exhibition.

#### **LHC4042 SELECT TOPICS 2**

Analyze current issues of curatorship and culture management that are linked to the field of professional development such as the museum, research, the art market, the press, cultural spaces and those spaces and areas that are emerging in the contemporary world to apply the theory to real experience.

#### **LHC4092 MEXICAN ART OF THE SECOND HALF OF THE 20<sup>th</sup> CENTURY**

Understand the characteristics of Mexican art of the second half of the 20<sup>th</sup> century by comparing the plastic and iconographic values promoted by the nationalist school, as well as in the dialogue with the international artistic proposals of the moment to understand the repositioning and rethinking of the values that Mexican art has had in this period.

#### **LHC4072 ART AND PSYCHOANALYSIS**

Evaluate the main characteristics of the historical relationships that were established between psychoanalysis and art in the West, through the analysis of the artistic production processes to identify the theoretical tools that an art historian has today.

#### **LHC4062 ART SOCIOLOGY**

Examine the reasons that motivated the appropriation of theoretical elements that the theory of art made to sociology in the 20<sup>th</sup> century and that gave birth to the specialty, through the analysis of the conditions of production to understand the complexity of artistic production and its consumption.

#### **LHC4102 SELECT TOPICS 3**

Analyze current problems in art history and curatorship in Mexico from the identification of theoretical proposals, artistic practices and areas of professional development that are important in the country, to understand the knowledge of Mexican art.

#### **LHC4082 CONTEMPORARY ART THEORY**

Understand different theoretical frameworks to elaborate a critical analysis of contemporary art by identifying the relationship with the economic, social and political environment in which it is inserted.

### **GENERAL ART ELECTIVE\***

- **ART0022 ART AND CULTURE OF THE AMERICAS**  
Identify sociocultural development in the Americas through their artistic expressions to establish an active dialogue with this past and its identity context.
- **ART0012 ART, HISTORY AND CULTURE**  
Identify how human beings define reality and express it for themselves and the world from the emergence of Western modernity, by explaining the reciprocal relationship between art, history and culture to critically argue artistic representation and expression topics.

### **GENERAL HUMANITIES ELECTIVE\***

- **HUM0012 ECOSOPHY**  
Compare world representation systems, analyzing different epistemological proposals to reposition the current Being-Man relationship with their environment and other beings from a fundamentally ecological philosophical dimension.
- **HUM0022 HUMANISTIC THINKING**  
Study humanist thought from a socio-historical cultural perspective, based on the analysis of its different historical nuances to understand its relevance in contemporary culture.

### **GENERAL BEHAVIORAL SCIENCE ELECTIVE\***

- **COM0012 ETHICS, SOCIETY AND THE ENVIRONMENT**  
 Discuss global problems and their local implications by integrating socio-economic, environmental and ethical aspects to create proposals for a tolerant society.
- **COM0022 BEHAVIOR AND HUMAN DEVELOPMENT**  
 Identify human development's bio-psycho-social factors, by analyzing the variables that affect individual and social behavior and use this knowledge in their academic and professional life.

### GENERAL MATH ELECTIVE\*

- **MAT0012 MATH FOR THINKING**  
 Apply various approaches to mathematical thinking by modeling and analyzing hypothetical and real-world phenomena, to design solutions to problems related to your studies and your physical environment.
- **MAT0022 MATH AND CULTURE**  
 Develop a project that integrates math with any of the expressions of culture, by modeling phenomena or indicators to make decisions that benefit society.

### GENERAL NATURAL SCIENCE ELECTIVE\*

- **CNE0012 FOOD AND LIFE**  
 Identify the relationship between food and health through research that provides data on eating habits to choose an informed diet for your daily life.
- **CNE0022 EVOLUTION AND BIODIVERSITY**  
 Describe the origin of diseases through causal factors to assess human health information sources.

*\*Courses that are part of the UDLAP General Education component*

## LANGUAGES

### LIO1012 STUDY OF LANGUAGE

Understand the processes of linguistic data analysis using the appropriate terminology from theoretical linguistics to describe different languages.

### LIO1022 HISTORY AND STUDY OF THE SPANISH LANGUAGE

Identify the grammatical characteristics of Spanish, through its historical and social development, to explain its evolution and formation.

**LEX0112 FOREIGN LANGUAGE I \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**INF0012 INFORMATION TECHNOLOGIES IN THE CONSTRUCTION OF KNOWLEDGE \***

Understand relevant information using Information and Communication Technologies (ICT) to document an economic, political, cultural and/or social problem.

**LIO1032 ACQUISITION OF THE FIRST LANGUAGE**

Identify the psycho-cognitive processes of first language development using the appropriate theories to describe the language of children at different stages of their lives.

**ESP0012 ACADEMIC REASONING\***

Express academic arguments orally and in writing within your discipline by developing and presenting persuasive speeches, using the rudiments of communication to interact effectively in a specific academic context.

**LIO1052 TRANSLATION STUDIES**

Identify translation methods, techniques and strategies following linguistic, social and cultural aspects to translate short texts.

**LEX0122 FOREIGN LANGUAGE II \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**LPD1042 LEARNING AND TEACHING THEORIES**

Differentiate between the main theories of learning and teaching by identifying their fundamentals to use in the analysis and design of teaching situations in the classroom.

**LIO1042 THIRD LANGUAGE 1**

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**LIO2022 ACQUISITION OF THE SECOND LANGUAGE**

Identify the factors involved in the acquisition of a second language by examining language learning environments to understand the linguistic profile.

**LAD2012 ENTREPRENEURIAL CULTURE**

Identify business opportunities by analyzing the creative process and the characteristics of the competitive environment to develop conditions that favor entrepreneurship.

**ESP0022 ACADEMIC WRITING \***

Develop academic articles of your discipline through the administration of specialized information and the application of academic and scientific conventions, for the dissemination of academic and scientific knowledge.

### **LEX0132 FOREIGN LANGUAGE III \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### **LIO2032 GRAMMATICAL THEORY**

Identify rules, principles and restrictions that characterize human language to apply them in the description of linguistic phenomena using different grammatical models.

### **LIO2012 THIRD LANGUAGE 2**

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### **LRP2032 COMMUNICATION AND GLOBALIZATION**

Identify the influence of culture and communication on individual identity through intercultural mediation interventions in everyday contexts to understand prejudices and tendencies to stereotype.

### **LIO2062 CONTRASTING GRAMMAR**

Compare conceptual and operational aspects of Spanish language grammar with the English language by performing linguistic analysis to apply them in the teaching and translation of these languages.

### **LIO2082 LANGUAGE AND COMPUTERS**

Apply the concepts and techniques of the study of the interface between language and computer by manipulating collections of texts or linguistic data through technological tools.

### **LIO2072 LANGUAGE TEACHING METHODOLOGY**

Understand the different language teaching methods and techniques by comparing teaching processes to identify language learning.

### **LIO2042 SOCIOLINGUISTICS**

Describe the various forms of contact between language and society using sociolinguistic analysis tools to identify the implications of language use in different social processes.

### **LIO2052 THIRD LANGUAGE 3**

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### **LPD3112 DISTANCE EDUCATION**

Select appropriate methods and strategies to develop distance and online learning experiences, based on educational theory, teaching and learning principles, organizational structure and national education policy.

### **LIO3042 SPECIALIZED LEXICONS**

Apply the techniques and concepts of lexicographical and terminological coding to produce glossaries, vocabularies and translation memoirs by processing and analyzing lexical data sources.

### **LIO3032 PROFESSIONAL PRACTICE 1**

Apply the appropriate methods and techniques to create solutions to language teaching problems by collaborating as a team with experts in professional or research situations.

#### **LIO3022 PRAGMATICS**

Understand theoretical pragmatics frameworks by performing linguistic analysis of authentic texts to apply them in the teaching and translation of languages.

#### **LRM3032 MULTICULTURAL THEORY**

Explain the theoretical models associated with multiculturalism by analyzing their implications and apply them in conflict situations derived from cultural difference.

#### **LIO3012 THIRD LANGUAGE 4**

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

#### **LIO3072 BILINGUALISM**

Analyze the bilingualism mechanisms and components to explain arguments for and against bilingual education by assessing the needs of each.

#### **LRI3092 NORTH AMERICAN STUDIES**

Analyze the actors, processes, institutions and political, economic and social dynamics in North America, through examining theories and concepts to identify the characteristics and problems of regional interaction, as well as their influence on the definition of Mexican foreign policy.

#### **LRI3062 ASIAN STUDIES**

Analyze the main economic, political, social and security variables in the national and regional processes of the Asian continent, relating the factors that influence them to explain their contemporary situation and their impact at a global level.

#### **LIO3082 SELECT TOPICS 1**

Analyze cutting-edge language teaching topics by examining the different teaching methods and techniques and apply them appropriately to any educational context.

#### **LIO3062 THIRD LANGUAGE 5**

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

#### **LIO3052 INTERPRETATION**

Classify interpretation methods and techniques to develop oral translations of short texts by applying the different modalities of the discipline, such as sight translation, unilateral and bilateral consecutive interpretation and simultaneous interpretation.

#### **LRI4052 EUROPEAN UNION STUDIES**

Analyze the structure, institutions, dynamics and decision-making of the European Union by examining treaties and theories to identify the main economic, political, social and security processes of the region, and its global environment.

### **LIO4022 LANGUAGE TEACHING EVALUATION**

Analyze evaluation theories and models of the language teaching-learning process by applying different evaluation forms based on specific purposes to design appropriate, efficient and reliable evaluation instruments.

### **LIO4032 PROFESSIONAL PRACTICE 2**

Apply appropriate methods and techniques to develop solutions to problems in the translation and interpretation of languages by identifying needs in teams of experts in professional or research situations.

### **LIO4042 SELECT TOPICS 2**

Analyze cutting-edge translation and interpretation topics by identifying methods and techniques, as well as standardized evaluation criteria to apply them to any intercultural context.

### **LIO4012 THIRD LANGUAGE 6**

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### **LIO4052 TRANSLATION**

Translate written texts of various genres by applying the editing and revision stages to produce an effect like that of the original text for a new linguistic and cultural audience.

### **LIO4062 LINGUISTIC DISCOURSE ANALYSIS**

Evaluate discourse analysis methods through linguistic examination of authentic texts to apply them in the teaching and translation of languages.

### **LIO4072 CURRICULUM DEVELOPMENT IN LANGUAGE TEACHING**

Inform about the dimensions, stages and sources of the language teaching curriculum by designing a language course to develop a language curriculum.

### **LIO4092 APPLIED LINGUISTICS RESEARCH**

Compare the different research practices in applied linguistics using methods and tools to develop hypotheses for applied linguistics problems.

### **LIO4082 TRANSLATION PRACTICE**

Translate texts applying specialized translation concepts to produce an effect similar to that of the original text for a new linguistic and cultural audience.

### **LIO4102 SELECT TOPICS 3**

Examine cutting-edge linguistics topics by analyzing methods and techniques specific to the discipline to apply them to any professional context.

## **GENERAL HUMANITIES ELECTIVE\***

- **HUM0012 ECOSOPHY**

Compare world representation systems, analyzing different epistemological proposals to reposition the current Being-Man relationship with their environment and other beings from a fundamentally ecological philosophical dimension.

- **HUM0022 HUMANISTIC THINKING**

Study humanist thought from a socio-historical cultural perspective, based on the analysis of its different historical nuances to understand its relevance in contemporary culture.

**GENERAL MATH ELECTIVE\***

- **MAT0012 MATH FOR THINKING**

Apply various approaches to mathematical thinking by modeling and analyzing hypothetical and real-world phenomena, to design solutions to problems related to your studies and your physical environment.

- **MAT0022 MATH AND CULTURE**

Develop a project that integrates math with any of the expressions of culture, by modeling phenomena or indicators to make decisions that benefit society.

**GENERAL BEHAVIORAL SCIENCE ELECTIVE\***

- **COM0012 ETHICS, SOCIETY AND THE ENVIRONMENT**

Discuss global problems and their local implications by integrating socio-economic, environmental and ethical aspects to create proposals for a tolerant society.

- **COM0022 BEHAVIOR AND HUMAN DEVELOPMENT**

Identify human development's bio-psycho-social factors, by analyzing the variables that affect individual and social behavior and use this knowledge in their academic and professional life.

**GENERAL NATURAL SCIENCE ELECTIVE\***

- **CNE0012 FOOD AND LIFE**

Identify the relationship between food and health through research that provides data on eating habits to choose an informed diet for your daily life.

- **CNE0022 EVOLUTION AND BIODIVERSITY**

Describe the origin of diseases through causal factors to assess human health information sources.

**GENERAL ART ELECTIVE\***

- **ART0022 ART AND CULTURE OF THE AMERICAS**

Identify sociocultural development in the Americas through their artistic expressions to establish an active dialogue with this past and its identity context.

- **ART0012 ART, HISTORY AND CULTURE**

Identify how human beings define reality and express it for themselves and the world from the emergence of Western modernity, by explaining the reciprocal relationship between art, history and culture to critically argue artistic representation and expression topics.

*\*Subjects that are part of the General Education component UDLAP*

## LITERATURE

### LLI1022 FUNDAMENTALS OF LITERARY WRITING

Identify the theoretical concepts of literary discourse by analyzing literature in contemporary society to accurately learn the meaning of studies and literary writing.

### LTE1032 HISTORY OF ANCIENT THEATER TO THE 19<sup>th</sup> CENTURY

Identify the main currents of theater, through the bibliographic and audiovisual analysis of theatrical manifestations from Greece to the 20<sup>th</sup> century, to understand the cognitive bases of dramaturgical and scenic creation.

### LIO1022 HISTORY AND STUDY OF THE SPANISH LANGUAGE

Identify the grammatical characteristics of Spanish, through its historical and social development, to explain its evolution and formation.

### LEX0112 FOREIGN LANGUAGE I \*

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### LLI1012 PRE-HISPANIC LITERATURE

Identify the different literary manifestations of pre-Hispanic cultures, by comparing the specific conditions of their production to understand the characteristics of pre-Hispanic linguistics.

### INF0012 INFORMATION TECHNOLOGIES IN THE CONSTRUCTION OF KNOWLEDGE \*

Understand relevant information using Information and Communication Technologies (ICT) to document an economic, political, cultural and/or social problem.

### ESP0012 ACADEMIC REASONING\*

Express academic arguments orally and in writing within your discipline by developing and presenting persuasive speeches, using the rudiments of communication to interact effectively in a specific academic context.

### LLI1042 HISTORY OF LITERARY THEORY

Understand the most important theoretical and critical texts that have been written about literature in the Western tradition, through the analysis of representative works, to relate the critical texts by applying the literary theories studied in class.

### LEX0122 FOREIGN LANGUAGE II \*

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### LLI1052 MEDIEVAL SPANISH LITERATURE

Analyze the literature written in medieval Castilian through historiography, epic, lyrics and primitive Castilian theater to understand its influence on later literature.

### **LLI1032 TEXTS OF THE CONQUEST**

Understand the particularities of literature from the conquest of America through its relationship with the hegemonic perspective to identify the fundamental texts on the conquest of America.

### **ESP0022 ACADEMIC WRITING \***

Develop academic articles of your discipline through the administration of specialized information and the application of academic and scientific conventions, for the dissemination of academic and scientific knowledge.

### **LPM2022 SCREENWRITING**

Analyze film scripts by identifying its elements to write a short film and segment of a feature film.

### **LEX0132 FOREIGN LANGUAGE III \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### **LLI2012 COLONIAL PERIOD LITERATURE**

Identify the main characteristics of colonial Spanish-American literature up to the 18<sup>th</sup> century, through the study of its most representative texts to analyze the cultural heterogeneity of this period in America.

### **LLI2032 SPANISH LITERATURE OF THE GOLDEN AGE**

Build an overview of the genres and authors of the golden age by comparing them with other eras, to apply them in their historical, social and cultural context.

### **LLI2022 THEORIES OF LANGUAGE AND DISCOURSE**

Examine the theories and methods of analysis of the complex processes of contemporary communication through the internal organization of texts and their relationship with other semiotic forms to critically interpret the different languages and discourses of sociocultural interaction in the world.

### **LTE2082 DRAMATURGY**

Identify the main characteristics that make up the dramaturgy from the analysis of the different contemporary dramatic theories to organize the writing and analysis of theatrical works.

### **LLI2072 CERVANTES STUDIES**

Examine the work of Miguel de Cervantes through by analyzing his works to establish the relationship between the Spanish golden age and Hispanic culture in general.

### **LLI2052 19<sup>th</sup> CENTURY SPANISH-AMERICAN LITERATURE**

Understand the horizons of production and reception of the Spanish-American legal production of the 19<sup>th</sup> century (poetry, essay, novel, letters and proclamations, short story) through its permanent contextualization to relate the development of the illustrated project in the Spanish-American literature of the period.

### **LLI2042 LITERARY MODELS - FICTION**

Identify structural and thematic differences between the epic, the novel and the story, comparing the various quantitative, qualitative and narrative enunciation elements that make up a story, to analyze paradigmatic works from the epic to the most recent stories and novels of the Western world in their printed and audiovisual representations.

#### **LRP3092 CRITICAL THEORY AND CULTURAL STUDIES**

Critically analyze the patterns, structures and social processes that influence the behavior of individuals as consumers of information by underpinning systems of critical content dissemination to analyze contemporary media.

#### **LLI2062 20<sup>th</sup> CENTURY LITERARY THEORIES**

Classify the fundamental concepts and models of 20<sup>th</sup> century literary theory, through the analysis of representative works to identify the characteristics of literary works of that period.

#### **LHC3052 ART AND GENRE**

Analyze the relationship between art and gender identity construction processes in the Western socio-historical-cultural context through a tour of art history to identify its possible contributions to gender theories.

#### **LLI3032 FICTION LITERARY WRITING**

Identify the narrative genres of contemporary writing through technical and stylistic aspects to prepare literary texts.

#### **LLI3012 ILLUSTRATION AND MODERNITY IN SPANISH LITERATURE**

Compare the trajectory of Spanish literature of the 18<sup>th</sup> and 19<sup>th</sup> centuries by analyzing the great periods or trends - late Baroque, Enlightenment, Romanticism, Realism and Modernity - to illustrate these canonical categories and relate them to the contemporary literature processes in Latin America.

#### **LLI3042 LITERARY MODELS - POETRY**

Identify the essential elements of poetry by analyzing the basic styles of poetry from the Renaissance to postmodernism, to correctly interpret important poems of the Western world.

#### **LLI3022 PROFESSIONAL PRACTICE 1**

Apply the theoretical and practical knowledge acquired in the different courses through cultural management practices, to compare the theory with professional work.

#### **LRI3052 CONTEMPORARY LATIN AMERICA**

Analyze the region, the recent history and politics of Latin American countries, as well as their contemporary dilemmas, through a conceptual review of the most important ideas and cases of the dominant countries, to identify this region in the current global environment, and to understand some of the academic trends.

#### **LLI3082 LATIN AMERICAN CRITICISM AND HISTORY**

Understand the critical and historiographical thinking of Latin America of the 19<sup>th</sup> and 20<sup>th</sup> centuries, through the analysis of critical texts and their most relevant authors, to relate the relevant theoretical conceptualizations.

#### **LLI3062 MODERN EUROPEAN LITERATURE**

Analyze the main European prose and poetry from the 18<sup>th</sup> to the 20<sup>th</sup> centuries, through the analysis of representative works to identify the relationship between this period of European literature with its Latin American counterparts.

#### **LLI3052 19<sup>th</sup> CENTURY MEXICAN LITERATURE**

Understand the themes and problems of Mexican literature from the pre-independence years to Modernism by analyzing its trajectory to establish its role within a cultural process in search of national identity.

#### **LLI3092 LITERARY MODELS - ESSAY**

Identify the theories of the essay and the main characteristics of the genre by analyzing the texts with the most representative authors, to interpret essay texts (European, Hispanic American and American) in the light of its theories.

#### **LLI3072 SELECT TOPICS 1**

Examine cutting-edge themes around a 21<sup>st</sup> century theoretical proposal through the relevant and critical relationship with Latin American and Western literary theory to explain a broader view global thinking.

#### **LLI4062 POETRY WRITING**

Interpret poetic writing through a framework of knowledge of the current lines on the creation of lyrical texts to develop creative skills that help consolidate a style of one's own poetry.

#### **LLI4032 AMERICAN LITERATURE 19<sup>th</sup> – 21<sup>st</sup> CENTURIES**

Understand American literature by analyzing representative works to compare their processes with those of the literature of the rest of America.

#### **LLI4022 MODERN MEXICAN LITERATURE**

Evaluate the institutionalized corpus in Mexican literature of the first half of the 20<sup>th</sup> century under the concept of literary autonomy through a transversal reading of the genres to identify their importance and their role in the shaping of modern Mexican culture.

#### **LLI4052 HISPANIC-AMERICAN FICTION OF THE 20<sup>th</sup> CENTURY**

Identify the narrative in Latin America through the analysis of the works produced from the abandonment of regionalism to the post-boom, to evaluate the emergence in a social and political way, considering the development of the Latin American Boom .

#### **LLI4012 PROFESSIONAL PRACTICE 2**

Compare professional performance with the theoretical bases, through professional practices, to recommend improvement actions in a cultural institution or company.

#### **LLI4042 SELECT TOPICS 2**

Examine current issues of relevance around a leading 21<sup>st</sup> century author by engaging with relevant works in Western and Latin American literature to achieve a broader view of world literature.

#### **LLI4072 BRAZILIAN LITERATURE 19<sup>th</sup>-21<sup>st</sup> CENTURY**

Understand Brazilian literature by analyzing representative works to relevantly and critically relate said literature with that of the rest of Latin America.

**LLI4092 CONTEMPORARY MEXICAN LITERATURE**

Explain the changes in Mexican legal culture through the analysis of the end of the national paradigm and the incorporation of new agents and practices from the sixties, to establish a basic panorama to interpret the cultural conditions of the present.

**LLI4102 HISPANIC-AMERICAN POETRY IN THE 20<sup>th</sup> CENTURY**

Analyze the processes of poetic creation in the Hispanic-American context of the 20<sup>th</sup> century, through the study of modernism to current poetry, to build in this space and time a panoramic view of the texts and authors of the lyrics and the Spanish language.

**LLI4112 CRITICISM AND ESSAY WORKSHOP**

Produce essay-critical texts by exploring different models and strategies, from literary essay to critical review, to apply the knowledge and skills of the degree and analyze one's own discursive production.

**LLI4082 SELECT TOPICS 3**

Examine current literary current topics of a country or region through the pertinent and critical relationship with the rest of western Latin American literature, to establish a broader view of world literature.

**GENERAL ART ELECTIVE\***

- **ART0022 ART AND CULTURE OF THE AMERICAS**  
Identify sociocultural development in the Americas through their artistic expressions to establish an active dialogue with this past and its identity context.
- **ART0012 ART, HISTORY AND CULTURE**  
Identify how human beings define reality and express it for themselves and the world from the emergence of Western modernity, by explaining the reciprocal relationship between art, history and culture to critically argue artistic representation and expression topics.

**GENERAL MATH ELECTIVE\***

- **MAT0012 MATH FOR THINKING**  
Apply various approaches to mathematical thinking by modeling and analyzing hypothetical and real-world phenomena, to design solutions to problems related to your studies and your physical environment.
- **MAT0022 MATH AND CULTURE**  
Develop a project that integrates math with any of the expressions of culture, by modeling phenomena or indicators to make decisions that benefit society.

**GENERAL BEHAVIORAL SCIENCE ELECTIVE\***

- **COM0012 ETHICS, SOCIETY AND THE ENVIRONMENT**  
Discuss global problems and their local implications by integrating socio-economic, environmental and ethical aspects to create proposals for a tolerant society.

- **COM0022 BEHAVIOR AND HUMAN DEVELOPMENT**

Identify human development's bio-psycho-social factors, by analyzing the variables that affect individual and social behavior and use this knowledge in their academic and professional life.

**GENERAL NATURAL SCIENCE ELECTIVE\***

- **CNE0012 FOOD AND LIFE**

Identify the relationship between food and health through research that provides data on eating habits to choose an informed diet for your daily life.

- **CNE0022 EVOLUTION AND BIODIVERSITY**

Describe the origin of diseases through causal factors to assess human health information sources.

**GENERAL HUMANITIES ELECTIVE\***

- **HUM0012 ECOSOPHY**

Compare world representation systems, analyzing different epistemological proposals to reposition the current Being-Man relationship with their environment and other beings from a fundamentally ecological philosophical dimension.

- **HUM0022 HUMANISTIC THINKING**

Study humanist thought from a socio-historical cultural perspective, based on the analysis of its different historical nuances to understand its relevance in contemporary culture.

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## MUSIC

**LMU1022 INSTRUMENT 1**

Identify the basic characteristics of musical performance on an instrument using note reading models and rhythms from the preparatory level to apply them to a basic repertoire.

**LMU1012 POPULAR MUSIC**

Understand representative works of American, Latin American and English music from the 1960s to expand the field of musical study by identifying popular culture elements.

**LEX0112 FOREIGN LANGUAGE I \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**LMU1042 BAROQUE AND CLASSICAL MUSIC**

Describe the development of the Baroque and Classical repertoire using tonal composition models and forms derived from baroque dance to understand genres and composers from 17<sup>th</sup> to 18<sup>th</sup> centuries.

**INF0012 INFORMATION TECHNOLOGIES IN THE CONSTRUCTION OF KNOWLEDGE \***

Understand relevant information using Information and Communication Technologies (ICT) to document an economic, political, cultural and/or social problem.

**LMU1032 MUSIC THEORY**

Produce notes, keys, armor, tries, rhythms and metrics, using small phrases in a choral texture of four voices to relate the basic structures of music to its interpretation and execution.

**ESP0012 ACADEMIC REASONING\***

Express academic arguments orally and in writing within your discipline by developing and presenting persuasive speeches, using the rudiments of communication to interact effectively in a specific academic context.

**LMU1072 TONAL HARMONY I**

Identify the rules based on classical music repertoire, by performing musical exercises and choral constructions to understand musical tools from functional tonality.

**LMU1082 AUDITORY TRAINING I**

Identify melodies, intervals and rhythms using basic metric and tonal models to write and sing simple tonal melodies.

**LMU1062 INSTRUMENT 2**

Express the basic characteristics of musical performance on an instrument using models of different musical styles and basic simple forms to apply them to a repertoire of the second basic level.

**LMU1052 MUSIC IN THE 19<sup>th</sup> CENTURY**

Classify the development of music from Beethoven to Debussy using models of tonal and chromatic composition to understand the musical structures used by 19<sup>th</sup> century classical music composers.

**LEX0122 FOREIGN LANGUAGE II \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**LMU2032 TONAL HARMONY II**

Understand chords, non-harmonic tones, modulations and cadences, applying the writing of harmonic progressions to four voices in the construction of a short piece that modulates to a close key and returns to the main key, to develop the ability to read, analyze and write Western music.

**LMU2042 AUDITORY TRAINING II**

Develop rhythmic and rhythmic-melodic exercises by understanding subdivisions and syncopes in simple and compound bars to express basic tonal melodies. Identify harmonic progressions using major and minor primary triads to establish hearing of basic tonal progressions.

**ESP0022 ACADEMIC WRITING \***

Develop academic articles of your discipline through the administration of specialized information and the application of academic and scientific conventions, for the dissemination of academic and scientific knowledge.

### **LMU2012 PRETONAL STRUCTURES**

Explain the development of the repertoire prior to tonality using models of rhythmic notation, modal composition and relationship between music and text to understand structures, genres and composers from the 10<sup>th</sup> to the 17<sup>th</sup> centuries.

### **LMU2022 INSTRUMENT 3**

Understand the formulas of a coherent execution by using formal, historical and stylistic schemes and techniques to apply them to a repertoire of the first intermediate level.

### **LEX0132 FOREIGN LANGUAGE III \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### **LMU2092 COUNTERPOINT**

Interpret analysis and creation exercises by applying the harmonic and formal resources from Palestrina's music to J.S. Bach, to develop both horizontal-melodic and vertical-harmonic musical skills.

### **LMU2062 CHOIR I**

Identify the essential aspects of choral performance using rhythmic and musical coupling to develop work with other members of the choral group and perform repertoires of various musical styles at the basic level.

### **LMU2052 MUSIC CONDUCTION**

Apply basic knowledge of musical conduction to interpret in front of an ensemble with ample artistic interpretation mastery, through the analysis of musical theoretical ideas and exercising leadership and cultural management skills.

### **LMU2102 AUDITORY TRAINING III**

Understand rhythmic and rhythmic-melodic exercises through the interpretation of tonal melodies with some chromatic tones and modulations to close tonalities and irregular rhythms to relate them to the hearing of melodies and intermediate tonal progressions.

### **LMU2082 INSTRUMENT 4**

Understand the formulas of a coherent execution through technical, formal, historical and stylistic schemes to apply them to repertoire of the second intermediate level.

### **LMU2072 MUSIC TECHNOLOGY**

Prepare compositions, arrangements, productions and sound reproductions through the application of the main computer tools to understand the techniques of manipulation of the music.

### **LIO1042 THIRD LANGUAGE 1**

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### **LMU3042 CHROMATIC HARMONY I**

Apply knowledge of chromatic harmony in the construction of a short piece, to develop solutions to problems of daily musical life by analyzing the chromatic system of classical music.

### **LMU3012 CHOIR II**

Classify the essential aspects of choral performance using rhythmic and musical coupling to develop work with other members of the choral group and perform repertoires of various musical styles at the intermediate level.

### **LMU3052 AUDITORY TRAINING IV**

Apply auditory memory to tonal structures using some chromatic tones, modulations to nearby tones and irregular rhythms to interpret rhythmic and rhythmic-melodic tonal exercises at an advanced level.

### **LMU3032 INSTRUMENT 5**

Analyze the formulas of a coherent execution that raise the interest of the public through technical, formal, historical, harmonic and stylistic schemes to apply them to a repertoire of the third intermediate level.

### **LMU3022 PROFESSIONAL PRACTICE 1**

Interpret chamber music through of planning, execution and production to apply the theoretical structure to the real practice in the musical area.

### **LMU3102 CHROMATIC HARMONY II**

Analyze representative works of the 20<sup>th</sup> and 21<sup>st</sup> centuries to create small works, through the application of the techniques of this repertoire.

### **LTE3072 SCENE CORPORALITY**

Relate the somatic, theoretical and experience perspectives of the scenic event to develop the bodily potential of the actor in the scene through exercises of movement, sensation, imagination, reflection, touch, and action.

### **LMU3112 AUDITORY TRAINING V**

Analyze complex melodies using non-tonal models to write and sing exercises based on repertoires of the late 20<sup>th</sup> and early 21<sup>st</sup> centuries.

### **LMU3092 INSTRUMENT 6**

Identify the management of models of analysis, memorization and execution of the fourth intermediate level through musical interpretation to develop a coherent execution that elevate the public's interest.

### **LMU3062 THE MUSIC OF THE 20<sup>th</sup> AND 21<sup>st</sup> CENTURIES**

Evaluate the development of music from 1900 using composition models after tonality to apply them to the analysis of repertoire of the twentieth and twenty-first century.

### **LMU3082 CHAMBER MUSIC I**

Perform chamber music using assembly techniques to develop a good job in musical ensembles of two or three instrumentalists.

### **LMU3072 MUSIC AND PERFORMING ARTS**

Relate the processes and styles of the interdisciplinary genres understanding the stylistic factors that determine the eras, to apply different ways of thinking both verbally and in writing.

#### **LDA4012 PERFORMANCE STUDIES**

Analyze performance by relating historical, cultural and philosophical contexts from different study areas, to create performance projects.

#### **LMU4062 FUNDAMENTALS OF MUSIC COMPOSITION**

Compose music for instrument through small vocal ensembles and groups, representative of the Western musical repertoire of the XXI century to better understand the processes of artistic creation.

#### **LMU4052 HISTORY OF JAZZ**

Analyze representative works of the jazz repertoire of the 20<sup>th</sup> and 21<sup>st</sup> centuries by identifying similarities and differences between the historical periods of jazz to develop knowledge of a repertoire other than classical music.

#### **LMU4042 INSTRUMENT 7**

Develop a repertoire of the first advanced level through formal, harmonic, historical and stylistic technical schemes to expose a coherent execution that elevates the public's interest.

#### **LMU4032 CHAMBER MUSIC II**

Perform chamber music using assembly techniques to develop a good job in musical ensembles of four instrumentalists.

#### **LMU4022 PROFESSIONAL PRACTICE 2**

Produce musical works by applying theoretical-practical models to individual and group presentations to understand musical structures in the interpretation and execution.

#### **LMU4012 SELECT TOPICS 1**

Examine current musical interpretation topics through the evaluation of models of historical and contemporary interpretation to identify the elements of a justified, coherent and purposeful performance.

#### **LAP4062 ART AND SOCIAL SPACE**

Relate the different meanings of social space with artistic practices of a different nature to create creative projects that are properly located and contribute to different social contexts through the application of concrete strategies.

#### **LMU4112 INSTRUMENT 8**

Develop professionalism in musical interpretation by applying historical and theoretical knowledge to interpret a responsible, informed and striking performance.

#### **LMU4072 MUSIC IN MEXICO**

Evaluate the development of music in Mexico through the analysis of tonal and post-tonal composition models to understand the different currents that characterize the musical repertoire created in Mexico or by Mexicans.

### **LMU4082 CHAMBER MUSIC III**

Interpret chamber music through the application of ensemble techniques to develop performances in different contexts.

### **LMU4122 ORCHESTRATION**

Evaluate the characteristics of each orchestral instrument by analyzing and developing arrangements based on the Western musical repertoire, to analyze the elements of the symphony orchestra and its subgroups.

### **LMU4092 SELECT TOPICS 2**

Analyze cutting-edge music theory topics through critical thinking and analysis of musical works to identify the elements of creation and writing of national and international music.

### **LMU4102 SELECT TOPICS 3**

Examine cutting-edge music history topics using models of critical historiography to identify new approaches and apply them to the analysis and interpretation of national and international music.

## **GENERAL HUMANITIES ELECTIVE\***

- **HUM0012 ECOSOPHY**  
Compare world representation systems, analyzing different epistemological proposals to reposition the current Being-Man relationship with their environment and other beings from a fundamentally ecological philosophical dimension.
- **HUM0022 HUMANISTIC THINKING**  
Study humanist thought from a socio-historical cultural perspective, based on the analysis of its different historical nuances to understand its relevance in contemporary culture.

## **GENERAL MATH ELECTIVE\***

- **MAT0012 MATH FOR THINKING**  
Apply various approaches to mathematical thinking by modeling and analyzing hypothetical and real-world phenomena, to design solutions to problems related to your studies and your physical environment.
- **MAT0022 MATH AND CULTURE**  
Develop a project that integrates math with any of the expressions of culture, by modeling phenomena or indicators to make decisions that benefit society.

## **GENERAL BEHAVIORAL SCIENCE ELECTIVE\***

- **COM0012 ETHICS, SOCIETY AND THE ENVIRONMENT**

Discuss global problems and their local implications by integrating socio-economic, environmental and ethical aspects to create proposals for a tolerant society.

- **COM0022 BEHAVIOR AND HUMAN DEVELOPMENT**

Identify human development's bio-psycho-social factors, by analyzing the variables that affect individual and social behavior and use this knowledge in their academic and professional life.

### **GENERAL NATURAL SCIENCE ELECTIVE\***

- **CNE0012 FOOD AND LIFE**

Identify the relationship between food and health through research that provides data on eating habits to choose an informed diet for your daily life.

- **CNE0022 EVOLUTION AND BIODIVERSITY**

Describe the origin of diseases through causal factors to assess human health information sources.

### **GENERAL ART ELECTIVE\***

- **ART0022 ART AND CULTURE OF THE AMERICAS**

Identify sociocultural development in the Americas through their artistic expressions to establish an active dialogue with this past and its identity context.

- **ART0012 ART, HISTORY AND CULTURE**

Identify how human beings define reality and express it for themselves and the world from the emergence of Western modernity, by explaining the reciprocal relationship between art, history and culture to critically argue artistic representation and expression topics.

*\*Courses that are part of the UDLAP General Education component*

## **THEATRE**

- **LTE1032 HISTORY OF THE THEATER FROM ANCIENT TIMES TO THE 19<sup>TH</sup> CENTURY**

Identify the main currents of theater, through the bibliographic and audiovisual analysis of theatrical manifestations from Greece to the 20<sup>th</sup> century, to understand the cognitive bases of dramaturgical and scenic creation.

- **LTE1012 ACTING IMPROVISATION**

Understand the main acting improvisation techniques and their relevance, through basic exercises to identify the main characteristics of the stage practice of a theatrical actor.

- **LEX0112 FOREIGN LANGUAGE I \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### **LTE1022 PRINCIPLES OF ACTING TRAINING**

Identify the principles of acting training through the evaluation and practice of basic breathing exercises, stretching, vocal exploration, relaxation and neutrality to understand the characteristics of optimal acting development.

### **INF0012 INFORMATION TECHNOLOGIES IN THE CONSTRUCTION OF KNOWLEDGE \***

Understand relevant information using Information and Communication Technologies (ICT) to document an economic, political, cultural and/or social problem.

### **LTE1042 PERFORMANCE 1**

Identify the main acting techniques based on the Stanislavski system through the practice of exercises to apply them in the performance in a staging and the creation of a dramatic character.

### **ESP0012 ACADEMIC REASONING\***

Express academic arguments orally and in writing within your discipline by developing and presenting persuasive speeches, using the rudiments of communication to interact effectively in a specific academic context.

### **LTE1052 MUSICAL AND RHYTHMIC TRAINING**

Identify the basic map of sounds, rhythms and notes, through primary exercises of musical reading and solfege to apply the fundamentals of reading notes and rhythms to an elementary sung repertoire.

### **LTE1062 HISTORY OF THEATRE FROM THE 20<sup>TH</sup> TO THE 21<sup>ST</sup> CENTURY**

Compare the differences that exist in the different stages of contemporary theater through the analysis of updated sources to identify theatrical creation processes and be able to influence the scenic processes of their environment.

### **LEX0122 FOREIGN LANGUAGE II**

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### **LPM1022 LANGUAGE OF CINEMA I**

Identify the main milestones in the first sixty years of film history through a written analysis of a film in accordance with the evolution and use of narrative and cinematic language techniques until the late 1950s to understand the most representative authors and their contributions to the cinematographic language.

### **LTE2012 PERFORMANCE 2**

Develop the Stanislavskian acting method through the use of physical, emotional and intellectual tools to understand the proven creation elements in theatrical exercises.

### **ESP0022 ACADEMIC WRITING \***

Develop academic articles of your discipline through the administration of specialized information and the application of academic and scientific conventions, for the dissemination of academic and scientific knowledge.

### **LEX0132 FOREIGN LANGUAGE III \*:**

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**LTE2042 THEATRICAL TEXT ANALYSIS METHODS**

Understand the theater methodologies and critical theories by exhaustively analyzing texts to understand the characteristics of the creative process.

**LTE2032 MEXICAN THEATER**

Understand the main thematic axes that cross the Mexican theatrical creation in the 20<sup>th</sup> and 21<sup>st</sup> centuries, by reviewing the staging and written texts to identify the artistic and cultural environment of Mexico and Latin America.

**LTE2022 VOICE FOR ACTORS**

Produce vibrations through the application of theoretical, technical and sensitive knowledge of the respiratory system and vocalist to develop an adequate vocal technique.

**LTE2062 PERFORMANCE 3**

Create a character using spatial scrolling and exploration exercises to develop various acting tools.

**LTE2082 DRAMATURGY**

Identify the main characteristics that make up the dramaturgy from the analysis of the different contemporary dramatic theories to organize the writing and analysis of theatrical works.

**LDA2082 BODY DRAMATURGY**

Identify the potential of dramaturgy, both in dance criticism and in the choreographic process to analyze the construction of significance and character in works with bases of movement, through choreographic and scenic studies that are based on the language of movement.

**LTE2052 SCENIC PRACTICE I**

Build a character and its relationship with dramatic situations, the fabric of actions and emotional motivations, applying acting methodologies and exercises, to interpret the scenes.

**LPM3012 AUDIOVISUAL PRODUCTION TECHNIQUES**

Identify the elements of the audiovisual message when creating of creative, technical and aesthetic pieces using the different tools and technical resources to express and broadcast audiovisual messages effectively that meet the minimum technical and aesthetic standards in their exhibition.

**LTE3052 PERFORMANCE 4**

Develop a creative work, through body and vocal exercises to understand language from stage action. Build a character and its relationship with dramatic situations and the fabric of actions and emotional motivations through systematic rehearsals to relate the elements of stage practice. Design a space through exploration and scenic movement to identify assembly requirements.

**LTE3032 CONTEMPORARY STAGE CURRENTS**

Classify the main contemporary scenic currents from the investigation of the main themes and theatrical proposals to analyze the new artistic proposals of theatrical art and its most current trends in the world.

**LTE3062 SCENE, THEORY AND CRITICISM**

Develop an argumentative and critical character, where they express with clarity and depth ideas related to the main themes of the course, through the analysis of theories, to build theatrical criticisms that can be published in local media.

#### **LTE3042 SCENIC PRACTICE II**

Apply the assembly processes through the systematic exercise of scenic tasks and processes, to organize the progressive tasks of the scenery assembly.

#### **LTE3012 PROFESSIONAL PRACTICE 1**

Combine the theoretical-practical and creative concepts required to develop a professional theatrical practice from the research, creation, presentation and marketing of individual projects.

#### **LPM3032 RADIO PRODUCTION**

Produce auditory messages with communicative richness, through the intentional use of the expressive radio code resources and the correct operation of the digital equipment, to record and reproduce audio to explain strategic proposals within the radio world.

#### **LTE3022 CHARACTER BUILDING WORKSHOP**

Build dramatic characters from the preparation of their costumes, masks, makeup, characterization and special effects to develop staging, performances and film projects.

#### **LTE3112 MEDIA PERFORMANCE**

Categorize the main characteristics that make up the performance for the media from the study of different cinematographic acting techniques to understanding the techniques of camera acting.

#### **LTE3072 SCENE CORPORALITY**

Relate the somatic, theoretical and experience perspectives of the scenic event to develop the bodily potential of the actor in the scene through exercises of movement, sensation, imagination, reflection, touch, and action.

#### **LTE3092 STAGE DIRECTION 1**

Prepare the direction of a theatrical production by applying tools and techniques of the scenic art to understand the conceptualization and importance of the direction and theatrical performance.

#### **LTE3082 SCENIC IMAGE**

Relate the concepts of scenic image through the development of the scenic space and creative exercises to plan scenic image elements.

#### **LMU3072 MUSIC AND PERFORMING ARTS**

Relate the processes and styles of the interdisciplinary genres understanding the stylistic factors that determine the eras, to apply different ways of thinking both verbally and in writing.

#### **LTE3102 SELECT TOPICS 1**

Examine cutting-edge topics in complementary theater languages by analyzing the conceptual and technical aspects of theater to relate scenic practice to these languages.

#### **LTE4042 STAGE DIRECTION 2**

Design a theatrical production using conceptual and practical scenic elements to understand the techniques of theatrical direction.

**LTE4012 COLLECTIVE THEATRICAL EXPERIENCE**

Establish a dynamic-collective work to develop a theatrical language of a group character through the application of fundamental contemporary methodologies and practices.

**LTE4022 ALTERNATIVE SCENIC LANGUAGES 1**

Compare the characteristics of the Avant-Garde theater by analyzing the historical events of this movement to develop critical arguments linked to the movements of the twentieth century.

**LTE4032 PROFESSIONAL PRACTICE 2**

Evaluate the professional performance, through the knowledge and skills acquired throughout their studies, to develop staging.

**LTE4052 SELECT TOPICS 2**

Examine current acting training topics by comparing dramatic circumstances with the fabric of specific physical, emotional and intellectual actions and motivations of a play to create a character.

**LTE4062 ALTERNATIVE SCENIC LANGUAGES 2**

Compare the characteristics of postmodern theatre, conceptualism and political and cultural resistance through critical analysis to clearly examine theatre currents.

**LTE4072 THEATRE PORTFOLIO AND LABOUR MARKET**

Identify the needs of the theatrical labor field through the study of the different practical elements to develop professional theatrical projects.

**LTE4082 STAGING**

Design a pre-professional short film through the development of stage currents to relate the theoretical and practical concepts of the degree with reality.

**LTE4092 STAGING WORKSHOP**

Develop a pre-professional editing process, using theatrical analysis methods to apply them to montages in professional cultural institutions.

**LTE4102 SELECT TOPICS 3**

Consider current stage practice topics by identifying the elements involved in a staging for acting and character development, stage direction, scenic image design and theatrical production.

**GENERAL HUMANITIES ELECTIVE\***

- **HUM0012 ECOSOPHY**  
Compare world representation systems, analyzing different epistemological proposals to reposition the current Being-Man relationship with their environment and other beings from a fundamentally ecological philosophical dimension.
- **HUM0022 HUMANISTIC THINKING**

Study humanist thought from a socio-historical cultural perspective, based on the analysis of its different historical nuances to understand its relevance in contemporary culture.

**GENERAL MATH ELECTIVE\***

- **MAT0012 MATH FOR THINKING**  
Apply various approaches to mathematical thinking by modeling and analyzing hypothetical and real-world phenomena, to design solutions to problems related to your studies and your physical environment.
- **MAT0022 MATH AND CULTURE**  
Develop a project that integrates math with any of the expressions of culture, by modeling phenomena or indicators to make decisions that benefit society.

**GENERAL BEHAVIORAL SCIENCE ELECTIVE\***

- **COM0012 ETHICS, SOCIETY AND THE ENVIRONMENT**  
Discuss global problems and their local implications by integrating socio-economic, environmental and ethical aspects to create proposals for a tolerant society.
- **COM0022 BEHAVIOR AND HUMAN DEVELOPMENT**  
Identify human development’s bio-psycho-social factors, by analyzing the variables that affect individual and social behavior and use this knowledge in their academic and professional life.

**GENERAL NATURAL SCIENCE ELECTIVE\***

- **CNE0012 FOOD AND LIFE**  
Identify the relationship between food and health through research that provides data on eating habits to choose an informed diet for your daily life.
- **CNE0022 EVOLUTION AND BIODIVERSITY**  
Describe the origin of diseases through causal factors to assess human health information sources.

**GENERAL ART ELECTIVE\***

- **ART0022 ART AND CULTURE OF THE AMERICAS**  
Identify sociocultural development in the Americas through their artistic expressions to establish an active dialogue with this past and its identity context.
- **ART0012 ART, HISTORY AND CULTURE**  
Identify how human beings define reality and express it for themselves and the world from the emergence of Western modernity, by explaining the reciprocal relationship between art, history and culture to critically argue artistic representation and expression topics.

***\*Courses that are part of the UDLAP General Education compone***



MIXED MASTER'S  
DEGREES

## MASTER IN VISUAL INFORMATION DESIGN

### MPD5013 IMAGE AND VISUAL LANGUAGE

To examine the importance of the use of images and texts in communication projects, through the understanding of the theories of presentation and representation, with the aim of generating effective visual messages for digital interfaces.

### MCM5023 LANGUAGE AND STORYTELLING IN DIGITAL MEDIA

Analyze what the ontology of the digital paradigm consists of, applying the main concepts about language and narration in new media, to generate narrative strategies with content and form, according to the current digitalization process.

### REP5013 CORPORATE AND PROFESSIONAL RESPONSIBILITY

Analyze the deontological obligations and duties that correspond to each subject in the development of their activities, from a human, social and legal perspective, so that individually and collectively they develop a responsible professional practice.

### MPD5023 DESIGN RESEARCH

Distinguish the different research techniques for design through their comparative study and their relationship with practical cases, to propose solutions based on quantitative and qualitative data to problems of information and interaction in organizations.

### MPD5033 INFORMATION ARCHITECTURE

Analyze methods for the structuring of information and planning of processes of complex interactive systems, through the use of categorization strategies to interpret, operate and evaluate data modeling processes.

### MPD5043 DIGITAL PUBLICATIONS

Design basic digital publications, from the multiplatform editorial concept and layout to the generation of digital files that guarantee the publication of editorial content through the design of reading experiences.

### MPD5053 USER EXPERIENCE DESIGN

Build interactive prototypes through research in user experience design and process mapping, up to the generation of cutting-edge digital interfaces, to develop the skills needed in the creation of interactive products.

### MPD5063 INFORMATION DISPLAY

Apply information visualization techniques in communication projects, through the generation of infographics, diagrams, maps or timelines, so that the end user can understand and interpret complex information.

### MPD5073 DESIGN FOR SOCIAL MEDIA

Build a digital strategy in social networks, using specific methodologies to correctly design organic and paid publications, in order that a brand can position itself better in relation to its competition.

### MPD5083 INFORMATION DESIGN AND SOCIETY

Define the purposes of Information Design based on the information generated by recognized authors in the field to identify trends with their different objects of study that shape the discipline both in the context of the social and in the professional.

**MPD5093 INNOVATION AND DESIGN**

Select research and innovation techniques through the use of relevant methodologies to produce meaningful experiences that solve problems of information and interaction in organizations.

**MPD5103 FIELD PRACTICE IN INFORMATION DESIGN I**

Apply the knowledge and skills of Information Design in the professional field, through the development of projects that offer solution to real problems of communication and interaction identified in an organization, with the aim of implementing innovation actions that impact the professional field.

**MPD5113 FIELD PRACTICE IN INFORMATION DESIGN II**

Build an Information Design project in the professional field through the application of Innovation and Thought Design methodologies to put into practice disciplinary knowledge and help an organization in its innovation processes through design.



EDUCATIONAL OFFER  
**Science**

## ACTUARIAL SCIENCE

### LIS1012 ALGORITHMS AND PROGRAMMING

Apply algorithmic thinking using control structures in the denotation of sequences, conditions, cycles, and appropriate data structures to develop solutions that can be implemented in a programming language.

### LEX0112 FOREIGN LANGUAGE I \*

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### MAT1012 UNIVERSITY MATH

Learn algebraic language to interpret and use mathematical expressions, including their corresponding graphics, to formulate and solve problems.

### INF0012 INFORMATION TECHNOLOGIES INKNOWLEDGE BUILDING \*

Understand relevant information using Information and Communication Technologies (ICT) to document an economic, political, cultural and/or social problem.

### MAT1062 ABSTRACT ALGEBRA

Establish solid math foundations, through demonstrations and use of mathematical properties, to model applied sciences phenomena.

### ESP0012 ACADEMIC REASONING\*

Express academic arguments orally and in writing within your discipline by developing and presenting persuasive speeches, using the rudiments of communication to interact effectively in a specific academic context.

### MAT1022 CALCULUS I

Apply derivative and integral functions of a variable to solve engineering, finance, management and science problems by modeling the speed of change of its indicators.

### CON1012 ACCOUNTING

Identify the various financial information elements through operations accounting records financial statements in service and commercial companies to control results.

### ECO1012 BUSINESS AND ECONOMICS

Identify the essential aspects of economic problems by examining the basic microeconomic analysis concepts and methods to interpret the decisions of individuals, companies, and their interaction in markets.

### MAT1042 ANALYTICAL GEOMETRY

Apply conics and basic mathematical concepts, using their algebraic properties with a vector approach, to model relevant indicators in your area of expertise.

**LEX0122 FOREIGN LANGUAGE II \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**MAT2012 CALCULUS II**

Apply directional derivatives and multiple integrals of variable functions through the modeling of the rate of change of their indicators to solve engineering, finance and science problems.

**ECO2012 MACROECONOMIC ENVIRONMENT**

Identify the basic macroeconomics indicators and models by analyzing long and short-term macroeconomic theories to infer the implications of different economic events and government policies in a country.

**ESP0022 ACADEMIC WRITING \***

Develop academic articles of your discipline through the administration of specialized information and the application of academic and scientific conventions, for the dissemination of academic and scientific knowledge.

**LEX0132 FOREIGN LANGUAGE III \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**LAT2012 STOCHASTIC MODELS I**

Apply probability techniques through different univariate models to calculate probabilities and expected values in real problems that contribute to decision-making.

**LAT2022 MATRIX THEORY**

Apply vector spaces, matrix theory and linear transformations to solve various world phenomena problems and to model and use matrix theory in your discipline through the use of technological resources.

**LAT2032 INTEREST THEORY I**

Analyze problems involving the value of money over time, using mathematical tools and financial concepts to develop solutions to practical and theoretical financial problems.

**MAT2042 MATHEMATICAL ANALYSIS I**

Apply the derivative and integral functions of a variable to solve engineering, finance, and science problems using the multiplier method, to develop solutions to optimization problems.

**MAT2052 ORDINARY DIFFERENTIAL EQUATIONS**

Apply different solutions techniques to differential equations using the existing classic ordinary differential equations methodologies to apply them in practical problems.

**LAT2042 ACTUARIAL PROGRAMMING TOOLS**

Design computer applications using Excel, VBA, and SQL tools to develop solutions to actuarial problems.

**LAT2062 STOCHASTIC MODELS II**

Apply probability techniques by developing different multivariate models to calculate probabilities and expected values in real problems that contribute to decision-making.

**LAT2072 INTEREST THEORY II**

Analyze problems involving continuous annuities and/or un-leveled payments, using mathematical tools and financial concepts to recommend solutions to practical and theoretical financial problems; apply the methods used in the evaluation of investment projects.

**LAT2052 INSURANCE THEORY**

Identify the main aspects of life insurance, damage insurance and insurance in general through the analysis of insurance policies, the participants and the role that each play in understanding the most common practices in the insurance industry.

**MAT3012 MATHEMATICAL ANALYSIS II**

Apply line and multiple integrals of variable functions through the infinite sums modeling their indicators to develop solutions to physics, finance and science problems.

**LAT3032 LIFE INSURANCE ACTUARIAL MATHEMATICS**

Apply basic life insurance models by calculating premiums and mathematical reserves to describe the products offered by the insurance industry.

**LAT3012 INFERENCE METHODS I**

Apply various methodologies to estimate interest parameters that contribute to decision-making, developing descriptive statistics, point estimation and interval estimation methods.

**LAT3022 STOCHASTIC MODELS III**

Apply probability techniques and stochastic processes by developing different models of probability and stochastic processes to calculate probabilities and expected values in real problems, thus contributing to decision making.

**LAT3042 PROFESSIONAL PRACTICE 1**

Apply the knowledge acquired during their actuarial science studies in professional environments, using the theory, methodologies and techniques learned to analyze, diagnose, plan, evaluate and take part in the solution of problems and situations of your profession.

**LAT3082 MATHEMATICAL ANALYSIS III**

Identify the properties of the Lebesgue integral, by analyzing the theory of measurable sets, measures and measurable functions, to understand a more general and flexible integral that replaces the Riemann integral.

**LAT3072 DEMOGRAPHICS**

Evaluate demographic phenomena through the use of models, mathematical techniques and actuarial mathematics to identify population growth processes.

**LEC3092 ECONOMETRICS I**

Learn statistical tools using specialized computer packages and databases to quantitatively analyze economic phenomena.

### **LAT3062 INFERENCE METHODS II**

Apply various statistical methodologies, developing different tests of parametric and nonparametric hypotheses to understand the parameters of interest of a population that contribute to decision-making in different actuarial science areas.

### **LAT3052 INVESTMENT PORTFOLIOS**

Describe the most important financial products, stocks and bonds using mathematical tools and financial concepts, to build investment portfolios that consider the risk-return ratio.

### **LII2042 OPTIMIZATION TECHNIQUES AND THEORY**

Analyze practical problems by applying mathematical programming models and methods, to develop optimal solutions to support decision-making.

### **LEC4032 ECONOMETRICS II**

Analyze statistical tools using databases in the form of time series to understand economic and financial phenomena.

### **LAT4042 PROFESSIONAL PRACTICE 2**

Evaluate problems and situations of your profession in real work environments, through the application of theory, methodologies and techniques learned to build a link between theory and practice.

### **LAT4012 DERIVATIVE PRODUCTS**

Describe how derivatives markets work and the financial products that are traded, applying the methods used in the valuation of derivative products; use mathematical tools and financial concepts to identify the risks involved.

### **LAT4032 SELECT TOPICS 1**

Analyze cutting-edge statistics and actuarial simulation topics by applying methodologies to identify statistical concepts and generate pseudo-random numbers.

### **LAT4022 RISK THEORY**

Apply actuarial models of loss in the non-life insurance branches by using mathematical tools necessary to analyze the calculation of premiums and reserves in insurance institutions.

### **LAT4062 ACTUARIAL RISK MANAGEMENT**

Apply the procedures and techniques used by the financial industry by identifying, measuring and controlling risks to relate them to the financial protection of a company.

### **LAT4052 ADVANCED OPTIMIZATION**

Analyze practical application problems through the application of mixed integer programming models and methods, to develop solutions that support decision-making processes where it is necessary to select an optimal alternative with respect to a specific objective.

### **LAT4072 SOCIAL SECURITY AND PENSIONS**

Identify the benefits covered by social security in different parts of the world by analyzing theories and tools to compare various pension systems.

### **LAT4082 SELECT TOPICS 2**

Examine cutting-edge finance topics through the analysis of theories to apply investment and fund strategies in actuary.

### **LAT4092 SELECT TOPICS 3**

Examine cutting-edge insurance topics by applying actuarial models to examine the characteristics of financial compensation.

### **GENERAL ART ELECTIVE\***

- **ART0022 ART AND CULTURE OF THE AMERICAS**  
Identify sociocultural development in the Americas through their artistic expressions to establish an active dialogue with this past and its identity context.
- **ART0012 ART, HISTORY AND CULTURE**  
Identify how human beings define reality and express it for themselves and the world from the emergence of Western modernity, by explaining the reciprocal relationship between art, history and culture to critically argue artistic representation and expression topics.

### **GENERAL MATH ELECTIVE\***

- **MAT0012 MATH FOR THINKING**  
Apply various approaches to mathematical thinking by modeling and analyzing hypothetical and real-world phenomena, to design solutions to problems related to your studies and your physical environment.
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Develop a project that integrates math with any of the expressions of culture, by modeling phenomena or indicators to make decisions that benefit society.

### **GENERAL BEHAVIORAL SCIENCE ELECTIVE\***

- **COM0012 ETHICS, SOCIETY AND THE ENVIRONMENT**  
Discuss global problems and their local implications by integrating socio-economic, environmental and ethical aspects to create proposals for a tolerant society.
- **COM0022 BEHAVIOR AND HUMAN DEVELOPMENT**  
Identify human development's bio-psycho-social factors, by analyzing the variables that affect individual and social behavior and use this knowledge in their academic and professional life.

### **GENERAL NATURAL SCIENCE ELECTIVE\***

- **CNE0012 FOOD AND LIFE**  
Identify the relationship between food and health through research that provides data on eating habits to choose an informed diet for your daily life.
- **CNE0022 EVOLUTION AND BIODIVERSITY**

Describe the origin of diseases through causal factors to assess human health information sources.

### GENERAL HUMANITIES ELECTIVE\*

- HUM0012 ECOSOPHY**  
 Compare world representation systems, analyzing different epistemological proposals to reposition the current Being-Man relationship with their environment and other beings from a fundamentally ecological philosophical dimension.
- HUM0022 HUMANISTIC THINKING**  
 Study humanist thought from a socio-historical cultural perspective, based on the analysis of its different historical nuances to understand its relevance in contemporary culture.

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## BIOLOGY

### QUI1022 GENERAL CHEMISTRY LAB

Develop analytical and practical skills through the observation and development of experiments measuring properties and transformations of matter and its velocity, to identify elementary techniques and thus become familiar with how to handle chemistry glass material, instruments and equipment.

### LEX0112 FOREIGN LANGUAGE I \*

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### MAT1012 UNIVERSITY MATH

Learn algebraic language to interpret and use mathematical expressions, including their corresponding graphics, to formulate and solve problems.

### QUI1012 GENERAL CHEMISTRY

Identify the properties and transformations of matter and the change rates, by describing the atomic structure and reactivity of substances, to describe the reasons why chemistry is useful in your area and in daily life. Systematically describe inorganic substances by correctly applying the rules of nomenclature to identify chemical formulas.

### INF0012 INFORMATION TECHNOLOGIES IN THE CONSTRUCTION OF KNOWLEDGE \*

Understand relevant information using Information and Communication Technologies (ICT) to document an economic, political, cultural and/or social problem.

### ESP0012 ACADEMIC REASONING\*

Express academic arguments orally and in writing within your discipline by developing and presenting persuasive speeches, using the rudiments of communication to interact effectively in a specific academic context.

**LBI1022 BIOLOGY**

Describe the structure, organization and interactions between the components of living beings by applying different learning methods that guide the integration of key concepts to understand the properties that characterize living systems.

**MAT1022 CALCULUS I**

Apply derivative and integral functions of a variable to solve engineering, finance, management and science problems by modeling the speed of change of its indicators.

**LBI1012 BIOLOGY LAB**

Analyze vital processes at different levels of biological organization using scientific research methods and techniques to apply experimentally the theoretical concepts acquired on the composition, structure and functioning of living beings.

**QUI1042 ORGANIC CHEMISTRY LAB I**

Understand the equipment used in organic chemistry and perform synthesis, separation, purification and identification of substances operations, using personal safety regulations, good lab practices and handling of hazardous waste to be able to measure properties of matter and make basic organic chemistry reactions.

**LEX0122 FOREIGN LANGUAGE II \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**QUI1032 ORGANIC CHEMISTRY I**

Describe the functional groups, properties and simple transformations of organic compounds using different organic structures and chemical equations to identify the relationship between the structures of organic compounds and their properties. Correctly identify organic compounds by applying IUPAC nomenclature rules to systematically understand different organic compounds.

**WHO2012 BIOCHEMISTRY I**

Identify biochemistry fundamentals through the review of chemistry, macromolecule structure and basic equations to interpret and analyze metabolism. Describe the relationships between macromolecules through their comparison at different scales, to relate their structure to the function they perform and their consequences at the cellular and organismal scales.

**ESP0022 ACADEMIC WRITING \***

Develop academic articles of your discipline through the administration of specialized information and the application of academic and scientific conventions, for the dissemination of academic and scientific knowledge.

**LBI2042 MYCOLOGY LAB**

Identify the groups of organisms studied by mycology by observing their cellular characteristics and reproductive structures to establish their place in the general scheme of biological classification. Define the characteristics of the organisms studied by mycology using collection, cultivation, staining and identification techniques, to apply the basic concepts of the biological sciences to these organisms.

**LBI2022 PROTISTS AND ALGAE LAB**

Analyze the ecological function of algae and protists applying field study techniques to establish the importance of these organisms. Classify the groups of algae and protists applying the methods of cultivation and staining to categorize them according to biological classification. Understand algae and protists by developing dichotomous keys to apply formal methods of biological identification.

**LEX0132 FOREIGN LANGUAGE III \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**LBI2032 MYCOLOGY**

Classify the groups of organisms studied by mycology by establishing their taxonomic position and evolutionary origin to identify their place in the biological diversity system. Understand the groups of organisms studied by mycology by describing their cellular characteristics and life cycles to interpret these attributes. Explain the groups of organisms studied by mycology by analyzing their ecological, medical and economic importance to develop solutions to problems in these areas.

**LBI2012 PROTISTS AND ALGAE**

Categorize groups of eukaryotic organisms known as algae and protists by describing their evolutionary origin to identify their overall place of biological classification. Describe groups of algae and protists by listing their cellular characteristics and life cycles to apply the basics of the life sciences to these organisms. Identify the relevance of algae and protists by analyzing their ecological, economic and medical importance to develop solutions to problems concerned.

**LBI2072 CELL BIOLOGY**

Identify the basic structures of the cell through the review of its components and their interrelationship to describe and understand their functions. Describe the relationship of the different organelles, their functions, their structure on a cellular and organism scale to relate it to the state of health or pathology of the organism integrating the information of the function of each one in the cellular context.

**QUI2062 BIOCHEMISTRY II**

Identify the fundamentals of biochemistry through the review of the general metabolism of living beings to interpret their interrelationships with regulation, growth and differentiation at the cellular level. Describe the relationships of metabolism and its deficiencies by identifying metabolic intermediates that are detectable for clinical interpretation.

**MAT2062 INFERENCE STATISTICS**

Apply various statistical techniques through different statistical inference methods to estimate parameters of interest that contribute to decision-making in different chemistry, biology and social sciences areas.

**LBC2022 MICROBIOLOGY LAB**

Develop microbiological techniques by practicing the methods used in the lab for the isolation, identification, culture and control of microorganisms.

**LBI2062 ZOOLOGY LAB I**

Understand different groups of invertebrates by examining morphological structures, life cycles and behavioral patterns to identify the importance of their adaptations in their ecology, diversification and evolution.

**LBC2012 MICROBIOLOGY**

Identify the fundamentals of the morphology and functioning of microorganisms, by reviewing their structure and metabolism to analyze the phenomena related to the world of microorganisms. Describe the interrelationships between microorganisms and their environment by reviewing their physiological activities to establish beneficial and harmful effects.

**LBI2052 ZOOLOGY I**

Analyze unifying concepts in zoology by classifying the groups of animal phylum according to evolutionary events that occurred during the history of the kingdom to relate the large groups of animals among them according to ecological, morphological and developmental traits.

**LBI3042 MOLECULAR BIOLOGY**

Identify the fundamentals of molecular biology through the review of the structure of macromolecules, their functional consequences and the mathematical description of their properties to interpret and analyze their participation in cellular metabolism, their control and the development of the cell and the organism.

**LBI3052 BOTANY I**

Evaluate Phylum Chlorophyta, Bryophyta and Pteridophyta, by examining their morphoanatomical and ecological characteristics to analyze the role of plants in evolutionary history of life on earth and their phylogenetic relationships within the Plantae Kingdom and with other organisms.

**LBI3062 BOTANY LAB I**

Identify in the field and in herbarium specimens the of the members of the groups: Chlorophyta, Marchantiophyta, Anthocerozoa Bryophyta, Sphenophyta, Lycophyta and Pteridophyta using dichotomous keys to apply formal biological identification methods. Analyze the phases of the life cycles of these groups applying the methods of collection and cultivation, to understand the evolutionary context of plant diversity.

**LBI3032 ZOOLOGY LAB II**

Understand different groups of chordates by examining morphological characteristics, forms of locomotion, feeding and reproduction to interpret the importance of their adaptations in their ecology, diversification and evolution.

**LBI3012 PROFESSIONAL PRACTICE 1**

Apply concepts and skills acquired during their studies by integrating multidisciplinary teams in the different areas of Biology to develop skills to identify problems in a real work environments.

**LBI3022 ZOOLOGY II**

Classify unifying concepts in Zoology related to the interpretation of vertebrate diversity through the management of vertebrate clades, according to evolutionary events that occurred during the history of the group to relate the large groups of vertebrates to each other and according to ecological, morphological, behavioral and developmental adaptations.

**LBI3072 BOTANY II**

Compare spermatophyta groups, through the identification of their morphoanatomical and ecological characteristics to understand and analyze the ecological and evolutionary success of seed plants and their phylogenetic relationships within this group.

**LBI3112 ANIMAL PHYSIOLOGY**

Identify the organ systems that make up an animal organism, by analyzing the relationships between the functioning of each system and the anatomical, environmental and evolutionary factors that determine it, to classify the various ways in which they are organized and how the organ systems of the different groups of animals work.

**LBI3092 GENETICS**

Identify the principles that govern heredity, as well as the causes of genetic variation of living beings by analyzing their components and variables to interpret genetic studies.

**LBI3142 CELLULAR AND MOLECULAR BIOLOGY LAB**

Correctly apply cellular and molecular techniques through the testing of these in the lab to analyze biological systems.

**LBI3082 BOTANY LAB II**

Describe the Gynophyta, Coniferophyta, Cycadophyta and Magnoliophyta groups, observing their macroscopic and microscopic characteristics, as well as their life cycles and adaptations to categorize these groups in the biodiversity scheme and value their evolutionary success. Examine the biological forms and reproductive structures of such groups by operating specimens and herbarium database to classify representative groups of regional and national flora, their ecological importance and representative families.

**LBI3122 ANIMAL PHYSIOLOGY LAB**

Analyze the functioning of different organic systems in invertebrates and vertebrates by observing, examining and measuring their physiological response to different variables in controlled experiments to identify the importance of physiological mechanisms in maintaining the vital functions of multicellular organisms.

**LBI3132 MEXICAN BIOTIC RESOURCES**

Determine the challenges and threats facing the conservation of Mexico's biotic resources by characterizing its biodiversity, physiography, ecosystems, patterns of use and current natural resource management policies, to develop proposals for sustainable management strategies.

**LBI3102 SELECT TOPICS 1**

Analyze cutting-edge molecular biology topics by studying their theoretical bases and integrating them with practice to develop solutions to specific problems.

**LBI4012 ECOLOGY AND ENVIRONMENTAL CHANGE**

Relate the structure and function of ecosystems through the analysis of the interactions between their different components (biotic and abiotic) to assess human effects and their consequences on ecosystems, particularly on climate change, as well as global remediation, mitigation and conservation measures.

### **LBI4052 PLANT PHYSIOLOGY**

Analyze the mechanisms that higher plants use to keep functioning through the description and examination of the processes and/or metabolic cycles involved in the water balance, the capture of light energy and its transformation into nutrients, the absorption of water and mineral salts and the intervention of hormones in the responses of plants, to examine how plants respond and adapt to their biotic and abiotic environment.

### **LBI4062 PLANT PHYSIOLOGY LAB**

Describe the process of plant growth and its determining factors by designing and developing experiments to identify the quantifying plant process.

### **LBI4042 ECOLOGY METHODS**

Interpret biotic and physical data in their ecological meaning through the application of data collection and analysis techniques in the field to develop proposals for solutions to current ecological problems.

### **LBI4022 PROFESSIONAL PRACTICE 2**

Develop activities in multidisciplinary work environments related to biology to identify real problems and recommend solutions through the application of theoretical concepts.

### **LBI4032 SELECT TOPICS 2**

To examine cutting-edge statistics topics, using the most up-to-date tools and methods to develop applications for statistical problems.

### **LBI4122 DEVELOPMENTAL BIOLOGY**

Analyze the processes by which animals grow and develop, using the concepts of genetic control, cell growth, cell differentiation and morphogenesis to identify the relationships between developmental mechanisms and evolutionary processes.

### **LBI4102 EVOLUTIONARY BIOLOGY**

Relate phenomena and processes to which living beings are subjected through the analysis of the theory of evolution by natural selection with evolutionary thinking, to interpret the concepts of adaptation, biological diversity and similarity between organisms and the mechanisms of change and adaptation of organisms.

### **LBI4072 COMMUNITY ECOLOGY**

Analyze from the beginning of Ecological Theory the structure and functioning of biological communities and ecosystems by examining their different levels of organization and structuring of a community and ecosystem: diversity, productivity, trophic structure, complex networks of interaction and biogeochemical cycles, to develop a comprehensive vision of nature from the interactions that occur between species with the abiotic environment.

### **LBI4132 DEVELOPMENTAL BIOLOGY LAB**

Relate animal embryonic development by microscopic and experimental examination of its different stages in preserved samples or in experimental model organisms to identify the application of cell differentiation and morphological changes in the development of a new individual.

### **LBI4112 EVOLUTIONARY BIOLOGY LAB**

Assess genetic variability within populations through quantitative analysis of human traits and other species and the use of simulations and molecular sequence databases to apply the way agents of evolutionary change act.

#### **LBI4082 CONSERVATION BIOLOGY METHODS**

Analyze what are the fundamental challenges in the intellectual, conceptual and practical fields that conservation biology must face through the development of proposals for solving specific problems to identify methods of conservation of species of organisms that influence all dimensions of human life.

#### **LBI4092 SELECT TOPICS 3**

Analyze cutting-edge ecology topics, by integrating concepts and theories to apply the most current and appropriate tools and methods in solving local and global ecological problems.

### **GENERAL ART ELECTIVE\***

- **ART0022 ART AND CULTURE OF THE AMERICAS**  
Identify sociocultural development in the Americas through their artistic expressions to establish an active dialogue with this past and its identity context.
- **ART0012 ART, HISTORY AND CULTURE**  
Identify how human beings define reality and express it for themselves and the world from the emergence of Western modernity, by explaining the reciprocal relationship between art, history and culture to critically argue artistic representation and expression topics.

### **GENERAL MATH ELECTIVE\***

- **MAT0012 MATH FOR THINKING**  
Apply various approaches to mathematical thinking by modeling and analyzing hypothetical and real-world phenomena, to design solutions to problems related to your studies and your physical environment.
- **MAT0022 MATH AND CULTURE**  
Develop a project that integrates math with any of the expressions of culture, by modeling phenomena or indicators to make decisions that benefit society.

### **GENERAL BEHAVIORAL SCIENCE ELECTIVE\***

- **COM0012 ETHICS, SOCIETY AND THE ENVIRONMENT**  
Discuss global problems and their local implications by integrating socio-economic, environmental and ethical aspects to create proposals for a tolerant society.
- **COM0022 BEHAVIOR AND HUMAN DEVELOPMENT**  
Identify human development's bio-psycho-social factors, by analyzing the variables that affect individual and social behavior and use this knowledge in their academic and professional life.

### **GENERAL NATURAL SCIENCE ELECTIVE\***

- **CNE0012 FOOD AND LIFE**  
Identify the relationship between food and health through research that provides data on eating habits to choose an informed diet for your daily life.
- **CNE0022 EVOLUTION AND BIODIVERSITY**  
Describe the origin of diseases through causal factors to assess human health information sources.

### **GENERAL HUMANITIES ELECTIVE\***

- **HUM0012 ECOSOPHY**  
Compare world representation systems, analyzing different epistemological proposals to reposition the current Being-Man relationship with their environment and other beings from a fundamentally ecological philosophical dimension.
- **HUM0022 HUMANISTIC THINKING**  
Study humanist thought from a socio-historical cultural perspective, based on the analysis of its different historical nuances to understand its relevance in contemporary culture.

*\*Courses that are part of the UDLAP General Education component*

## **CLINICAL BIOCHEMISTRY**

### **QUI1022 GENERAL CHEMISTRY LAB**

Develop analytical and practical skills through the observation and development of experiments measuring properties and transformations of matter and its velocity, to identify elementary techniques and thus become familiar with how to handle chemistry glass material, instruments and equipment.

### **LEX0112 FOREIGN LANGUAGE I \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### **MAT1012 UNIVERSITY MATH**

Learn algebraic language to interpret and use mathematical expressions, including their corresponding graphics, to formulate and solve problems.

### **QUI1012 GENERAL CHEMISTRY**

Identify the properties and transformations of matter and the change rates, by describing the atomic structure and reactivity of substances, to describe the reasons why chemistry is useful in your area and in daily life. Systematically describe inorganic substances by correctly applying the rules of nomenclature to identify chemical formulas.

### **INF0012 INFORMATION TECHNOLOGIES IN THE CONSTRUCTION OF KNOWLEDGE \***

Understand relevant information using Information and Communication Technologies (ICT) to document an economic, political, cultural and/or social problem.

**ESP0012 ACADEMIC REASONING\***

Express academic arguments orally and in writing within your discipline by developing and presenting persuasive speeches, using the rudiments of communication to interact effectively in a specific academic context.

**MAT1022 CALCULUS I**

Apply derivative and integral functions of a variable to solve engineering, finance, management and science problems by modeling the speed of change of its indicators.

**QUI1042 ORGANIC CHEMISTRY LAB I**

Understand the equipment used in organic chemistry and perform synthesis, separation, purification and identification of substances operations, using personal safety regulations, good lab practices and handling of hazardous waste to be able to measure properties of matter and make basic organic chemistry reactions.

**LEX0122 FOREIGN LANGUAGE II \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**QUI1032 ORGANIC CHEMISTRY I**

Describe the functional groups, properties and simple transformations of organic compounds using different organic structures and chemical equations to identify the relationship between the structures of organic compounds and their properties. Correctly identify organic compounds by applying IUPAC nomenclature rules to systematically understand different organic compounds.

**WHO2012 BIOCHEMISTRY I**

Identify biochemistry fundamentals through the review of chemistry, macromolecule structure and basic equations to interpret and analyze metabolism. Describe the relationships between macromolecules through their comparison at different scales, to relate their structure to the function they perform and their consequences at the cellular and organismal scales.

**ESP0022 ACADEMIC WRITING \***

Develop academic articles of your discipline through the administration of specialized information and the application of academic and scientific conventions, for the dissemination of academic and scientific knowledge.

**QUI2032 ORGANIC CHEMISTRY LAB II**

Understand the different chemical reactions observing good lab practices and handling of reagents to obtain organic compounds. Select the physical and instrumental analysis methods to identify an organic compound, by reviewing the physical and spectroscopic data obtained.

**QUI2052 CHEMICAL THERMODYNAMICS LAB**

Analyze data from heat transfer processes by correctly generating and interpreting the graphs to obtain information on thermodynamic parameters.

**LEX0132 FOREIGN LANGUAGE III \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**QUI2022 ORGANIC CHEMISTRY II**

Identify the main reactions in organic chemistry and their mechanisms using chemical equations, to analyze how organic compounds are transformed. Apply nuclear magnetic resonance spectroscopy by interpreting the spectra to understand the structure of a molecule.

**QUI2042 CHEMICAL THERMODYNAMICS**

Describe the various energy exchange processes in physical and chemical changes, through the appropriate use of the principles of thermodynamics, to interpret physicochemical phenomena and their implications in the associated processes.

**LBI2072 CELL BIOLOGY**

Identify the basic structures of the cell through the review of its components and their interrelationship to describe and understand their functions. Describe the relationship of the different organelles, their functions, their structure on a cellular and organism scale to relate it to the state of health or pathology of the organism integrating the information of the function of each one in the cellular context.

**QUI2062 BIOCHEMISTRY II**

Identify the fundamentals of biochemistry through the review of the general metabolism of living beings to interpret their interrelationships with regulation, growth and differentiation at the cellular level. Describe the relationships of metabolism and its deficiencies by identifying metabolic intermediates that are detectable for clinical interpretation.

**MAT2062 INFERENCE STATISTICS**

Apply various statistical techniques through different statistical inference methods to estimate parameters of interest that contribute to decision-making in different chemistry, biology and social sciences areas.

**LBC2032 GENERAL HISTOLOGY**

Identify the microscopic structures of cells and tissues, by describing their morphological characteristics to understand the role they play in the different organs and systems of the human body.

**LBC2022 MICROBIOLOGY LAB**

Develop microbiological techniques by practicing the methods used in the lab for the isolation, identification, culture and control of microorganisms.

**QUI2102 ANALYTICAL CHEMISTRY LAB**

Develop analytical and practical skills through the observation and development of experiments to identify and quantify the components of a substance through different methods of analysis, to skillfully manipulate the material and lab equipment used in analytical chemistry.

**LBC2012 MICROBIOLOGY**

Identify the fundamentals of the morphology and functioning of microorganisms, by reviewing their structure and metabolism to analyze the phenomena related to the world of microorganisms. Describe the interrelationships between microorganisms and their environment by reviewing their physiological activities to establish beneficial and harmful effects.

#### **QUI2092 ANALYTICAL CHEMISTRY**

Identify a substance's components using different analysis, separation, identification and determination of the ions and molecules methods.

#### **QUI3012 INSTRUMENTAL ANALYSIS**

Manage the different instrumental analysis techniques by applying characterization methods and techniques to analyze and identify materials.

#### **LBC3022 ANATOMY AND PHYSIOLOGY**

Identify the organism's tissues, organs, devices and systems with their physiological functions, through the review and analysis of their parts and characteristics, to correlate it with the state of health of the person or to diagnose or treat a pathology.

#### **LBI3042 MOLECULAR BIOLOGY**

Identify the fundamentals of molecular biology through the review of the structure of macromolecules, their functional consequences and the mathematical description of their properties to interpret and analyze their participation in cellular metabolism, their control and the development of the cell and the organism.

#### **QUI3022 INSTRUMENTAL ANALYSIS LAB**

Apply instrumental analysis methods common in by using different methods and techniques to characterize materials.

#### **LBC3032 ANATOMY AND PHYSIOLOGY LAB**

Apply the basic principles of human anatomy and physiology through different experiments that reflect functionality, to develop the practical skills to interpret physiological functions tests of the organism and its anatomy.

#### **LBC3012 PROFESSIONAL PRACTICE 1**

Identify integral solutions to problems by applying theoretical and acquired knowledge to compare the theoretical with professional practice.

#### **LBC3092 PATHOPHYSIOLOGY**

Identify the basic mechanisms of pathological processes, through the review of normal functions of the the body's organs and systems, to interpret the lab results and relate them to different diseases and their specific mechanisms that produce clinical manifestations.

#### **LBI3092 GENETICS**

Identify the principles that govern heredity, as well as the causes of genetic variation of living beings by analyzing their components and variables to interpret genetic studies.

#### **LBC3062 HEMATOLOGY**

Apply knowledge about morphology and physiology hematology and the basic diagnostic methodology, through the review and description of its components, functionality and characteristics, to interpret lab results during pathological blood alterations.

#### **LBC3072 IMMUNOLOGY**

Describe the structure and function of the molecules and cells that participate in the immune response in humans, through the review and analysis of their composition, functionality and characteristics, to relate the conceptual and operational management of the main types of response immune, stages, cells and tissues involved in immune conditions.

#### **LBC3082 IMMUNOLOGY AND HEMATOLOGY LAB**

Apply the basic terminology used in hematology and immunology and its application in the clinical lab, through the description and performance of immuno-hematological lab tests to interpret results and support clinical diagnosis.

#### **LBC3052 MOLECULAR METHODS LAB**

Apply the fundamentals of biochemistry, molecular and cellular biology for the development and execution of detection, quantification and diagnostic tests to solve of problems using equations and methodologies.

#### **LBC3042 APPLIED MOLECULAR METHODS**

Apply the fundamentals of biochemistry, molecular and cellular biology for the development and execution of detection, quantification and diagnostic tests to solve applied problems through the review of the equations and methodologies that are used.

#### **LBC3102 MEDICAL VIROLOGY**

Identify the most important viruses in human health through the review of the most recent information from each medical interest group to consider satisfactory results that support prevention and/or treatment strategies according to the etiological agent.

#### **LBC4042 MEDICAL PARASITOLOGY LAB**

Apply the knowledge acquired through lab experiments, to safely and responsibly identify the different parasites (protozoans, helminths and their vectors) that can affect and produce diseases in humans.

#### **LBC4062 CLINICAL CHEMISTRY LAB**

Interpret lab tests, through the integration and realization of clinical biochemistry techniques, to prepare the diagnosis, treatment and follow-up of the patient.

#### **LBC4032 MEDICAL PARASITOLOGY**

Analyze the different species of pathogenic parasites (protozoans, arthropods) that affect human health through their identification and more effective and less toxic treatments to propose a treatment and/or prevention.

#### **LBC4022 PROFESSIONAL PRACTICE 2**

Apply the knowledge acquired during their training process in a work team by carrying out specific activities in the different areas of clinical biochemistry to develop a more complex and global vision of the problems and situations of biochemical work.

**LBC4052 CLINICAL CHEMISTRY**

Interpret lab tests on alterations that affect biomolecule metabolism, electrolyte balance and cell survival, through the analysis and correlation of results under normal and pathological conditions, to produce reliable results that support the health team in making decisions in the diagnosis or treatment of the same.

**LBC4012 SELECT TOPICS 1**

Analyze cutting-edge biomedical topics by deepening the conceptual and analytical knowledge of the search for information and problem solving to create new contributions.

**LBC4072 TOXICOLOGY**

Classify the harmful substances to which living organisms are exposed in the environment by identifying their origin, degree of toxicity, toxicokinetics and toxicodynamics, to apply national and international regulations governing toxicology in the various areas of professional development. Explain the methodology involved in the identification, characterization and evaluation of the biological consequences of the action of toxic or potentially toxic compounds of very varied origins through the determination of the characteristics of the exposure and the terrestrial system involved, to prevent toxicological risks and poisonings.

**LBC4132 QUALITY ASSURANCE LAB**

Identify the requirements that clinical analysis laboratories must meet, through the review and description of regulations and the analysis of tests to interpret reliable results.

**LBC4102 MEDICAL BACTERIOLOGY**

Apply the most common and current methods for the isolation and identification of bacteria in human health by applying information from each microbial group in clinical lab practice to recommend a treatment according to the etiological agent.

**LBC4122 BACTERIOLOGY AND MYCOLOGY LAB**

Understand the most appropriate methodology to analyze biological samples to identify bacteria and fungi that can affect and produce diseases in humans. Apply theoretical concepts through lab experiments, to safely and responsibly identify bacterial and fungal agents that can affect and produce diseases in humans.

**LBC4112 MEDICAL MYCOLOGY**

Identify the different species of pathogenic fungi through the analysis of the most frequent mycosis and fungal genera of medical interest worldwide and in Mexico along with information on the most effective and least toxic antifungals to propose treatment and/or prevention.

**LBC4082 SELECT TOPICS 2**

Identify cutting-edge public health issues through the analysis of the most innovative conceptual and technological knowledge of science to develop new solutions to problems.

**LBC4092 SELECT TOPICS 3**

Explain current health administration and legislation topics by applying the conceptual and analytical knowledge of experimental sciences to propose preventive and corrective solutions to problems related to the health of communities.

### GENERAL NATURAL SCIENCE ELECTIVE\*

- **CNE0012 FOOD AND LIFE**  
Identify the relationship between food and health through research that provides data on eating habits to choose an informed diet for your daily life.
- **CNE0022 EVOLUTION AND BIODIVERSITY**  
Describe the origin of diseases through causal factors to assess human health information sources.

### GENERAL MATH ELECTIVE\*

- **MAT0012 MATH FOR THINKING**  
Apply various approaches to mathematical thinking by modeling and analyzing hypothetical and real-world phenomena, to design solutions to problems related to your studies and your physical environment.
- **MAT0022 MATH AND CULTURE**  
Develop a project that integrates math with any of the expressions of culture, by modeling phenomena or indicators to make decisions that benefit society.

### GENERAL ART ELECTIVE\*

- **ART0022 ART AND CULTURE OF THE AMERICAS**  
Identify sociocultural development in the Americas through their artistic expressions to establish an active dialogue with this past and its identity context.
- **ART0012 ART, HISTORY AND CULTURE**  
Identify how human beings define reality and express it for themselves and the world from the emergence of Western modernity, by explaining the reciprocal relationship between art, history and culture to critically argue artistic representation and expression topics.

### GENERAL BEHAVIORAL SCIENCE ELECTIVE\*

- **COM0012 ETHICS, SOCIETY AND THE ENVIRONMENT**  
Discuss global problems and their local implications by integrating socio-economic, environmental and ethical aspects to create proposals for a tolerant society.
- **COM0022 BEHAVIOR AND HUMAN DEVELOPMENT**  
Identify human development's bio-psycho-social factors, by analyzing the variables that affect individual and social behavior and use this knowledge in their academic and professional life.

### GENERAL HUMANITIES ELECTIVE\*

- **HUM0012 ECOSOPHY**

Compare world representation systems, analyzing different epistemological proposals to reposition the current Being-Man relationship with their environment and other beings from a fundamentally ecological philosophical dimension.

- **HUM0022 HUMANISTIC THINKING**

Study humanist thought from a socio-historical cultural perspective, based on the analysis of its different historical nuances to understand its relevance in contemporary culture.

*\*Courses that are part of the UDLAP General Education component*

## DATA SCIENCE

**LIS1012 ALGORITHMS AND PROGRAMMING**

Apply algorithmic thinking using control structures in the denotation of sequences, conditions, cycles, and appropriate data structures to develop solutions that can be implemented in a programming language.

**LEX0112 FOREIGN LANGUAGE I**

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**MAT1012 UNIVERSITY MATH**

Learn algebraic language to interpret and use mathematical expressions, including their corresponding graphics, to formulate and solve problems.

**INF0012 INFORMATION TECHNOLOGIES IN THE CONSTRUCTION OF KNOWLEDGE\***

Understand relevant information using Information and Communication Technologies (ICT) to document an economic, political, cultural and/or social problem.

**MAT1062 ABSTRACT ALGEBRA**

Establish solid math foundations, through demonstrations and use of mathematical properties, to model applied sciences phenomena.

**ESP0012 ACADEMIC REASONING\***

Express academic arguments orally and in writing within your discipline by developing and presenting persuasive speeches, using the rudiments of communication to interact effectively in a specific academic context.

**MAT1022 CALCULUS I**

Apply derivative and integral functions of a variable to solve engineering, finance, management and science problems by modeling the speed of change of its indicators.

**MAT1042 ANALYTICAL GEOMETRY**

Apply conics and basic mathematical concepts, using their algebraic properties with a vector approach, to model relevant indicators in your area of expertise.

**LEX0122 FOREIGN LANGUAGE II \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**LIS1022 OBJECT-ORIENTED PROGRAMMING**

Describe the object-oriented paradigm using UNIFIED MODELING LANGUAGE (UML) notation and the Java programming language to implement an application's requirements.

**LDS1011 DISCRETE ANALYSIS**

Establish the principles and characteristics of discrete mathematics techniques by using logic and discrete mathematical reasoning to solve problems.

**MAT2012 CALCULUS II**

Apply directional derivatives and multiple integrals of variable functions through the modeling of the rate of change of their indicators to solve engineering, finance and science problems.

**ESP0022 ACADEMIC WRITING \***

Develop academic articles of your discipline through the administration of specialized information and the application of academic and scientific conventions, for the dissemination of academic and scientific knowledge.

**LIS2032 DATA STRUCTURES**

Identify the characteristics, advantages and disadvantages of existing algorithms in the management of the main data structures through their implementation and analysis to develop solutions that contribute to the construction of complex computer systems.

**EX0132 FOREIGN LANGUAGE III \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**LAT2012 STOCHASTIC MODELS I**

Apply probability techniques through different univariate models to calculate probabilities and expected values in real problems that contribute to decision-making.

**LAT2022 MATRIX THEORY**

Apply vector spaces, matrix theory and linear transformations to solve various world phenomena problems and to model and use matrix theory in your discipline through the use of technological resources.

**MAT2042 MATHEMATICAL ANALYSIS I**

Apply the derivative and integral functions of a variable to solve engineering, finance, and science problems using the multiplier method, to develop solutions to optimization problems.

**LIS2082 DATABASES**

Develop database applications, representing your information without inconsistencies or anomalies with the relational data model to organize storage and later access in a fast and structured way.

#### **MAT2052 ORDINARY DIFFERENTIAL EQUATIONS**

Apply different solutions techniques to differential equations using the existing classic ordinary differential equations methodologies to apply them in practical problems.

#### **LIS2012 DISCRETE MATHEMATICS**

Identify the appropriate design technique in problem solving through the asymptotic analysis of an algorithm to develop efficient solutions.

#### **LAT2062 STOCHASTIC MODELS II**

Apply probability techniques by developing different multivariate models to calculate probabilities and expected values in real problems that contribute to decision-making.

#### **MAT3012 MATHEMATICAL ANALYSIS II**

Apply line and multiple integrals of variable functions through the infinite sums modeling their indicators to develop solutions to physics, finance and science problems.

#### **LFA3082 NUMERICAL ANALYSIS**

Develop programming language codes using the principles of algebra and calculus to analyze nonlinear, algebraic and differential equations systems.

#### **LAT3012 INFERENCE METHODS I**

Apply various methodologies to estimate interest parameters that contribute to decision-making, developing descriptive statistics, point estimation and interval estimation methods.

#### **LDS1021 DATA MINING**

Apply the principles of data mining by developing specific analysis models to establish the appropriate information extraction method to ensure efficient decision-making.

#### **LAT3022 STOCHASTIC MODELS III**

Apply probability techniques and stochastic processes by developing different models of probability and stochastic processes to calculate probabilities and expected values in real problems, thus contributing to decision making.

#### **LDS1031 PROFESSIONAL PRACTICE 1**

Apply the knowledge acquired during the licenciatura in data science in professional environments by applying theories and methodologies in the analysis, diagnosis, planning, evaluation and decision-making processes to provide solutions of problems of the profession.

#### **LDS1041 TOPOLOGICAL DATA ANALYSIS**

Apply data topology concepts by using homology features for data analysis and problem solving in the field of data science.

#### **LEC3092 ECONOMETRICS I**

Learn statistical tools using specialized computer packages and databases to quantitatively analyze economic phenomena.

#### **LIS3082 ARTIFICIAL INTELLIGENCE**

Design applications using artificial intelligence search techniques, deductive databases and genetic algorithms to build intelligent software based on automatic reasoning and oriented to optimization.

#### **LAT3062 INFERENCE METHODS II**

Apply various statistical methodologies, developing different tests of parametric and nonparametric hypotheses to understand the parameters of interest of a population that contribute to decision-making in different actuarial science areas.

#### **LDS1051 PATTERN RECOGNITION**

Examine the main pattern recognition techniques by analyzing the development of methods and classifiers for optimal selection in image analysis, audio and speech recognition, data mining, data retrieval and bio-computing.

#### **LI2042 OPTIMIZATION TECHNIQUES AND THEORY**

Analyze practical problems by applying mathematical programming models and methods, to develop optimal solutions to support decision-making.

#### **LDS1071 MACHINE LEARNING**

Identify the concepts of supervised and unsupervised machine learning by implementing and analyzing algorithms to develop solutions to specific recent problems.

#### **LEC4032 ECONOMETRICS II**

Analyze statistical tools through the database in the form of time series to distinguish economic and financial phenomena.

#### **LDS1091 PROFESSIONAL PRACTICE 2**

Evaluate problems and situations in the profession by applying the knowledge acquired during the studies in data science to design proposals for solutions to real problems.

#### **LDS1101 CONCURRENT SCHEDULING**

Understand the main programming characteristics by comparing parallel and concurrent processing algorithms for data analysis in complex cases.

#### **LDS1081 NEURAL NETWORKS**

Apply neural network techniques and theory through the interface between modern technology and the human brain to solve varied problems in data science, statistics and computing.

#### **LDS1061 SELECT TOPICS 1**

Analyze cutting-edge topics in data analysis using multivariate methods by applying specialized techniques and methodologies to apply statistical concepts that involve many variables.

#### **LIS4102 CLOUD COMPUTING AND BIG DATA**

Identify the design and implementation concepts of "big data" systems by analyzing existing successful systems to develop solutions to specific recent problems.

### **LAT4052 ADVANCED OPTIMIZATION**

Analyze practical application problems through the application of mixed integer programming models and methods, to develop solutions that support decision-making processes where it is necessary to select an optimal alternative with respect to a specific objective.

### **LDS1111 SELECT TOPICS 2**

Examine cutting-edge topics in the area of statistical learning by analyzing theories and using specialized models, to identify the applications of data science in new technology models.

### **LDS1121 SELECT TOPICS 3**

Examine current issues in computer security in data science by using models and application analysis to effectively select data protection strategies.

### **LDS1131 DATA VISUALIZATION**

Apply the techniques of visualization and presentation of information through the analysis of case studies to develop mechanisms for the presentation and effective communication of information.

## **GENERAL ART ELECTIVE\***

- **ART0022 ART AND CULTURE OF THE AMERICAS**  
Identify sociocultural development in the Americas through their artistic expressions to establish an active dialogue with this past and its identity context.
- **ART0012 ART, HISTORY AND CULTURE**  
Identify how human beings define reality and express it for themselves and the world from the emergence of Western modernity, by explaining the reciprocal relationship between art, history and culture to critically argue artistic representation and expression topics.

## **GENERAL MATH ELECTIVE\***

- **MAT0012 MATH FOR THINKING**  
Apply various approaches to mathematical thinking by modeling and analyzing hypothetical and real-world phenomena, to design solutions to problems related to your studies and your physical environment.
- **MAT0022 MATH AND CULTURE**  
Develop a project that integrates math with any of the expressions of culture, by modeling phenomena or indicators to make decisions that benefit society.

## **GENERAL BEHAVIORAL SCIENCE ELECTIVE\***

- **COM0012 ETHICS, SOCIETY AND THE ENVIRONMENT**  
Discuss global problems and their local implications by integrating socio-economic, environmental and ethical aspects to create proposals for a tolerant society.
- **COM0022 BEHAVIOR AND HUMAN DEVELOPMENT**

Identify human development's bio-psycho-social factors, by analyzing the variables that affect individual and social behavior and use this knowledge in their academic and professional life.

### **GENERAL NATURAL SCIENCE ELECTIVE\***

- **CNE0012 FOOD AND LIFE**  
Identify the relationship between food and health through research that provides data on eating habits to choose an informed diet for your daily life.
- **CNE0022 EVOLUTION AND BIODIVERSITY**  
Describe the origin of diseases through causal factors to assess human health information sources.

### **GENERAL HUMANITIES ELECTIVE\***

- **HUM0012 ECOSOPHY**  
Compare world representation systems, analyzing different epistemological proposals to reposition the current Being-Man relationship with their environment and other beings from a fundamentally ecological philosophical dimension.
- **HUM0022 HUMANISTIC THINKING**  
Study humanist thought from a socio-historical cultural perspective, based on the analysis of its different historical nuances to understand its relevance in contemporary culture.

*\*Courses that are part of the UDLAP General Education component*

## **NUTRITION SCIENCES**

### **LMR1032 ANATOMIC PHYSIOLOGY**

Evaluate the fundamentals of the morphology and normal functioning of the organism, by analyzing the structure and normal function of the different systems to obtain a broad view on the physical configuration of the human being.

### **QUI1022 GENERAL CHEMISTRY LAB**

Develop analytical and practical skills through the observation and development of experiments measuring properties and transformations of matter and its velocity, to identify elementary techniques and thus become familiar with how to handle chemistry glass material, instruments and equipment.

### **LEX0112 FOREIGN LANGUAGE I \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### **MAT1012 UNIVERSITY MATH**

Learn algebraic language to interpret and use mathematical expressions, including their corresponding graphics, to formulate and solve problems.

#### **QUI1012 GENERAL CHEMISTRY**

Identify the properties and transformations of matter and the change rates, by describing the atomic structure and reactivity of substances, to describe the reasons why chemistry is useful in your area and in daily life. Systematically describe inorganic substances by correctly applying the rules of nomenclature to identify chemical formulas.

#### **INF0012 INFORMATION TECHNOLOGIES IN THE CONSTRUCTION OF KNOWLEDGE**

Understand relevant information using Information and Communication Technologies (ICT) to document an economic, political, cultural and/or social problem.

#### **ESP0012 ACADEMIC REASONING\***

Express academic arguments orally and in writing within your discipline by developing and presenting persuasive speeches, using the rudiments of communication to interact effectively in a specific academic context.

#### **LCN1012 DIETETICS**

Design normal and therapeutic diets through the analysis of the characteristics of the correct diet and the nutritional contribution of the foods, to recommend the choice of foods and selection of menus in individuals under the guidelines of the current Mexican official regulations.

#### **LMR1052 PHYSIOLOGY**

Understand the basic knowledge of medical physiology and the fundamentals of the normal functioning of the organism; through the analysis of the alterations that occur in the disease, by using scientific reasoning with a critical attitude to correlate the knowledge of physiology with an adequate diagnosis and treatment.

#### **QUI1042 ORGANIC CHEMISTRY LAB I**

Understand the equipment used in organic chemistry and perform synthesis, separation, purification and identification of substances operations, using personal safety regulations, good lab practices and handling of hazardous waste to be able to measure properties of matter and make basic organic chemistry reactions.

#### **LEX0122 FOREIGN LANGUAGE II \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

#### **UI1032 ORGANIC CHEMISTRY I**

Describe the functional groups, properties and simple transformations of organic compounds using different organic structures and chemical equations to identify the relationship between the structures of organic compounds and their properties. Correctly identify organic compounds by applying IUPAC nomenclature rules to systematically understand different organic compounds.

**WHO2012 BIOCHEMISTRY I**

Identify biochemistry fundamentals through the review of chemistry, macromolecule structure and basic equations to interpret and analyze metabolism. Describe the relationships between macromolecules through their comparison at different scales, to relate their structure to the function they perform and their consequences at the cellular and organismal scales.

**LCN2022 NUTRITION PLAN DEVELOPMENT**

Understand the basic measurements methods, equipment used and hygiene techniques in the handling and preparation of food, by applying standard health regulations and procedures to develop normal and modified nutrition plans, preserving their nutritional properties.

**ESP0022 ACADEMIC WRITING \***

Develop academic articles of your discipline through the administration of specialized information and the application of academic and scientific conventions, for the dissemination of academic and scientific knowledge.

**LCN2012 NUTRITION STATUS ASSESSMENT**

Identify the nutritional status from the collection, analysis and interpretation of anthropometric, biochemical, clinical and dietary indicators, to make a nutritional diagnosis of individuals or groups taking as references the current Mexican official standards and the nutritional care process established by the Academy of Nutrition and Dietetics.

**LEX0132 FOREIGN LANGUAGE III \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**QUI2062 BIOCHEMISTRY II**

Identify the fundamentals of biochemistry through the review of the general metabolism of living beings to interpret their interrelationships with regulation, growth and differentiation at the cellular level. Describe the relationships of metabolism and its deficiencies by identifying metabolic intermediates that are detectable for clinical interpretation.

**MAT2062 INFERENCE STATISTICS**

Apply various statistical techniques through different statistical inference methods to estimate parameters of interest that contribute to decision-making in different chemistry, biology and social sciences areas.

**LFB2012 PHARMACOLOGY**

Describe the pharmacological basis of current therapeutics by using pharmacology-specific terminology to identify the effects of drugs. Discuss the current pharmacology challenges in the discovery of new drugs through the knowledge of their behavior in the body and the circumstances that modify the response to their treatment to propose new methods to optimize pharmacotherapies.

**LMR2062 CLINICAL IMMUNOLOGY**

Identify the mechanisms used by the human body to respond as specific and nonspecific protection against infectious agents or external factors, by analyzing immunological aspects and their cellular relationship.

**LBC2012 MICROBIOLOGY**

Identify the fundamentals of the morphology and functioning of microorganisms, by reviewing their structure and metabolism to analyze the phenomena related to the world of microorganisms. Describe the interrelationships between microorganisms and their environment by reviewing their physiological activities to establish beneficial and harmful effects.

**LCN2032 NUTRITION DURING THE LIFE CYCLE**

Identify the stages of the human life cycle and its main physiological and psychosocial characteristics, and recommended daily intakes, through the design of a nutrition plan, according to the characteristics of the correct diet and the guidelines set by the official Mexican regulations in force, to establish healthy eating habits that favor the development, growth and maintenance of the healthy individual.

**LMR3012 BIOETHICS IN HEALTH SCIENCES**

Debate professional development based on codes and ethical principles, through the justification of legal regulations, laws, individual guarantees, human rights and cultural diversities, to assess the limitations and opportunities that favor a sustainable multidisciplinary comprehensive approach.

**LBI3042 MOLECULAR BIOLOGY**

Identify the fundamentals of molecular biology through the review of the structure of macromolecules, their functional consequences and the mathematical description of their properties to interpret and analyze their participation in cellular metabolism, their control and the development of the cell and the organism.

**LCN3022 BIOCHEMISTRY AND NUTRITIONAL PHYSIOLOGY**

Identify digestion, absorption, transport, storage and degradation of nutrients, as well as their points of regulation, to understand the maintenance of homeostasis integrating the metabolic and physiological functions of nutrients at the cell, tissue and organism level.

**LNA3032 FOOD MICROBIOLOGY LAB**

Interpret the results obtained from microbiological analyses and apply food safety standards by working in the lab under sterile conditions to develop handling, culture and conservation of microorganisms skills and avoid the potential for corruption or pathogenicity.

**LNA3022 FOOD MICROBIOLOGY**

Examine the importance of microorganisms in relation to food spoilage and disease prevention by identifying their effects on various intrinsic and food extrinsic factors to establish a good sanitary quality of a product.

**LCN3012 PROFESSIONAL PRACTICE 1**

Apply dietetics, assessment of the state of nutrition, nutrition in the life cycle and development of eating plans in hospitals, industries, government or food sector determining the nutritional status of healthy individuals in the different stages of life and designing the corresponding diets to identify the main food problems in real cases.

**LPA3022 INTERVIEW THEORY AND TECHNIQUE**

Apply the different psychological interview phases by analyzing ethical aspects and communication skills to develop a simulated psychological interview of clinical cases.

**LBC3092 PATHOPHYSIOLOGY**

Identify the basic mechanisms of pathological processes, through the review of normal functions of the the body's organs and systems, to interpret the lab results and relate them to different diseases and their specific mechanisms that produce clinical manifestations.

**LBI3092 GENETICS**

Identify the principles that govern heredity, as well as the causes of genetic variation of living beings by analyzing their components and variables to interpret genetic studies.

**LBC3052 MOLECULAR METHODS LAB**

Apply the fundamentals of biochemistry, molecular and cellular biology for the development and execution of detection, quantification and diagnostic tests to solve of problems using equations and methodologies.

**LNA3082 FOOD CHEMISTRY LAB**

Explain the changes that can occur in food, to prevent deterioration, prevent chemical change or improve a food product through the relationship of its components: water, carbohydrates, lipids, protein, enzymes and pigments.

**LCN3032 NUTRITION AND PHYSICAL ACTIVITY**

Identify the physiological changes that occur in the human body under exercise conditions and the metabolic destinations of different nutrients during exercise, by analyzing the additional nutritional requirements to design nutritional interventions.

**LNA3072 FOOD CHEMISTRY**

Understand the chemical structures of the main food components, by analyzing the key chemical and biochemical changes in food and the changes that affect its composition, structure, quality and safety to establish the influence on the physical, chemical, nutritional and organoleptic properties of the food and create new solutions, products, systems, components and/or processes.

**LMR3022 PUBLIC HEALTH AND EPIDEMIOLOGY IN HEALTH SCIENCES**

Identify the importance of epidemiology by applying the epidemiological variables of time, place and person to study the population health situation. Evaluate the health indicators of communities and populations by identifying health problems to design programs that comply with a public health policy.

#### **LNA4022 FOOD ANALYSIS**

Analyze the main methods used by interpreting their fundamentals to propose modifications without affecting the accuracy of the results.

#### **LNA4032 FOOD ANALYSIS LAB**

Identify the macro and micro components in food by analyzing the results obtained in experiments to apply the concepts and theories of physical chemistry and food analysis.

#### **LCN4022 CLINICAL NUTRITION I**

Establish therapeutic strategies for nutritional intervention in pathological states derived from metabolic syndrome, hepatic, pancreatic, renal and gastrointestinal tract alterations, through the analysis of pathophysiology, nutritional diagnosis, concomitant diseases and stage of the patient's life cycle and applying the current Mexican Official Standards and National and International Clinical Practice Guidelines as the case may be, to develop treatment proposals, prevention of complications and/or recovery.

#### **LCN4012 PROFESSIONAL PRACTICE 2**

Develop activities within hospitals, industries, government sector, research center, or food sector to design appropriate nutritional interventions through the determination of the nutritional status of individuals with specific pathologies.

#### **LCN4032 SELECT TOPICS 1**

Examine cutting-edge food composition and health topics by analyzing chemical changes and sources of contamination in food handling and processing to identify their potential effects on human health and develop safe nutrition plans.

#### **LCN4042 SELECT TOPICS 2**

Analyze cutting-edge nutrition education topics through the study of scientific knowledge focused on the person and/or groups, to identify mechanisms that contribute to the prevention of diseases, adherence to nutritional treatment and the acquisition of healthy eating habits.

#### **LMR4022 HEALTH SCIENCES RESEARCH METHODOLOGY**

Develop a theoretical and/or experimental work, under the direction and advice of a professional of any of the areas or topics of the specialty, by evaluating the methodology to design a research protocol.

#### **LCN4072 CLINICAL NUTRITION II**

Establish nutritional intervention therapeutic strategies in individuals with malnutrition derived from severe pathological states by examining the pathophysiology, nutritional diagnosis, concomitant diseases and stages of the patient's life cycle, to develop treatment proposals, prevention of complications and/or recovery of the patient.

### **LCN4092 COMMUNITY NUTRITION**

Design intervention programs to develop proposals for food-related health problems by assessing nutritional status and its sociocultural context in groups and communities.

### **LPA4072 FOOD PSYCHOLOGY**

Evaluate disruptive eating behaviors of individuals through the analysis of cognitions and social aspects, to identify eating disorders and recommend a healthy lifestyle.

### **LCN4052 NUTRITIONAL SUPPORT**

Evaluate the nutritional status of individuals in critical states due to pathological conditions, metabolic stress and/or prolonged fasting to establish enteral or parenteral nutritional support strategies, through the application of national and international clinical practice guidelines.

### **LCN4082 SELECT TOPICS 3**

Analyze cutting-edge Nutrigenomics topics through the analysis of scientific theories and methodologies to establish solutions while applying critical thinking.

### **GENERAL ART ELECTIVE\***

- **ART0022 ART AND CULTURE OF THE AMERICAS**  
Identify sociocultural development in the Americas through their artistic expressions to establish an active dialogue with this past and its identity context.
- **ART0012 ART, HISTORY AND CULTURE**  
Identify how human beings define reality and express it for themselves and the world from the emergence of Western modernity, by explaining the reciprocal relationship between art, history and culture to critically argue artistic representation and expression topics.

### **GENERAL MATH ELECTIVE\***

- **MAT0012 MATH FOR THINKING**  
Apply various approaches to mathematical thinking by modeling and analyzing hypothetical and real-world phenomena, to design solutions to problems related to your studies and your physical environment.
- **MAT0022 MATH AND CULTURE**  
Develop a project that integrates math with any of the expressions of culture, by modeling phenomena or indicators to make decisions that benefit society.

### **GENERAL BEHAVIORAL SCIENCE ELECTIVE\***

- **COM0012 ETHICS, SOCIETY AND THE ENVIRONMENT**  
Discuss global problems and their local implications by integrating socio-economic, environmental and ethical aspects to create proposals for a tolerant society.
- **COM0022 BEHAVIOR AND HUMAN DEVELOPMENT**  
Identify human development's bio-psycho-social factors, by analyzing the variables that affect individual and social behavior and use this knowledge in their academic and professional life.

**GENERAL NATURAL SCIENCE ELECTIVE\***

- **CNE0012 FOOD AND LIFE**  
Identify the relationship between food and health through research that provides data on eating habits to choose an informed diet for your daily life.
- **CNE0022 EVOLUTION AND BIODIVERSITY**  
Describe the origin of diseases through causal factors to assess human health information sources.

**GENERAL HUMANITIES ELECTIVE\***

- **HUM0012 ECOSOPHY**  
Compare world representation systems, analyzing different epistemological proposals to reposition the current Being-Man relationship with their environment and other beings from a fundamentally ecological philosophical dimension.
- **HUM0022 HUMANISTIC THINKING**  
Study humanist thought from a socio-historical cultural perspective, based on the analysis of its different historical nuances to understand its relevance in contemporary culture.

*\*Courses that are part of the UDLAP General Education component*

## DENTAL SURGEON

**LMR1032 ANATOMIC PHYSIOLOGY**

Evaluate the fundamentals of the morphology and normal functioning of the organism, by analyzing the structure and normal function of the different systems to obtain a broad view on the physical configuration of the human being.

**LMR1022 CLINICAL BIOCHEMISTRY**

Identify the structure of biomolecules by observing their development in the lab to establish their relationship with the human body. Review the processes involved in the molecular mechanisms and chemical transformations responsible for the biological processes involved in the functions of the organism, by simulating them to arrive at better diagnoses in professional practice.

**LMR1042 EMBRYOLOGY AND GENETICS**

Outline the origin, growth and development of human beings and the cause of the processes that intervene in normal ontogeny, to carry out a preventive work and promotion of adequate health habits, understanding the morphological changes that occur in different developmental stages.

**ESP0011 SPANISH I (\*)**

At the end of the course, the student can manage information to write texts within the discipline, adapting the necessary writing to achieve persuasive intention in the context of the academic interactions of the area.

**LMR1012 HISTOLOGY**

Describe the microscopic structures of the cells, tissues and organs of different devices and systems of the human body, identifying and classifying cells to relate them to diseases' pathophysiology.

**LEX0111 FOREIGN LANGUAGE I \***

At the end of the course, the student can transmit and understand known and/or new information orally and in writing.

**LCD1011 DENTAL ANATOMY**

Use concepts and different types of teething to develop wax models, which resemble a real intervention in patients, through the identification of the stomatognathic apparatus and its elements.

**LMR1062 CELLULAR AND MOLECULAR BIOLOGY**

Understand the structure, organization, compartmentalization, molecular and cellular complexity necessary to describe the vital phenomena both in single-celled organisms and in the integration of organisms, using scientific reasoning and a critical attitude that correlates the knowledge of cellular and molecular biology with a diagnosis and adequate treatments to understand the cellular regulation and gene expression processes.

**ESP0021 SPANISH II (\*)**

At the end of the course, the student is able to select and manage information to guide their exposition and reasoning skills to write texts of their discipline, managing them as expressions for the construction and dissemination of academic and scientific knowledge.

**LMR1052 PHYSIOLOGY**

Understand the basic knowledge of medical physiology and the fundamentals of the normal functioning of the organism; through the analysis of the alterations that occur in the disease, by using scientific reasoning with a critical attitude to correlate the knowledge of physiology with an adequate diagnosis and treatment.

**LEX0121 FOREIGN LANGUAGE II \***

At the end of the course, the student can transmit and understand known and/or new information orally and in writing.

**MAT0011 QUANTITATIVE REASONING (\*)**

At the end of the course, the student can pose and solve problems, translate statements into symbolic relationships, efficiently manage symbols, use graphs and symbols to communicate quantitative data and interpret graphs.

**INF0011 INFORMATION TECHNOLOGIES IN THE CONSTRUCTION OF KNOWLEDGE \***

At the end of the course, the student is able to use Information and Communication Technologies in the processes of research, decision-making, generation of ideas and proposals; combining its processing capabilities to access, validate, share and use information effectively and ethically.

**LCD2041 DENTAL ANESTHESIOLOGY**

Select dental anesthesiology techniques, by analyzing the characteristics and types of anesthetics to perform optimal analgesics to be able to work with patients.

**LMR2022 GENERAL PHARMACOLOGY**

Interpret the knowledge acquired about general pharmacology, action mechanisms, indications and contraindications of the different drugs to develop skills to rationally prescribe medicines.

**LCD2021 DENTAL MATERIALS LAB**

Explain the structures and physicochemical properties of different dental materials, through the analysis of the components and praxis that will help to perfect various techniques, to properly manipulate the materials during dental practice.

**LEX0131 FOREIGN LANGUAGE III \***

At the end of the course, the student can transmit and understand known and/or new information orally and in writing.

**LMR2012 MICROBIOLOGY AND PARASITOLOGY**

Identify the biological bases of microorganisms that cause the infectious diseases that prevail in our environment, considering mainly structural, biochemical and genetic properties involved in the process of infectious diseases. Use suitable samples to isolate and identify microorganisms based on different types of microscopic, biochemical or immunological tests.

**LCD2011 PREVENTIVE AND COMMUNITY DENTISTRY**

Identify the different prevention mechanisms by analyzing different dental care techniques to develop preventive oral education programs.

**LCD2061 ORAL PATHOLOGY**

Understand the alterations and diseases located in the oral cavity, maxillary, mandibular and dental organs, by studying the causes and development of signs and symptoms, as well as multidisciplinary participation, to determine the diagnosis and timely detection of serious diseases.

**LMR2032 PROPAEDEUTICS IN HEALTH SCIENCES**

Analyze the propaedeutic methodology based on the syndromes of the different pathologies, applying the theoretical foundations of the propaedeutic method, to move towards an etiological, syndromic, anatomopathological and integral diagnosis. Develop skills and abilities necessary to explore the nervous system, through the analysis of the principles of effective communication, transmission, interpretation, expression and comprehension of oral and written language to make complete medical records (inspection, palpation, percussion and auscultation).

#### **AHC0011 ART, HISTORY AND CULTURE (\*)**

At the end of the course, the student is able to identify and analyze communication and action strategies, as well as the influence of political, social and economic change on the transformation of models, conceptualization of cultural artifact and its conservation.

#### **LCD2051 DENTAL OPERATION CLINIC**

Apply procedures in the dental operation, through the description of elements, dental structures and injuries, which allow an analysis of the process to be followed and return function and aesthetics to the dental organ.

#### **MAT2001 STATISTICS**

Manage the basic concepts of math notation used in the descriptive data analysis, through the identification of the statistical relationship with the scientific method to apply the descriptive statistical methods in the analysis of social issues.

#### **LCD2071 DENTAL IMAGING**

Use the different techniques of intraoral and extraoral x-rays, by analyzing the methodology and processing of dental imaging to develop interpretations of the radiographic study.

#### **LMR2062 CLINICAL IMMUNOLOGY**

Describe the pharmacological basis of current therapeutics by using pharmacology-specific terminology to identify the effects of drugs. Discuss the current pharmacology challenges in the discovery of new drugs through the knowledge of their behavior in the body and the circumstances that modify the response to their treatment to propose new methods to optimize pharmacotherapies.

#### **LMR2042 NUTRITION AND METABOLISM**

Determine the importance of food as a supplier of nutrients, study the way in which they are assimilated by the human body, understanding both the physiological and metabolic function, as well as the different states of health and disease, to integrate actions of prevention, diagnosis and treatment of nutritional disorders.

#### **LCD2031 OCCLUSION**

Analyze the types of pathologies of the temporomandibular joint, by thoroughly detecting the different stages of eruption of the teeth and acquiring masticatory skills, to apply the ideal comprehensive treatment.

#### **LMR3012 BIOETHICS IN HEALTH SCIENCES**

Debate professional development based on codes and ethical principles, through the justification of legal regulations, laws, individual guarantees, human rights and cultural diversities, to assess the limitations and opportunities that favor a sustainable multidisciplinary comprehensive approach.

#### **LCD3051 DENTAL OPERATION CLINIC II**

Carry out relevant reconstructions in the dental organ, through the description of the procedures and techniques for the management of tissues, respecting aesthetics and function.

#### **LCD3061 ENDODONTICS**

Identify the physiology, anatomy and pathologies of the pulp chamber of the dental organ and periradicular tissues, through diagnosis to propose treatments that help the preservation of natural dental organs.

#### **EDS0011 ETHICS FOR SUSTAINABLE DEVELOPMENT (\*)**

At the end of the course, the student can identify and analyze the general guidelines to study sustainable development, both theoretically and practically; the relevance of ethical behavior in the design and implementation of sustainable development; Mexico's shortcomings and progress in terms of sustainable development; policies conducive to carrying out significant socially responsible changes in terms of sustainable development.

#### **LCD3041 DENTAL EXTRACTION**

Describe dental extraction procedures, through the analysis of surgical principles and clinical behavior to apply the necessary actions and treatment to follow.

#### **LCD3031 PERIODONTICS**

Identify periodontal conditions in a structured way, through the analysis of the medical history and pathologies of the oral cavity to develop diagnoses and prevention treatments that address these diseases.

#### **LCD3021 PROSTHESIS**

Explain the procedures to be performed on the fixed prosthesis, by assessing the prosthetic steps to perform the reconstruction of the dental organ.

#### **LCD3121 ENDODONTICS CLINIC**

Identify the physiology, anatomy and pathologies of the pulp chamber, dental organ and periradicular tissues, through endodontic treatment to obtain results in the preservation of natural dental organs.

#### **LCD3101 EXODONTIC CLINIC**

Perform extractions and oral surgical procedures, through the application of exodontic techniques and appropriate instruments to determine the avulsion or extraction of the tooth or root rest.

**LCD3081 PERIODONTICS CLINIC**

Apply advanced procedures and techniques in reconstructive treatment, through the analysis of periodontal disease to adapt regenerative and aesthetic treatment plans. Detect factors that influence the development of periodontal disease, by identifying bad habits, bad dental procedures and diseases to propose a complete oral health.

**LCD3111 PROTHESIS CLINIC**

Understand the procedures and foundations of the fixed and removable prosthesis, through the analysis of the physiological, mechanical and aesthetic principles of the oral cavity to develop skills in an orderly and sequential way.

**LCD3091 PROSTHODONTICS**

Develop prosthodontic techniques and procedures, through the elaboration of complete dentures and the proper use of the various materials and equipment for the study and practice of prosthodontics achieving a rehabilitation in the function and aesthetics of the oral cavity.

**LMR3022 PUBLIC HEALTH AND EPIDEMIOLOGY IN HEALTH SCIENCES**

Identify the importance of epidemiology by applying the epidemiological variables of time, place and person to study the population health situation. Evaluate the health indicators of communities and populations by identifying health problems to design programs that comply with a public health policy.

**LCD3071 SELECT TOPICS I**

Assess morphological changes, in terms of shape, color, surface, intra-bone and perioral lesions of the oral cavity, maxillofacial region, head and neck, by analyzing histopathological, microbiological or cabinet studies to determine common oral pathologies.

**LCD4041 MAXILLOFACIAL SURGERY**

Use the techniques and procedures in maxillofacial surgery, by identifying the different pathologies and lesions in the oral cavity to generate a reconstructive, regenerative and aesthetic treatment in maxillofacial surgery. Describe the procedures that allow to proceed safely in the field of surgery, through the analysis of surgical principles, to determine the necessary actions to be used in the treatment.

**LCD4021 PROSTHODONTIC CLINIC**

Develop techniques and procedures to make complete and monomandibular dentures; optimally using various dental materials and equipment for the practice of total prosthodontics.

**LCD4031 PEDIATRIC DENTISTRY**

Detect the type of behavior of the pediatric patient by analyzing the psychological, cognitive and emotional development of the child and adolescent, to generate adequate pediatric rehabilitation procedures.

#### **LCD4061 ORTHODONTICS**

To determine the changes presented within the dental organs such as the maxillary region, head, neck, by analyzing the occlusions to formulate diagnoses and treatments in orthodontics.

#### **LMR4012 HEALTH PSYCHOLOGY**

Select the procedures and techniques that best suit different situations, assessing the health aspect from an interdisciplinary way, reviewing biological, social and psychological aspects, to determine the factors that affect the mental pathology of the patient. Analyze personality disorders and other diseases, by classifying each of them and knowing the main traits, to develop medical practice.

#### **LCD4051 ORAL REHABILITATION**

Apply necessary techniques and procedures, through the evaluation of oral diseases and their psychological aspects to generate oral rehabilitation treatments.

#### **LCD4011 SELECT TOPICS II**

Use dentistry as a method to identify people, through the analysis of teeth, materials and x-rays, as well as the realization of medical records that provide pre- and postmortem information, to collate data, look for coincidences or differences in dental structures.

#### **LCD4091 MAXILLOFACIAL SURGERY CLINIC**

Apply techniques and procedures in maxillofacial surgery, through the analysis of the latest procedures and advanced techniques in reconstructive, regenerative and aesthetic treatment in this type of surgery to achieve a treatment and rehabilitation focused on the patient.

#### **LCD4121 PEDIATRIC DENTISTRY CLINIC**

Apply advanced techniques and procedures in pediatric dentistry treatments, through the clinical analysis of the behavior of the pediatric patient to implement a comprehensive rehabilitation.

#### **LCD4071 GERIATRIC REHABILITATION CLINIC**

Describe the physical-organic characteristics of the stomatognathic apparatus with edentation problems and its relationship with the elderly, as well as the factors involved in its etiology to structure a complete rehabilitation in the elderly.

#### **LCD4101 ORAL REHABILITATION CLINIC**

Use oral rehabilitation techniques and procedures, through the analysis of diagnosis, treatment and rehabilitation to generate a recovery in the patient.

#### **LCD4111 ORTHODONTIC LAB**

Analyze the orthodontic treatment following the ordered procedures, by identifying habits and malocclusions in the patient, to describe the generalities when applying devices in the oral cavity.

### **LMR4022 HEALTH SCIENCES RESEARCH METHODOLOGY**

Develop a theoretical and/or experimental work, under the direction and advice of a professional of any of the areas or topics of the specialty, by evaluating the methodology to design a research protocol.

### **LCD4081 SELECT TOPICS III**

Use new techniques and procedures in surgical updates, through the assessment of reconstructive, regenerative and aesthetic treatments to create novel treatments.

### **GENERAL ART ELECTIVE\***

- **ART0022 ART AND CULTURE OF THE AMERICAS**  
Identify sociocultural development in the Americas through their artistic expressions to establish an active dialogue with this past and its identity context.
- **ART0012 ART, HISTORY AND CULTURE**  
Identify how human beings define reality and express it for themselves and the world from the emergence of Western modernity, by explaining the reciprocal relationship between art, history and culture to critically argue artistic representation and expression topics.

### **GENERAL MATH ELECTIVE\***

- **MAT0012 MATH FOR THINKING**  
Apply various approaches to mathematical thinking by modeling and analyzing hypothetical and real-world phenomena, to design solutions to problems related to your studies and your physical environment.
- **MAT0022 MATH AND CULTURE**  
Develop a project that integrates math with any of the expressions of culture, by modeling phenomena or indicators to make decisions that benefit society.

### **GENERAL BEHAVIORAL SCIENCE ELECTIVE\***

- **COM0012 ETHICS, SOCIETY AND THE ENVIRONMENT**  
Discuss global problems and their local implications by integrating socio-economic, environmental and ethical aspects to create proposals for a tolerant society.
- **COM0022 BEHAVIOR AND HUMAN DEVELOPMENT**  
Identify human development's bio-psycho-social factors, by analyzing the variables that affect individual and social behavior and use this knowledge in their academic and professional life.

### **GENERAL NATURAL SCIENCE ELECTIVE\***

- **CNE0012 FOOD AND LIFE**  
Identify the relationship between food and health through research that provides data on eating habits to choose an informed diet for your daily life.

- **CNE0022 EVOLUTION AND BIODIVERSITY**

Describe the origin of diseases through causal factors to assess human health information sources.

**GENERAL HUMANITIES ELECTIVE\***

- **HUM0012 ECOSOPHY**

Compare world representation systems, analyzing different epistemological proposals to reposition the current Being-Man relationship with their environment and other beings from a fundamentally ecological philosophical dimension.

- **HUM0022 HUMANISTIC THINKING**

Study humanist thought from a socio-historical cultural perspective, based on the analysis of its different historical nuances to understand its relevance in contemporary culture.

*\*Courses that are part of the UDLAP General Education component*

## NURSING

**CNE0012 FOOD AND LIFE**

Identify the relationship between food and health through research that provides data on eating habits to choose an informed diet for your daily life.

**LMR1032 ANATOMIC PHYSIOLOGY**

Evaluate the fundamentals of the morphology and normal functioning of the organism, by analyzing the structure and normal function of the different systems to obtain a broad view on the physical configuration of the human being.

**LEX0112 FOREIGN LANGUAGE I \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**MAT0012 MATH FOR THINKING**

Apply various approaches to mathematical thinking by modeling and analyzing hypothetical and real-world phenomena, to design solutions to problems related to your studies and your physical environment.

**LEF1012 BASIC NURSING PRINCIPLES I**

Identify the components of holistic care and emotional support by understanding the patient's basic needs to address the human responses of the individual, group, family, or community.

**INF0012 INFORMATION TECHNOLOGIES IN THE CONSTRUCTION OF KNOWLEDGE \***

Understand relevant information using Information and Communication Technologies (ICT) to document an economic, political, cultural and/or social problem.

**ESP0012 ACADEMIC REASONING\***

Express academic arguments orally and in writing within your discipline by developing and presenting persuasive speeches, using the rudiments of communication to interact effectively in a specific academic context.

#### **ART0012 ART, HISTORY AND CULTURE**

Identify how human beings define reality and express it for themselves and the world from the emergence of Western modernity, by explaining the reciprocal relationship between art, history and culture to critically argue artistic representation and expression topics.

#### **LCN1012 DIETETICS**

Design normal and therapeutic diets through the analysis of the characteristics of the correct diet and the nutritional contribution of the foods, to recommend the choice of foods and selection of menus in individuals under the guidelines of the current Mexican official regulations.

#### **LMR1052 PHYSIOLOGY**

Understand the basic knowledge of medical physiology and the fundamentals of the normal functioning of the organism; through the analysis of the alterations that occur in the disease, by using scientific reasoning with a critical attitude to correlate the knowledge of physiology with an adequate diagnosis and treatment.

#### **LEX0122 FOREIGN LANGUAGE II \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

#### **LEF1032 BASIC NURSING PRINCIPLES PRACTICES**

Classify the components of holistic care and emotional support by assessing the patient to understand the human responses of the individual, group, family or community.

#### **LEF1022 BASIC NURSING PRINCIPLES II**

Understand the components of holistic care and emotional support through the critical analysis of the stages of the nursing process, ethical codes and patients' rights, to carry out interventions and develop comprehensive solutions that meet the needs of the patient, group, family or community with professionalism, altruism and humanism.

#### **ESP0022 ACADEMIC WRITING**

Develop academic articles of your discipline through the administration of specialized information and the application of academic and scientific conventions, for the dissemination of academic and scientific knowledge.

#### **MAT2092 STATISTICS FOR HEALTH SCIENCES**

Apply various statistical techniques through different methods of statistical inference to estimate parameters that contribute to decision-making in different chemistry, biology and social sciences areas.

#### **LEX0132 FOREIGN LANGUAGE III \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**LEF2022 NURSING MODELS AND THEORIES**

Identify the main philosophical and theoretical currents, as well as nursing models, by analyzing the foundations and tools of each of them considering relevant physical, social, cultural, psychological, spiritual and environmental factors, to apply them in to develop diagnoses, interventions, programs and projects aimed at the care of patients.

**HUM0022 HUMANISTIC THINKING**

Study humanist thought from a socio-historical cultural perspective, based on the analysis of its different historical nuances to understand its relevance in contemporary culture.

**LEF2012 PROMOTING FAMILY AND COMMUNITY HEALTH**

Analyze national regulations, epidemiological surveillance systems and public health theories on health promotion and disease prevention in the families of the communities through the assessment of physiological and pathological information to develop diagnoses and design strategies for cure, rehabilitation and/or limitation of damage that respond to the needs of society.

**LEF2062 MATERNAL AND CHILD NURSING**

Examine the pathologies of the female reproductive system and its care, through the analysis of its sexual function and the control of human reproduction to identify disorders during pregnancy and puerperium and intervene appropriately in avoiding medical complications in these stages by providing adequate and pertinent care.

**COM0012 ETHICS, SOCIETY AND THE ENVIRONMENT**

Discuss global problems and their local implications by integrating socio-economic, environmental and ethical aspects to create proposals for a tolerant society.

**LEF2042 GYNECOLOGY AND OBSTETRICS**

Describe the different stages of gynecological development and its complications through the identification and timely assessment of risk factors to weigh the optimal health status of the patient avoiding a high-risk pregnancy.

**LEF2082 APPLIED MICROBIOLOGY IN NURSING**

Identify the biological bases of the microorganisms that cause the infectious diseases that prevail in our environment, considering mainly structural, biochemical and genetic properties involved in infectious diseases' process.

**LEF2032 SURGICAL MEDICAL PATHOLOGY**

Describe the specialized methods and procedures of surgical intervention by identifying the appropriate tools in each patient to develop exhaustive and systematic assessments and favor as much as possible the measures of asepsis and antisepsis.

**LEF2072 HEALTH PROMOTION PRACTICES**

Analyze knowledge about health promotion and prevention in communities by examining national regulations, epidemiological surveillance systems and public health theories to develop actions that contribute to promoting community health.

**LEF2052 PSYCHOLOGY**

Analyze the background and methodology of psychology by identifying the factors and processes involved in social thinking and constructing the reality of the individual to apply the processes of interaction and influence between social groups.

**LEF3042 SURGICAL NURSING**

Identify health problems that require surgical interventions through comprehensive and systematic assessments based on the principles of nursing care to design and apply interventions according to CPG.

**LEF3032 PEDIATRIC NURSING**

Identify the needs of the pediatric patient by making nursing diagnoses that contemplate a complete assessment and risk factors during the life cycle to apply the appropriate holistic care to a healthy or sick child.

**LEF3022 NURSING PHARMACOLOGY**

Examine the practical theoretical concepts of general pharmacology, as well as pharmacodynamic and pharmacokinetic knowledge by analyzing the mechanisms of action, indications and contraindications of different drugs to identify their interactions and adverse effects.

**LEF3012 PEDIATRICS IN NURSING**

Identify the principles of pediatric health and safety through the analysis of the theoretical practical concepts of patient mobilization and management, infection control, basic first aid and emergency procedures to evaluate and understand the health services and individualized programs most appropriate in the care and improvement of the health of patients, family or community.

**LEF3052 MATERNAL AND CHILD NURSING PRACTICES**

Examine the different complications of pregnancy through the analysis of fetal disorders, as well as possible medical complications during pregnancy to apply appropriate care to help prevent a high-risk pregnancy.

**LEF3062 SURGICAL NURSING PRACTICES**

Develop exhaustive and systematic assessments through the application of theoretical and practical knowledge of nursing, nursing propaedeutics and medical surgical generalities to identify the appropriate tools in each patient.

**LEF3092 BIOETHICS AND NURSING LEGISLATION**

Identify when emotional support and the issuance of professional and argued judgments are necessary through the analysis of regulatory and legal codes to develop legally grounded solutions to ethical or moral dilemmas of nursing practice.

**LEF3102 TEACHING IN HEALTH**

Inform, educate and supervise patients and their families in social groups, as well as caregivers, in health matters and about nursing care, through the application of specific educational techniques and pedagogical-didactic strategies with effective communication to develop continuous improvements in health care.

**LEF3112 CRITICAL CARE NURSING**

Identify the various roles, responsibilities and functions of nursing in the comprehensive care of patients in critical condition through the analysis of regulatory and legal codes, as well as the theoretical concepts of the anatomy and physiology of the human body, pathophysiology, technique and invasive procedures, nursing process as a scientific method to develop with professionalism its discipline for the benefit of the need of the individual.

**LEF3082 NURSING RESEARCH I**

Analyze research methodologies by studying their fundamental principles, theories and methods to apply them in the development of solutions to problems related to nursing, based on scientific evidence.

**LEF3122 PEDIATRIC NURSING PRACTICES**

Design specific nursing care plans evaluating alterations in the child's health status in relation to a multidisciplinary health team to develop solutions to identified problems and make decisions about them.

**LEF3072 SELECT TOPICS I**

Examine cutting-edge topics related to nursing care by analyzing the latest trends in clinical practice to develop innovative proposals.

**LEF4042 ADMINISTRATION AND CARE MANAGEMENT**

Identify the characteristics of the managerial function of nursing services and care management through the analysis of the administration of the Mexican health system to apply group management techniques.

**LEF4032 MENTAL HEALTH AND PSYCHIATRY NURSING**

Identify the importance of nursing in mental and psychiatric health by analyzing the relationship between clinical psychology, psychopathology, and nursing care to develop interventions at the primary, secondary, and tertiary care levels.

**LEF4062 CARE MANAGEMENT AND MANAGEMENT PRACTICES**

Identify the philosophical and organizational aspects, as well as the characteristics of the managerial function of nursing services and care management by analyzing the importance of the administration of the Mexican health system to apply group management techniques and weight the quality of nursing care in health institutions.

**LEF4052 NURSING PRACTICES IN THE CRITICAL PATIENT**

Develop theoretical and practical knowledge about nursing in critical care by analyzing the various roles, responsibilities and functions of nursing to create solutions that contribute to innovation in care.

**LEF4022 MENTAL HEALTH AND PSYCHIATRY**

Examine the functioning of the Central Nervous System (CNS), as well as the technical bases of neurobiology through the analysis of the procedures, techniques and principles of mental and psychiatric health nursing to establish the behavior and pathological processes of the nervous system, and to plan the relevant care and primary, secondary and tertiary care.

**LEF4012 SELECT TOPICS II**

Identify cutting-edge nursing administration topics by analyzing the latest trends in nursing administration to develop effective and efficient management of nursing care.

**LEF4102 GERIATRIC NURSING**

Identify the health needs of the geriatric patient through the assessment, diagnosis and intervention aimed at the elderly to design corresponding strategies, prevention of complications derived from the same degenerative process and rehabilitation.

#### **LEF4082 NURSING RESEARCH II**

Develop proposals for solutions to current problems in the nursing discipline through the application of scientific research methodology, to create knowledge in health based on evidence, which contributes to the well-being of people.

#### **LEF4122 GERIATRIC NURSING PRACTICES**

Develop diagnoses of the geriatric person through intervention and assessments aimed at the elderly to identify their health needs and design strategies for care, prevention, cure, rehabilitation and limitation of damage under the principles of evidence-based nursing.

#### **LEF4112 MENTAL HEALTH AND PSYCHIATRY PRACTICES**

Identify the importance of nursing in mental and psychiatric health by analyzing the relationship between clinical psychology, psychopathology, and nursing care to develop actions that contribute to mental health and the process of making people sick at the levels of primary, secondary and tertiary care.

#### **LEF4092 THANATOLOGY AND PALLIATIVE CARE**

Establish the importance of thanatology through the analysis of its fundamental principles and effects to apply appropriate palliative care in the terminal or terminally ill patient that contribute to achieving a dignified death.

#### **LEF4072 SELECT TOPICS III**

Develop innovative proposals related to nursing through the application of evidence-based scientific research methodology to create health solutions aimed at preserving the well-being of the community.

## **PHYSICS**

#### **QUI1022 GENERAL CHEMISTRY LAB**

Develop analytical and practical skills through the observation and development of experiments measuring properties and transformations of matter and its velocity, to identify elementary techniques and thus become familiar with how to handle chemistry glass material, instruments and equipment.

#### **LEX0112 FOREIGN LANGUAGE I \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

#### **MAT1012 UNIVERSITY MATH**

Learn algebraic language to interpret and use mathematical expressions, including their corresponding graphics, to formulate and solve problems.

#### **QUI1012 GENERAL CHEMISTRY**

Identify the properties and transformations of matter and the change rates, by describing the atomic structure and reactivity of substances, to describe the reasons why chemistry is useful in your area and in daily life. Systematically describe inorganic substances by correctly applying the rules of nomenclature to identify chemical formulas.

#### **INF0012 INFORMATION TECHNOLOGIES IN THE CONSTRUCTION OF KNOWLEDGE \***

Understand relevant information using Information and Communication Technologies (ICT) to document an economic, political, cultural and/or social problem.

#### **MAT1062 ABSTRACT ALGEBRA**

Establish solid math foundations, through demonstrations and use of mathematical properties, to model applied sciences phenomena.

#### **ESP0012 ACADEMIC REASONING\***

Express academic arguments orally and in writing within your discipline by developing and presenting persuasive speeches, using the rudiments of communication to interact effectively in a specific academic context.

#### **MAT1022 CALCULUS I**

Apply derivative and integral functions of a variable to solve engineering, finance, management and science problems by modeling the speed of change of its indicators.

#### **FIS1012 GENERAL PHYSICS I**

Apply the laws of Newtonian mechanics using mathematical algebra and calculus techniques to solve mechanics problems.

#### **MAT1042 ANALYTICAL GEOMETRY**

Apply conics and basic mathematical concepts, using their algebraic properties with a vector approach, to model relevant indicators in your area of expertise.

#### **FIS1022 GENERAL PHYSICS LAB I**

Apply the fundamentals of Newtonian kinematics and mechanics using lab equipment and supplies to compare experimental results with theoretical models.

#### **LEX0122 FOREIGN LANGUAGE II \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

#### **MAT2012 CALCULUS II**

Apply directional derivatives and multiple integrals of variable functions through the modeling of the rate of change of their indicators to solve engineering, finance and science problems.

#### **ESP0022 ACADEMIC WRITING \***

Develop academic articles of your discipline through the administration of specialized information and the application of academic and scientific conventions, for the dissemination of academic and scientific knowledge.

#### **FIS2012 GENERAL PHYSICS II**

Apply the laws governing electrical and magnetic phenomena using mathematical algebra and calculus techniques to develop solutions to electromagnetic problems.

**FIS2022 GENERAL PHYSICS LAB II**

Apply the fundamentals of electrostatics, electrical properties of materials, electrical circuits and magnetism using lab equipment and material to compare experimental results with theoretical models.

**LEX0132 FOREIGN LANGUAGE III \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**MAT2082 PROBABILITY AND STATISTICS**

Apply various probability and statistical techniques through different probability models and descriptive and inferential statistical methodologies to estimate parameters that contribute to decision-making.

**MAT2042 MATHEMATICAL ANALYSIS**

Apply the derivative and integral functions of a variable to solve engineering, finance, and science problems using the multiplier method, to develop solutions to optimization problems.

**LFA2012 HEAT, WAVES AND FLUIDS**

Define the basic concepts and laws of wave motion, thermal phenomena and fluid dynamics through the application of mathematical formulations to develop solutions to heat, wave and fluid problems.

**LFA2022 EXPERIMENTAL HEAT, WAVES AND FLUIDS**

Apply the basic principles governing wave behavior, thermodynamics, and fluids using lab equipment and material to compare experimental results with theoretical models.

**MAT2052 ORDINARY DIFFERENTIAL EQUATIONS**

Apply different solutions techniques to differential equations using the existing classic ordinary differential equations methodologies to apply them in practical problems.

**LAT2022 MATRIX THEORY**

Apply vector spaces, matrix theory and linear transformations to solve various world phenomena problems and to model and use matrix theory in your discipline through the use of technological resources.

**MAT3012 MATHEMATICAL ANALYSIS II**

Apply line and multiple integrals of variable functions through the infinite sums modeling their indicators to develop solutions to physics, finance and science problems.

**MAT3022 PARTIAL DIFFERENTIAL EQUATIONS**

Apply the different methods of solving differential equations with boundary variables through the analysis of variable methodologies to develop physical systems.

**LFA3012 CLASSIC MECHANICS**

Apply the Lagrangian or Hamiltonian formulation and its relation to the conservation of energy and momentum theorems using calculus techniques to establish the dynamics of one or more particles.

#### **LFA3052 MATHEMATICAL PHYSICS METHODS I**

Apply the foundations of advanced mathematics of group theory, of complex variable functions, as well as different representations of vector operators using the symmetries of physical systems to develop solutions to complex problems that consider a greater number of factors and interactions.

#### **LFA3022 OPTICS**

Analyze optical phenomena in geometric, wave and corpuscular modeling frameworks, using advanced mathematics and computational tools to identify multidisciplinary applications.

#### **LFA3032 EXPERIMENTAL OPTICS**

Compare interference, diffraction, reflection and refraction of light waves phenomena with theoretical models using instrumentation and corresponding methodologies to design projects with optical applications.

#### **LFA3042 PROFESSIONAL PRACTICE 1**

Apply the knowledge acquired during their studies establishing a link between theory and practice, using the theory, methodologies and experimental techniques learned to identify and develop proposals for solutions to problems and situations of your profession.

#### **LFA3082 NUMERICAL ANALYSIS**

Develop programming language codes using the principles of algebra and calculus to analyze nonlinear, algebraic and differential equations systems.

#### **LFA3102 MODERN PHYSICS**

Compare classical phenomena with quantum and relativistic phenomena using the theories of classical physics, quantum mechanics, and the theory of relativity to develop solutions to problems related to modern physics.

#### **LFA3112 EXPERIMENTAL MODERN PHYSICS**

Compare experimental data with theoretical models using computer monitoring techniques to design and develop a comprehensive project related to modern physics.

#### **LFA3072 MATHEMATICAL PHYSICS METHODS II**

Apply the special functions and associated functions using the mathematical properties to identify the different systems of classical and quantum physics.

#### **LFA3062 ELECTROMAGNETIC THEORY**

Explain the fundamentals of Maxwell's electromagnetic theory by solving the equations of electromagnetism to establish the connection between the microscopic and macroscopic properties of matter.

#### **LFA3092 CLASSIC THERMODYNAMICS**

Analyze thermodynamic processes by identifying the characteristics of the various physical systems by applying the corresponding equations to establish the interdisciplinary problems present in the description of reversible and irreversible processes.

#### **LFA4042 COMPUTER PHYSICS I**

Identify iterative and random techniques using mathematical methods to create numerical solutions and compare theoretical models of computer physics.

#### **LFA4062 SOLID STATE PHYSICS**

Apply the fundamentals of crystallography and solid-state physics by applying Fermi gas theory to classify the microscopic properties of crystalline systems and their relationship to material characterization experiments.

#### **LFA4032 QUANTUM MECHANICS I**

Apply the theoretical structure of quantum mechanics to simple systems of a single interaction potential using the Schrödinger model as a basis to determine the calculation of experimentally observed values.

#### **LFA4012 STATISTICAL MECHANICS**

Categorize microscopic models of physical systems using statistical methods to analyze macroscopic phenomena and their applications.

#### **LFA4022 PROFESSIONAL PRACTICE 2**

Apply the knowledge acquired their studies to evaluate the solution of problems and situations of the profession, using the theory, methodologies and experimental techniques learned, establishing a link between theory and practice.

#### **LFA4052 SELECT TOPICS 1**

Examine cutting-edge electromagnetic radiation topics using advanced mathematics methodologies to relate concepts to physical practice.

#### **LFA4072 COMPUTER PHYSICS II**

Analyze the results obtained in classical and quantum physical systems using numerical solutions of problems specific to modern physics to relate them to existing theoretical models.

#### **LFA4082 COMPUTER PHYSICS LAB**

Analyze scientific problems through the application of different methods to build numerical models of solution.

#### **LFA4112 QUANTUM MECHANICS II**

Apply the methodologies of quantum systems with all their complex interaction structure using perturbation theory to study the interactions in hydrogen atoms taking this system in order to identify the theoretical structure of quantum mechanics.

#### **LFA4092 SELECT TOPICS 2**

Analyze current physical systems topics using methodologies to relate the concepts of the course with physics.

### LFA4102 SELECT TOPICS 3

Identify current condensed matter topics by analyzing theoretical and experimental models to establish the connection between the macroscopic and microscopic properties of matter.

### GENERAL ART ELECTIVE\*

- **ART0022 ART AND CULTURE OF THE AMERICAS**  
Identify sociocultural development in the Americas through their artistic expressions to establish an active dialogue with this past and its identity context.
- **ART0012 ART, HISTORY AND CULTURE**  
Identify how human beings define reality and express it for themselves and the world from the emergence of Western modernity, by explaining the reciprocal relationship between art, history and culture to critically argue artistic representation and expression topics.

### GENERAL MATH ELECTIVE\*

- **MAT0012 MATH FOR THINKING**  
Apply various approaches to mathematical thinking by modeling and analyzing hypothetical and real-world phenomena, to design solutions to problems related to your studies and your physical environment.
- **MAT0022 MATH AND CULTURE**  
Develop a project that integrates math with any of the expressions of culture, by modeling phenomena or indicators to make decisions that benefit society.

### GENERAL BEHAVIORAL SCIENCE ELECTIVE\*

- **COM0012 ETHICS, SOCIETY AND THE ENVIRONMENT**  
Discuss global problems and their local implications by integrating socio-economic, environmental and ethical aspects to create proposals for a tolerant society.
- **COM0022 BEHAVIOR AND HUMAN DEVELOPMENT**  
Identify human development's bio-psycho-social factors, by analyzing the variables that affect individual and social behavior and use this knowledge in their academic and professional life.

### GENERAL NATURAL SCIENCE ELECTIVE\*

- **CNE0012 FOOD AND LIFE**  
Identify the relationship between food and health through research that provides data on eating habits to choose an informed diet for your daily life.
- **CNE0022 EVOLUTION AND BIODIVERSITY**  
Describe the origin of diseases through causal factors to assess human health information sources.

### GENERAL HUMANITIES ELECTIVE\*

- **HUM0012 ECOSOPHY**  
 Compare world representation systems, analyzing different epistemological proposals to reposition the current Being-Man relationship with their environment and other beings from a fundamentally ecological philosophical dimension.
- **HUM0022 HUMANISTIC THINKING**  
 Study humanist thought from a socio-historical cultural perspective, based on the analysis of its different historical nuances to understand its relevance in contemporary culture.

*\*Courses that are part of the UDLAP General Education component*

## **MEDICAL SURGEON**

### **INF0012 INFORMATION TECHNOLOGIES IN THE CONSTRUCTION OF KNOWLEDGE \***

Understand relevant information using Information and Communication Technologies (ICT) to document an economic, political, cultural and/or social problem.

### **LEX0112 FOREIGN LANGUAGE I \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### **MAT0012 MATH FOR THINKING**

Apply various approaches to mathematical thinking by modeling and analyzing hypothetical and real-world phenomena, to design solutions to problems related to your studies and your physical environment.

### **CNE0012 FOOD AND LIFE**

Identify the relationship between food and health through research that provides data on eating habits to choose an informed diet for your daily life.

### **LMR1012 HISTOLOGY**

Describe the microscopic structures of the cells, tissues and organs of different devices and systems of the human body, identifying and classifying cells to relate them to diseases' pathophysiology.

### **LMR1022 CLINICAL BIOCHEMISTRY**

Identify the structure of biomolecules by observing their development in the lab to establish their relationship with the human body. Review the processes involved in the molecular mechanisms and chemical transformations responsible for the biological processes involved in the functions of the organism, by simulating them to arrive at better diagnoses in professional practice.

**LMR1032 ANATOMIC PHYSIOLOGY**

Evaluate the fundamentals of the morphology and normal functioning of the organism, by analyzing the structure and normal function of the different systems to obtain a broad view on the physical configuration of the human being.

**LMR1042 EMBRYOLOGY AND GENETICS**

Outline the origin, growth and development of human beings and the cause of the processes that intervene in normal ontogeny, to carry out a preventive work and promotion of adequate health habits, understanding the morphological changes that occur in different developmental stages.

**LMR1072 SIMULATION LAB I**

Associate the student to a different learning environment allowing a more active participation creating confidence to face reality as a health professional through activities that introduce the student to medical praxis. Understand the mistakes made by turning them learning opportunities, reviewing the causes and establishing strategies for their correction.

**ESP0012 ACADEMIC REASONING\***

Express academic arguments orally and in writing within your discipline by developing and presenting persuasive speeches, using the rudiments of communication to interact effectively in a specific academic context.

**LEX0122 FOREIGN LANGUAGE II \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**ART0012 ART, HISTORY AND CULTURE**

Identify how human beings define reality and express it for themselves and the world from the emergence of Western modernity, by explaining the reciprocal relationship between art, history and culture to critically argue artistic representation and expression topics.

**COM0012 ETHICS, SOCIETY AND THE ENVIRONMENT**

Discuss global problems and their local implications by integrating socio-economic, environmental and ethical aspects to create proposals for a tolerant society.

**LMR1052 PHYSIOLOGY**

Understand the basic knowledge of medical physiology and the fundamentals of the normal functioning of the organism; through the analysis of the alterations that occur in the disease, by using scientific reasoning with a critical attitude to correlate the knowledge of physiology with an adequate diagnosis and treatment.

**LMR1062 CELLULAR AND MOLECULAR BIOLOGY**

Understand the structure, organization, compartmentalization, molecular and cellular complexity necessary to describe the vital phenomena both in single-celled organisms and in the integration of organisms, using scientific reasoning and a critical attitude that correlates the knowledge of cellular and molecular biology with a diagnosis and adequate treatments to understand the cellular regulation and gene expression processes.

**LMR1082 HUMAN ANATOMY I**

Learn the human anatomy as a foundation to build clinical knowledge of the formative stage, identifying the normal anatomical structures from diverse aspects including radiological images.

**LMR1092 SIMULATION LAB II**

Represent, in simulated patients, various situations that create skills and attitude changes in the student. Discover learning processes in an organized way starting with individual elements through skills designed for this purpose. Express the mistakes made in a way by turning them into learning opportunities, reviewing the causes and establishing strategies to correct them.

**ESP0022 ACADEMIC WRITING \***

Develop academic articles of your discipline through the administration of specialized information and the application of academic and scientific conventions, for the dissemination of academic and scientific knowledge.

**LEX0132 FOREIGN LANGUAGE III \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**HUM0022 HUMANISTIC THINKING**

Study humanist thought from a socio-historical cultural perspective, based on the analysis of its different historical nuances to understand its relevance in contemporary culture.

**LMR2012 MICROBIOLOGY AND PARASITOLOGY**

Identify the biological bases of microorganisms that cause the infectious diseases that prevail in our environment, considering mainly structural, biochemical and genetic properties involved in the process of infectious diseases. Use suitable samples to isolate and identify microorganisms based on different types of microscopic, biochemical or immunological tests.

**LMR2022 GENERAL PHARMACOLOGY**

Interpret the knowledge acquired about general pharmacology, action mechanisms, indications and contraindications of the different drugs to develop skills to rationally prescribe medicines.

**LMR2032 PROPAEDEUTICS IN HEALTH SCIENCES**

Analyze the propaedeutic methodology based on the syndromes of the different pathologies, applying the theoretical foundations of the propaedeutic method, to move towards an etiological, signological, syndromatic, anatomopathological and integral diagnosis. Develop skills and abilities necessary to explore the nervous system, through the analysis of the principles of effective communication, transmission, interpretation, expression and comprehension of oral and written language to make complete medical records (inspection, palpation, percussion and auscultation).

**LMR2052 HUMAN ANATOMY II**

Comprehensively manage human anatomy as a foundation to build semiological and clinical knowledge of the formative stage of the degree, identifying normal anatomical structures from various aspects including radiological imaging and dissection techniques that include chest and abdominal cavity.

**LMR2072 SIMULATION LAB III**

Create scenarios close to reality to modify behavior patterns and create individual skills, decision-making and complex interactions through situations to conceive the complexity of medical practice. Determine the mistakes made by turning them into learning opportunities, reviewing the causes and establishing strategies to correct them.

**LMR2082 CLINICAL PHYSIOLOGY**

Apply the physiological principles that govern the body, through the analysis of the homeostatic mechanisms that act to maintain health to identify the conditions that can alter the body. Examine the processes that occur in health and disease through the analysis of explaining the relationship structure function of each system of the organism to explain the means that can be performed in primary care. Manage the processes carried out by each system of the organism, by associating the functions of these and their importance for the homeostasis of the body, to analyze with critical attitude the choice of appropriate, effective and ethical education, prevention, diagnosis and treatment actions that can be carried out at the first level of care.

**LMR2042 NUTRITION AND METABOLISM**

Determine the importance of food as a supplier of nutrients, study the way in which they are assimilated by the human body, understanding both the physiological and metabolic function, as well as the different states of health and disease, to integrate actions of prevention, diagnosis and treatment of nutritional disorders.

**LMR2062 CLINICAL IMMUNOLOGY**

Describe the pharmacological basis of current therapeutics by using pharmacology-specific terminology to identify the effects of drugs. Discuss the current pharmacology challenges in the discovery of new drugs through the knowledge of their behavior in the body and the circumstances that modify the response to their treatment to propose new methods to optimize pharmacotherapies.

**LMR2092 FAMILY AND COMMUNITY MEDICINE**

Analyze the theory of the family and the social community in its environment, with a focus on Primary Health Care, seeking to integrate these concepts, to obtain an attitude of social and professional commitment to promote, preserve, improve, restore and rehabilitate individual and collective health in their daily work.

**LMR2102 PRINCIPLES OF SURGERY**

Manage the fundamentals of Basic Surgical Education, identifying the most appropriate techniques, and through scientific reasoning and a critical attitude that correlates the knowledge of surgical diseases with an adequate diagnosis and treatment that will lead the student to obtain a more complete view of the entire surgical environment to which the patient will be subjected.

**LMR2112 MEDICAL PHARMACOLOGY**

Apply the general principles of Pharmacology in current therapeutics by evaluating the choice and determining the use of drugs according to the system of the organism on which they act predominantly, as well as their main therapeutic indications, pharmacological interactions, contraindications and adverse effects.

**LMR2122 CLINICAL HEMATOLOGY**

Analyze the functional alterations that occur in the diseases related to this specialty, using scientific reasoning and a critical attitude that correlates the pathophysiology for prevention or diagnosis, treatment and adequate rehabilitation.

**LMR2132 BASIC KNOWLEDGE EXAM**

Master the fundamental concepts of the subjects of the basic area through bibliographic reviews, and individual and group study sessions to demonstrate knowledge about the subjects of the basic area.

**LMR2142 SIMULATION LAB IV**

Analyze the mistakes made by turning them into learning opportunities, reviewing the causes and establishing strategies to correct them.

**LMR3012 BIOETHICS IN HEALTH SCIENCES**

Debate professional development based on codes and ethical principles, through the justification of legal regulations, laws, individual guarantees, human rights and cultural diversities, to assess the limitations and opportunities that favor a sustainable multidisciplinary comprehensive approach.

**LMR3042 PSYCHIATRY**

Solve clinical cases to master the fundamentals of psychiatry. Analyze functional alterations that occur in mental illness through scientific reasoning and a critical attitude to achieve an adequate correlation of pathophysiology, diagnosis, treatment and adequate rehabilitation

**LMR3052 GASTROENTEROLOGY**

Apply the fundamentals of Internal Medicine in Gastroenterology through the analysis of the functional alterations that occur in the disease, using scientific reasoning and a critical attitude that correlates the knowledge of pathophysiology, prevention or failing that the adequate diagnosis, treatment and rehabilitation, to raise their knowledge in the management of gastrointestinal diseases , situations that will be put to the test in their class hours, through clinical cases that must be handled by the students or group of them.

**LMR3062 SURGERY**

Identify in an integral way the anatomy of the colon, rectum and anus as a foundation to build clinical knowledge, identifying the structures, their interactions, functions and main pathologies of each segment studied. Assess each normal anatomical interaction from various aspects including those of radiological images most used in coloproctology and urology, and dissection techniques that include abdominal cavity and its interaction as an environment around the colon, rectum and anus, as well as the urogenital apparatus.

**LMR3072 OPHTHALMOLOGY**

Analyze the functional alterations that occur in the disease applied to primary health care and community health to correlate the knowledge of pathophysiology, and thus perform adequate prevention, diagnosis, treatment and rehabilitation through the analysis of the homeostatic mechanisms of the eye that allow it to identify the visual system in the state of health and disease. Apply the different methods and diagnostic tests by analyzing the most frequent pathologies to properly use the necessary for each case. Apply evidence-based medicine for the solution of clinical cases, integrating an accurate and clear medical record that allows an adequate follow-up by other treating physicians. Compare the most frequent complications that may occur through describing the different pathologies to adequately follow up each case and if necessary, send to a more appropriate level of care.

**LMR3082 OTOLARYNGOLOGY**

Master the fundamentals of knowledge of Otolaryngology by reviewing the literature so that the most frequent pathologies are identified. To analyze the functional alterations that occur in the disease by means of the adequate exploration of the patients to obtain an adequate therapeutic diagnostic binomial. Use scientific reasoning so that the student can obtain a critical attitude that correlates the knowledge of pathophysiology, prevention or failing that the proper diagnosis, treatment and rehabilitation.

**LMR3092 CLINICAL FIELDS I**

Manage the fundamentals to assess patients in the areas of Outpatient Consultation to achieve an adequate diagnosis and therapeutic approach.

**LMR3102 CLINICAL CASES I**

Apply the fundamentals of knowledge through the study of evidence-based medicine and the foundations for the elaboration, and presentation of clinical cases, identifying the problems of greater morbidity in the first level of care, using scientific reasoning and a critical attitude that correlates the knowledge of epidemiological factors, prevention levels and the adequate elaboration of clinical case for any type of pathology and in any age group or to efficiently execute diagnostic and therapeutic processes.

**LMR3032 SELECT TOPICS I**

Establish a diagnosis using the normal and pathological structures of the individual to interpret the images and cuts produced by the mastograph.

**LMR3022 PUBLIC HEALTH AND EPIDEMIOLOGY IN HEALTH SCIENCES**

Identify the importance of epidemiology by applying the epidemiological variables of time, place and person to study the population health situation. Evaluate the health indicators of communities and populations by identifying health problems to design programs that comply with a public health policy.

**LMR3112 SELECT TOPICS II**

Master the fundamentals of the knowledge of Internal Medicine in infectology by analyzing the functional alterations that occur in the disease to correlate the knowledge of pathophysiology, prevention or failing that the adequate diagnosis, treatment and rehabilitation.

**LMR3122 NEUROLOGY**

Apply the fundamentals of the Neurology area applied to primary health care and community health by analyzing the functional alterations that occur in the disease and use scientific reasoning with a critical attitude to use knowledge of pathophysiology, prevention, diagnosis, treatment and rehabilitation correctly.

**LMR3132 GASTRIC SURGERY**

Identify the main surgical conditions of the digestive system, to establish the anatomical, pathophysiological and finally surgical treatment correlation, through the analysis of clinical cases of diseases that need surgery as a treatment, and in this way the student will be able to expand their associated medical and surgical knowledge.

**LMR3142 OBSTETRICS**

Carry out the integration of medical records with emphasis on the data of the obstetric practice, posing with precision and clarity the most relevant information for the full understanding of the individual or group case being attended. Apply physiological principles through resolution of clinical cases to provide medical care in the planning of pregnancy, during pregnancy, the puerperium and lactation. Analyze the physiological processes during labor and its care in clinical simulators for later in real scenarios minimizing human error. Identify the different complications of pregnancy through literature review to understand a high-risk pregnancy.

**LMR3152 DERMATOLOGY**

Analyze the functional alterations that occur in the disease through scientific reasoning and a critical attitude that correlates the knowledge of pathophysiology to achieve a diagnosis of certainty for timely treatment and/or adequate rehabilitation.

**LMR3162 NEPHROLOGY**

Analyze the functional alterations of the urinary system as a clinical manifestation of nephrological diseases through its theoretical knowledge to develop the general practitioner's own skills in its approach.

**LMR3172 CLINICAL FIELDS II**

Interpret the rationale for patient assessment in different disciplinary clinical areas through guided visits to provide a better level of care as a general practitioner.

**LMR3182 CLINICAL CASES II**

Develop required clinical skills through training in the ideal scenarios to give timely and quality response to the health needs of the individual, by applying the elements of clinical reasoning and diagnostic strategies in the resolution of problems with clinical cases and identifying evidence-based medicine as a necessary tool in medical training and clinical practice.

**LMR4032 GERIATRICS**

Analyze the fundamentals of Geriatrics, in primary health care, the knowledge of the functional alterations that occur in the disease, using scientific reasoning and a critical attitude that correlates the knowledge of pathophysiology, prevention or failing that the adequate diagnosis, treatment and rehabilitation to apply them correctly in the elderly population.

**LMR4042 GYNECOLOGY**

Analyze the basic principles of the anatomy, physiology and pathophysiology of the different stages of the menstrual cycle through literature review to understand between physiological and pathological processes. Apply the different diagnostic procedures of gynecology by analyzing lab and cabinet studies to establish certain diagnoses. Describe the different stages of gynecological development by reviewing clinical cases to identify the pathologies of the female reproductive system and its management. Carry out the integration of medical records with emphasis on the data of gynecological practice, raising with precision and clarity the most relevant information for the full understanding of the individual or group case being attended.

**LMR4052 ENDOCRINOLOGY**

Apply the fundamentals of the endocrinology area through the analysis of the functional alterations that occur in the most frequent endocrine pathologies and use scientific reasoning with a critical attitude to

use the knowledge of pathophysiology in the correct realization of prevention, diagnosis, treatment and rehabilitation. Name the physiological principles of the endocrine glands through identifying homeostatic mechanisms to differentiate the organism in the state of health and disease. Explain the different methods and diagnostic tests by analyzing endocrine pathologies to use the most appropriate. Establish appropriate and effective care for the patient and his or her family through adequate health education, to prevent and, if necessary, restore health. Use evidence-based medicine for the solution of clinical cases, through integrating an accurate and clear medical record that allows an adequate follow-up. Discriminate the most frequent complications that may arise by analyzing different pathologies to properly follow up each case and if necessary send to a more appropriate level of care.

#### **LMR4062 RHEUMATOLOGY**

Identify the fundamentals of knowledge of internal medicine in rheumatology through scientific reasoning and a critical attitude that correlates the knowledge of pathophysiology for prevention or failing that adequate diagnosis, treatment and rehabilitation.

#### **LMR4072 PEDIATRICS I**

Evaluate the normal pediatric patient by revising NOM-031-SSA-2010 for the control of the healthy child and while they can achieve the competencies for the evaluation of health in the normal child at the first level of health care. Identify children who are outside normal standards by applying the percentiles of growth and development, to refer them to a higher level of attention.

#### **LMR4082 CARDIOLOGY**

Use the knowledge acquired through the analysis of the functional alterations that occur in the most frequent endocrine pathologies and use scientific reasoning with a critical attitude to use the knowledge of pathophysiology in the correct realization of diagnosis and treatment. Explain the physiological principles of the cardiovascular system through comparing normal and abnormal processes so that they allow you to identify the organism in the state of health and disease. Apply the different methods and diagnostic tests through the analysis of different pathologies to use the diagnostic tools properly. Establish appropriate and effective care for the patient and his or her family through adequate health education, to prevent and, if necessary, restore health. Use evidence-based medicine for the solution of clinical cases, through integrating an accurate and clear medical record that allows an adequate follow-up. Discriminate the most frequent complications that may arise by analyzing different pathologies to properly follow up each case and if necessary, send to a more appropriate level of care.

#### **LMR4092 CLINICAL FIELDS III**

Evaluate patients in different disciplinary areas through clinical visits to resolve clinical cases. Examine the health of the healthy patient by conducting the interrogation and medical history to be able to perform an adequate physical examination in this type of patients.

#### **LMR4102 CLINICAL CASES III**

Develop in the doctor the clinical skills required in his professional activity, through training in the ideal scenarios, as well as the development of a critical capacity, which allows him to give a timely and quality response to the health needs of the individual, apply the elements of clinical reasoning and diagnostic strategies in the resolution of problems with clinical cases and identify evidence-based medicine as a

necessary tool in training medical and clinical practice, as aptitude necessary to acquire clinical competence.

**LMR4112 EMERGENCIES**

Manage the fundamentals of emergency medicine as an integrating element that uses scientific reasoning critical attitude correlating the knowledge of pathophysiology preventing adequate diagnosis, treatment and rehabilitation, to propose a management pertinent to each case.

**LMR4022 HEALTH SCIENCES RESEARCH METHODOLOGY**

Develop a theoretical and/or experimental work, under the direction and advice of a professional of any of the areas or topics of the specialty, by evaluating the methodology to design a research protocol.

**LMR4122 SELECT TOPICS III**

Decide the level of care required by the patient to make the referral in their case to identify the role of the general practitioner with respect to the cancer patient, classifying the most common lesions according to international oncology practice guidelines to outline the management of the cancer patient.

**LMR4132 TRAUMATOLOGY AND ORTHOPEDICS**

Master the fundamentals of traumatology and orthopedics, through the systematized study of its contents, to apply them correctly in your professional practice. To analyze the alterations that occur in the musculoskeletal or neuromuscular system, systematically using scientific reasoning and a critical attitude that correlates the knowledge of pathophysiology, prevention or, failing that, adequate diagnosis, treatment and rehabilitation, to incorporate them into the diagnosis and treatment.

**LMR4142 PEDIATRICS II**

Interpret the fundamentals of the assessment of pediatric syndromes through the review of the literature, resolution of clinical cases to guide diagnosis and therapy. To analyze the functional alterations that occur in pediatric disease using scientific reasoning to achieve a critical attitude that correlates the knowledge of Pediatrics in General with an adequate diagnosis and treatment.

**LMR4152 PULMONOLOGY**

Analyze the functional alterations that occur in the most frequent pulmonological pathologies using scientific reasoning with a critical attitude for the correct realization of diagnosis and treatment. Apply the different methods and diagnostic tests by analyzing respiratory pathologies to use the most appropriate. Establish appropriate and effective care for the patient and his or her family through adequate health education, to prevent and, if necessary, restore health. Use evidence-based medicine for the solution of clinical cases, through integrating an accurate and clear medical record that allows an adequate follow-up. Understand the most frequent complications that may arise by analyzing different pathologies to properly follow up each case and if necessary, send to a more appropriate level of care.

**LMR4162 PATHOLOGICAL ANATOMY**

Describe the fundamentals of knowledge of cellular and tissue morphology in the area of pathological anatomy using lab tools for unequivocal understanding of the types of cellular injury. To analyze the functional, cellular and even molecular alterations that occur in the disease through scientific reasoning and a critical attitude that correlates anatomical-clinical knowledge and pathophysiology.

**LMR4172 CLINICAL FIELD IV**

Master the fundamentals for patient assessment in disciplinary areas by reviewing clinical practice guidelines to expand their knowledge. Achieve competencies for health assessment of healthy patient through evidence-based medicine resolution to minimize error in the real environment.

**LMR4182 CLINICAL CASES IV**

Develop in the doctor the clinical skills required in his professional activity, through training in the ideal scenarios, as well as the development of a critical capacity, which allows him to give a timely and quality response to the health needs of the individual, applying the elements of clinical reasoning and diagnostic strategies in the resolution of problems with clinical cases, through the knowledge of Evidence-Based Medicine as a necessary tool in medical training and clinical practice, as a necessary aptitude to acquire clinical competence, which knows how to identify the problems of greater morbidity at the first level of care and can use scientific reasoning and a critical attitude to correlate the knowledge of epidemiological factors, the levels of prevention for any type of pathology and in any age group.

**LMR4192 UNDERGRADUATE INTERNSHIP ROTATION I**

Apply the propaedeutic methodology based on the syndromes of the different pathologies of the human body to restore the patient's health. Apply the theoretical foundations of the propaedeutic method, moving towards the etiological, sonological, syndromic, anatomopathological and integral diagnosis to have an adequate methodology in the correct care of the patient. Apply the principles of effective communication: transmission, interpretation, expression and comprehension of oral and written language to complete medical records through the development of clinical skills and abilities (inspection, palpation, percussion and auscultation) to avoid quasi-pregnancies and/or in-hospital sentinel events.

**LMR4202 UNDERGRADUATE INTERNSHIP ROTATION II**

Apply the propaedeutic methodology based on the syndromes of the different pathologies of the human body to restore the patient's health. Apply the theoretical foundations of the propaedeutic method, moving towards the etiological, sonological, syndromic, anatomopathological and integral diagnosis to have an adequate methodology in the correct care of the patient. Apply the principles of effective communication: transmission, interpretation, expression and comprehension of oral and written language through complete medical records and through the development of clinical skills and abilities (inspection, palpation, percussion and auscultation) to avoid quasi-pregnancies and/or in-hospital sentinel events. Apply professional and bioethical values in medical practice problems to confidentially handle medical information to confidentially nest medical information and apply professional and bioethical values in medical practice problems.

**LMR4212 MONITORING AND EVALUATING SOCIAL SERVICE**

Explain the core branches such as Internal Medicine, Gynecology and Obstetrics, Pediatrics and Surgery, by presenting exams at the end of each module to establish the principles of each core area of medicine.

## NANOTECHNOLOGY AND MOLECULAR ENGINEERING

**QUI1022 GENERAL CHEMISTRY LAB**

Develop analytical and practical skills through the observation and development of experiments measuring properties and transformations of matter and its velocity, to identify elementary techniques and thus become familiar with how to handle chemistry glass material, instruments and equipment.

**LEX0112 FOREIGN LANGUAGE I \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**MAT1012 UNIVERSITY MATH**

Learn algebraic language to interpret and use mathematical expressions, including their corresponding graphics, to formulate and solve problems.

**QUI1012 GENERAL CHEMISTRY**

Identify the properties and transformations of matter and the change rates, by describing the atomic structure and reactivity of substances, to describe the reasons why chemistry is useful in your area and in daily life. Systematically describe inorganic substances by correctly applying the rules of nomenclature to identify chemical formulas.

**INF0012 INFORMATION TECHNOLOGIES IN THE CONSTRUCTION OF KNOWLEDGE \***

Understand relevant information using Information and Communication Technologies (ICT) to document an economic, political, cultural and/or social problem.

**MAT1032 LINEAR ALGEBRA**

Solve systems of equations by applying the theoretical processes of linear algebra and using technological resources to model phenomena in applied sciences.

**ESP0012 ACADEMIC REASONING\***

Express academic arguments orally and in writing within your discipline by developing and presenting persuasive speeches, using the rudiments of communication to interact effectively in a specific academic context.

**MAT1022 CALCULUS I**

Apply derivative and integral functions of a variable to solve engineering, finance, management and science problems by modeling the speed of change of its indicators.

**FIS1012 GENERAL PHYSICS I**

Apply the laws of Newtonian mechanics using mathematical algebra and calculus techniques to solve mechanics problems.

**FIS1022 GENERAL PHYSICS LAB I**

Apply the fundamentals of Newtonian kinematics and mechanics using lab equipment and supplies to compare experimental results with theoretical models.

**QUI1042 ORGANIC CHEMISTRY LAB I**

Understand the equipment used in organic chemistry and perform synthesis, separation, purification and identification of substances operations, using personal safety regulations, good lab practices and handling of hazardous waste to be able to measure properties of matter and make basic organic chemistry reactions.

**LEX0122 FOREIGN LANGUAGE II \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**QUI1032 ORGANIC CHEMISTRY I**

Describe the functional groups, properties and simple transformations of organic compounds using different organic structures and chemical equations to identify the relationship between the structures of organic compounds and their properties. Correctly identify organic compounds by applying IUPAC nomenclature rules to systematically understand different organic compounds.

**MAT2012 CALCULUS II**

Apply directional derivatives and multiple integrals of variable functions through the modeling of the rate of change of their indicators to solve engineering, finance and science problems.

**ESP0022 ACADEMIC WRITING \***

Develop academic articles of your discipline through the administration of specialized information and the application of academic and scientific conventions, for the dissemination of academic and scientific knowledge.

**FIS2012 GENERAL PHYSICS II**

Apply the laws governing electrical and magnetic phenomena using mathematical algebra and calculus techniques to develop solutions to electromagnetic problems.

**FIS2022 GENERAL PHYSICS LAB II**

Apply the fundamentals of electrostatics, electrical properties of materials, electrical circuits and magnetism using lab equipment and material to compare experimental results with theoretical models.

**QUI2032 ORGANIC CHEMISTRY LAB II**

Understand the different chemical reactions observing good lab practices and handling of reagents to obtain organic compounds. Select the physical and instrumental analysis methods to identify an organic compound, by reviewing the physical and spectroscopic data obtained.

**QUI2052 CHEMICAL THERMODYNAMICS LAB**

Analyze data from heat transfer processes by correctly generating and interpreting the graphs to obtain information on thermodynamic parameters.

**LEX0132 FOREIGN LANGUAGE III \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**QUI2022 ORGANIC CHEMISTRY II**

Identify the main reactions in organic chemistry and their mechanisms using chemical equations, to analyze how organic compounds are transformed. Apply nuclear magnetic resonance spectroscopy by interpreting the spectra to understand the structure of a molecule.

**QUI2042 CHEMICAL THERMODYNAMICS**

Describe the various energy exchange processes in physical and chemical changes, through the appropriate use of the principles of thermodynamics, to interpret physicochemical phenomena and their implications in the associated processes.

**LIM2012 MATERIALS SCIENCE AND ENGINEERING I**

Explain the effect of microscopic properties of engineering materials, with their macroscopic physical properties, through the analysis of the different phenomena that support them, to relate the use of a specific material in a certain application.

**MAT2052 ORDINARY DIFFERENTIAL EQUATIONS**

Apply different solutions techniques to differential equations using the existing classic ordinary differential equations methodologies to apply them in practical problems.

**QUI2102 ANALYTICAL CHEMISTRY LAB**

Develop analytical and practical skills through the observation and development of experiments to identify and quantify the components of a substance through different methods of analysis, to skillfully manipulate the material and lab equipment used in analytical chemistry.

**QUI2082 INORGANIC CHEMISTRY LAB I**

Identify the relationship between the structure of an inorganic compound with its physical and chemical properties to interpret its electronic structure and molecular geometry by appropriate classification and correct selection of the method of preparation and characterization.

**QUI2092 ANALYTICAL CHEMISTRY**

Identify a substance's components using different analysis, separation, identification and determination of the ions and molecules methods.

**QUI2072 INORGANIC CHEMISTRY I**

Identify the concepts of chemical bonding, electronegativity, molecular symmetry, group theory applied to chemistry, molecular orbitals and atomic structure of ionic and molecular solids, as well as Pearson's acid-base theory and the periodical properties of metals by analyzing current concepts of inorganic chemistry correctly and accurately to interpret the physical and chemical properties of inorganic compounds.

**LNM2012 SYNTHESIS AND CHARACTERIZATION OF NANOMATERIALS**

Classify nanomaterials based on their composition, dimensionality and shape, by identifying the different methods of synthesis (chemical and physical) and characterization to examine the physical properties and potential uses of each type of nanomaterial.

**QUI3012 INSTRUMENTAL ANALYSIS**

Manage the different instrumental analysis techniques by applying characterization methods and techniques to analyze and identify materials.

**QUI3032 PHYSICAL CHEMISTRY**

Apply the law of reaction rate in homogeneous systems through experimental data from chemical reactions to describe their kinetic behavior. Describe the properties of electrochemical cells, interfaces and colloidal systems through thermodynamic fundamentals to explain their stability and the conditions affecting it.

#### **QUI3022 INSTRUMENTAL ANALYSIS LAB**

Apply instrumental analysis methods common in by using different methods and techniques to characterize materials.

#### **LN3022 NANOMATERIALS CHARACTERIZATION LAB**

Identify safety rules and experimental techniques by using lab materials and chemicals to understand the process to characterize nanomaterials.

#### **QUI3042 PHYSICAL CHEMISTRY LAB**

Determine the parameters governing the speed of reactions in homogeneous systems through known experimental methods to evaluate their kinetic behavior.

#### **LN3012 NANOMATERIAL SYNTHESIS LAB**

Skillfully use lab materials and chemicals, identifying and describing safety rules and experimental techniques to understand the process from the preparation of nanomaterials.

#### **LN3032 PROFESSIONAL PRACTICE 1**

Identify the skills of the area of professional training and work in multidisciplinary teams, through the analysis of the environment where the practice is carried out to develop proposals to nanotechnology technological problems.

#### **LFA3102 MODERN PHYSICS**

Compare classical phenomena with quantum and relativistic phenomena using the theories of classical physics, quantum mechanics, and the theory of relativity to develop solutions to problems related to modern physics.

#### **LFA3112 EXPERIMENTAL MODERN PHYSICS**

Compare experimental data with theoretical models using computer monitoring techniques to design and develop a comprehensive project related to modern physics.

#### **QUI3062 INORGANIC CHEMISTRY LAB II**

Evaluate the most appropriate preparation and reagents by developing experimental techniques in the lab to design new inorganic materials, catalysts and bioinorganic systems.

#### **LN3052 SENSORS AND MOLECULAR ELECTRONICS LAB**

Classify the lab materials and chemical substances used in the study and design of nanostructured materials, by identifying the methods of preparation and characterization, complying with the established standards of quality and safety to build useful technological devices.

#### **QUI3052 INORGANIC CHEMISTRY II**

Identify the different types of coordination and organometallic compounds according to IUPAC rules using electronic theories and bonding interaction properties to describe the reaction mechanisms in which organometallic catalysts participate in the design of efficient chemical processes.

#### **LN3042 SENSORS AND MOLECULAR ELECTRONICS**

Identify the different existing molecular, super molecular and supramolecular systems by analyzing their scope and limitations, as well as design, synthesis and characterization strategies to build and apply molecular machines, molecular sensors, biomaterials and molecular electronics devices.

#### **LN4012 SURFACE PHYSICAL CHEMISTRY**

Identify the fundamental concepts of physical chemistry, by examining applied theories of adsorption processes, electrochemistry and reaction mechanisms correctly and clearly, as well as the methods of characterization and analysis to apply them in the interpretation of surface phenomena.

#### **LN4022 SURFACE PHYSICAL CHEMISTRY LAB**

Apply the most appropriate synthesis techniques by examining the analysis and characterization techniques to understand the study and rationalization of surface phenomena, catalysts and electrode electrochemical processes.

#### **LN4042 NANOBIO TECHNOLOGY LAB**

Develop skills of isolation, identification and handling of biomolecules through the analysis of different LAB methods and techniques to understand new nanomaterials with different biological and non-biological applications.

#### **LN4032 NANOBIO TECHNOLOGY**

Identify each of the different important biomolecules in the cell and cellular bistructures that exist in nature with the possibility of being used as nanostructures through examining the biophysical chemistry characteristics of biomolecules and functions in single-celled and multicellular organisms to design new nanostructured models and overproduction strategies by genetic engineering methods.

#### **LN4062 PROFESSIONAL PRACTICE 2**

Apply the techniques and concepts of Nanotechnology and Molecular Engineering by carrying out specific projects in the different nanotechnology areas, evaluating the resources available to develop proposals to real cases.

#### **LN4052 SELECT TOPICS 1**

Analyze cutting-edge molecular engineering topics by integrating the concepts and theories acquired to develop solutions to specific problems in the area.

#### **LN4122 MOLECULAR ENGINEERING AND SIMULATION**

Interpret macro, micro and nanostructured systems using software programs in a professional, ingenious and correct way to develop simulations of systems of interest in molecular engineering, nanoscience and nanotechnology.

#### **LN4092 NANOTECHNOLOGY AND APPLIED MOLECULAR ENGINEERING LAB**

Categorize general methods of preparation and characterization of nanomaterials in a precise, clear and safe way, through the application of current regulations, to implement these methods in technological and scientific research projects.

#### **LN4082 NANOTECHNOLOGY AND APPLIED MOLECULAR ENGINEERING**

Identify specific areas of nanotechnology that can serve successfully and innovatively, through comparative analysis and estimation supported by scientific evidence to develop solutions of technological problems in specific and important uses in energy, health, environment, among others.

#### **LN4072 NANOTECHNOLOGY AND SOCIETY**

Analyze the scope and limitations of nanoscience and nanotechnology in society, through the evaluation of the risks and benefits of these technologies applied in each of the major axes of development to establish their impact on social and economic development.

#### **LN4102 SELECT TOPICS 2**

Analyze current applied nanotechnology topics by integrating techniques from a current and informed point of view to develop proposals for applications to the materials obtained.

#### **LN4112 SELECT TOPICS 3**

Analyze cutting-edge nanoscience and nanotechnology topics by evaluating new techniques and materials to identify advances in the area.

### **GENERAL ART ELECTIVE\***

- **ART022 ART AND CULTURE OF THE AMERICAS**  
Identify sociocultural development in the Americas through their artistic expressions to establish an active dialogue with this past and its identity context.
- **ART012 ART, HISTORY AND CULTURE**  
Identify how human beings define reality and express it for themselves and the world from the emergence of Western modernity, by explaining the reciprocal relationship between art, history and culture to critically argue artistic representation and expression topics.

### **GENERAL MATH ELECTIVE\***

- **MAT012 MATH FOR THINKING**  
Apply various approaches to mathematical thinking by modeling and analyzing hypothetical and real-world phenomena, to design solutions to problems related to your studies and your physical environment.
- **MAT022 MATH AND CULTURE**  
Develop a project that integrates math with any of the expressions of culture, by modeling phenomena or indicators to make decisions that benefit society.

### **GENERAL BEHAVIORAL SCIENCE ELECTIVE\***

- **COM012 ETHICS, SOCIETY AND THE ENVIRONMENT**  
Discuss global problems and their local implications by integrating socio-economic, environmental and ethical aspects to create proposals for a tolerant society.
- **COM022 BEHAVIOR AND HUMAN DEVELOPMENT**

Identify human development's bio-psycho-social factors, by analyzing the variables that affect individual and social behavior and use this knowledge in their academic and professional life.

### GENERAL NATURAL SCIENCE ELECTIVE\*

- CNE0012 FOOD AND LIFE**  
 Identify the relationship between food and health through research that provides data on eating habits to choose an informed diet for your daily life.
- CNE0022 EVOLUTION AND BIODIVERSITY**  
 Describe the origin of diseases through causal factors to assess human health information sources.

### GENERAL HUMANITIES ELECTIVE\*

- HUM0012 ECOSOPHY**  
 Compare world representation systems, analyzing different epistemological proposals to reposition the current Being-Man relationship with their environment and other beings from a fundamentally ecological philosophical dimension.
- HUM0022 HUMANISTIC THINKING**  
 Study humanist thought from a socio-historical cultural perspective, based on the analysis of its different historical nuances to understand its relevance in contemporary culture.

*\*Courses that are part of the UDLAP General Education component*

## CHEMICAL PHARMACEUTICAL BIOLOGY

### ADM1012 MANAGEMENT FUNDAMENTALS

Describe the nature of management theory by explaining the administrative process and functional areas to identify an organization's integral administrative work.

### QUI1022 GENERAL CHEMISTRY LAB

Develop analytical and practical skills through the observation and development of experiments measuring properties and transformations of matter and its velocity, to identify elementary techniques and thus become familiar with how to handle chemistry glass material, instruments and equipment.

### LEX0112 FOREIGN LANGUAGE I \*

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### MAT1012 UNIVERSITY MATH

Learn algebraic language to interpret and use mathematical expressions, including their corresponding graphics, to formulate and solve problems.

**QUI1012 GENERAL CHEMISTRY**

Identify the properties and transformations of matter and the change rates, by describing the atomic structure and reactivity of substances, to describe the reasons why chemistry is useful in your area and in daily life. Systematically describe inorganic substances by correctly applying the rules of nomenclature to identify chemical formulas.

**INF0012 INFORMATION TECHNOLOGIES IN THE CONSTRUCTION OF KNOWLEDGE \***

Understand relevant information using Information and Communication Technologies (ICT) to document an economic, political, cultural and/or social problem.

**ESP0012 ACADEMIC REASONING\***

Express academic arguments orally and in writing within your discipline by developing and presenting persuasive speeches, using the rudiments of communication to interact effectively in a specific academic context.

**MAT1022 CALCULUS I**

Apply derivative and integral functions of a variable to solve engineering, finance, management and science problems by modeling the speed of change of its indicators.

**QUI1042 ORGANIC CHEMISTRY LAB I**

Understand the equipment used in organic chemistry and perform synthesis, separation, purification and identification of substances operations, using personal safety regulations, good lab practices and handling of hazardous waste to be able to measure properties of matter and make basic organic chemistry reactions.

**LEX0122 FOREIGN LANGUAGE II \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**QUI1032 ORGANIC CHEMISTRY I**

Describe the functional groups, properties and simple transformations of organic compounds using different organic structures and chemical equations to identify the relationship between the structures of organic compounds and their properties. Correctly identify organic compounds by applying IUPAC nomenclature rules to systematically understand different organic compounds.

**WHO2012 BIOCHEMISTRY I**

Identify biochemistry fundamentals through the review of chemistry, macromolecule structure and basic equations to interpret and analyze metabolism. Describe the relationships between macromolecules through their comparison at different scales, to relate their structure to the function they perform and their consequences at the cellular and organismal scales.

**ESP0022 ACADEMIC WRITING \***

Develop academic articles of your discipline through the administration of specialized information and the application of academic and scientific conventions, for the dissemination of academic and scientific knowledge.

**QUI2032 ORGANIC CHEMISTRY LAB II**

Understand the different chemical reactions observing good lab practices and handling of reagents to obtain organic compounds. Select the physical and instrumental analysis methods to identify an organic compound, by reviewing the physical and spectroscopic data obtained.

**QUI2052 CHEMICAL THERMODYNAMICS LAB**

Analyze data from heat transfer processes by correctly generating and interpreting the graphs to obtain information on thermodynamic parameters.

**LEX0132 FOREIGN LANGUAGE III \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**QUI2022 ORGANIC CHEMISTRY II**

Identify the main reactions in organic chemistry and their mechanisms using chemical equations, to analyze how organic compounds are transformed. Apply nuclear magnetic resonance spectroscopy by interpreting the spectra to understand the structure of a molecule.

**QUI2042 CHEMICAL THERMODYNAMICS**

Describe the various energy exchange processes in physical and chemical changes, through the appropriate use of the principles of thermodynamics, to interpret physicochemical phenomena and their implications in the associated processes.

**LBI2072 CELL BIOLOGY**

Identify the basic structures of the cell through the review of its components and their interrelationship to describe and understand their functions. Describe the relationship of the different organelles, their functions, their structure on a cellular and organism scale to relate it to the state of health or pathology of the organism integrating the information of the function of each one in the cellular context.

**QUI2062 BIOCHEMISTRY II**

Identify the fundamentals of biochemistry through the review of the general metabolism of living beings to interpret their interrelationships with regulation, growth and differentiation at the cellular level. Describe the relationships of metabolism and its deficiencies by identifying metabolic intermediates that are detectable for clinical interpretation.

**MAT2062 INFERENCE STATISTICS**

Apply various statistical techniques through different statistical inference methods to estimate parameters of interest that contribute to decision-making in different chemistry, biology and social sciences areas.

**LFB2012 PHARMACOLOGY**

Describe the pharmacological basis of current therapeutics by using pharmacology-specific terminology to identify the effects of drugs. Discuss the current pharmacology challenges in the discovery of new drugs

through the knowledge of their behavior in the body and the circumstances that modify the response to their treatment to propose new methods to optimize pharmacotherapies.

**LBC2022 MICROBIOLOGY LAB**

Develop microbiological techniques by practicing the methods used in the lab for the isolation, identification, culture and control of microorganisms.

**QUI2102 ANALYTICAL CHEMISTRY LAB**

Develop analytical and practical skills through the observation and development of experiments to identify and quantify the components of a substance through different methods of analysis, to skillfully manipulate the material and lab equipment used in analytical chemistry.

**LBC2012 MICROBIOLOGY**

Identify the fundamentals of the morphology and functioning of microorganisms, by reviewing their structure and metabolism to analyze the phenomena related to the world of microorganisms. Describe the interrelationships between microorganisms and their environment by reviewing their physiological activities to establish beneficial and harmful effects.

**QUI2092 ANALYTICAL CHEMISTRY**

Identify a substance's components using different analysis, separation, identification and determination of the ions and molecules methods.

**QUI3012 INSTRUMENTAL ANALYSIS**

Manage the different instrumental analysis techniques by applying characterization methods and techniques to analyze and identify materials.

**LBC3022 ANATOMY AND PHYSIOLOGY**

Identify the organism's tissues, organs, devices and systems with their physiological functions, through the review and analysis of their parts and characteristics, to correlate it with the state of health of the person or to diagnose or treat a pathology.

**LBI3042 MOLECULAR BIOLOGY**

Identify the fundamentals of molecular biology through the review of the structure of macromolecules, their functional consequences and the mathematical description of their properties to interpret and analyze their participation in cellular metabolism, their control and the development of the cell and the organism.

**QUI3032 PHYSICAL CHEMISTRY**

Apply the law of reaction rate in homogeneous systems through experimental data from chemical reactions to describe their kinetic behavior. Describe the properties of electrochemical cells, interfaces and colloidal systems through thermodynamic fundamentals to explain their stability and the conditions affecting it.

**QUI3022 INSTRUMENTAL ANALYSIS LAB**

Apply instrumental analysis methods common in by using different methods and techniques to characterize materials.

**LBC3032 ANATOMY AND PHYSIOLOGY LAB**

Apply the basic principles of human anatomy and physiology through different experiments that reflect functionality, to develop the practical skills to interpret physiological functions tests of the organism and its anatomy.

#### **QUI3042 PHYSICAL CHEMISTRY LAB**

Determine the parameters governing the speed of reactions in homogeneous systems through known experimental methods to evaluate their kinetic behavior.

#### **LFB3012 PROFESSIONAL PRACTICE 1**

Apply theoretical and practical knowledge of the profession, through practical activities of the professional reality of the country, with the purpose of using scientific reasoning with a critical attitude.

#### **LFB3032 PHARMACOTHERAPY**

Apply the general principles of pharmacology in current therapeutics by evaluating the processes of selection and use of drugs depending on the organism's system, as well as their main therapeutic indications, pharmacological interactions, contraindications and adverse effects, to predict the modification of pathological processes and the undesirable effects they cause. Analyze the drug therapy of the patient through a comprehensive view of the patient and their condition, as well as the characteristics and effects of the drug to use them appropriately in health care.

#### **LBC3092 PATHOPHYSIOLOGY**

Identify the basic mechanisms of pathological processes, through the review of normal functions of the the body's organs and systems, to interpret the lab results and relate them to different diseases and their specific mechanisms that produce clinical manifestations.

#### **LBI3092 GENETICS**

Identify the principles that govern heredity, as well as the causes of genetic variation of living beings by analyzing their components and variables to interpret genetic studies.

#### **LBC3072 IMMUNOLOGY**

Describe the structure and function of the molecules and cells that participate in the immune response in humans, through the review and analysis of their composition, functionality and characteristics, to relate the conceptual and operational management of the main types of response immune, stages, cells and tissues involved in immune conditions.

#### **LFB3022 PHARMACOLOGY LAB**

Integrate the concepts of pharmacology, through lab practices, to demonstrate the effect of drugs in animals and in humans.

#### **LBC3052 MOLECULAR METHODS LAB**

Apply the fundamentals of biochemistry, molecular and cellular biology for the development and execution of detection, quantification and diagnostic tests to solve of problems using equations and methodologies.

**LFB3042 MEDICAL-DIAGNOSIS MICROBIOLOGY**

Identify the most important infectious syndromes (viral, bacterial, fungal and parasitic) in human health, through the review of the most recent information of each clinical syndrome and the most appropriate pharmacological treatment in each case to relate the methods of isolation and identification of these pathogens.

**LFB4042 BIOPHARMACY AND PHARMACOKINETICS**

Analyze the relationship between the physicochemical characteristics of a drug, the pharmaceutical form in which it is presented and its interaction with the body by describing the concepts of bioavailability and the factors that condition it, to propose biopharmaceutical strategies to optimize the pharmacotherapeutic action of drugs and methodologies oriented to bioequivalence studies in generic-interchangeable drugs. To explain the pharmacokinetic and pharmacodynamic events following the administration of a drug through the calculation of the most important pharmacokinetic parameters of a given patient, to use this knowledge in the individualization of pharmacotherapies and in the prediction of changes in the most relevant pharmacokinetic parameters in patients with certain disease conditions or treated with specific drug groups.

**LFB4052 HOSPITAL AND COMMUNITY PHARMACY**

Organize pharmaceutical services in hospital institutions and community pharmacies pharmaceutical care and the rational use of medicines, as well as compliance with current regulations, to contribute to the health care of patients as members of the health team. Plan programs and initiatives for health promotion, disease prevention and pharmacotherapeutic follow-up through the application of knowledge related to the preparation, distribution, administration and monitoring of medicines, to promote the safe and appropriate use of these in and by patients.

**LFB4032 PROFESSIONAL PRACTICE 2**

Evaluate solutions to problems or opportunities from an academic perspective through professional practices to improve the skills, attitudes and experiences necessary to exercise the profession.

**LFB4012 PHARMACEUTICAL TECHNOLOGY I**

Apply good pharmaceutical practices related to the design and elaboration of medicines through the management of the elaboration and control techniques of medicines prepared in the hospital pharmacy and in the pharmaceutical industry, to ensure the quality of the medicines, as well as their rational use for the benefit of society.

**LFB4022 SELECT TOPICS 1**

Analyze the most recent and significant advances in the pharmaceutical sector in biotechnology by identifying the biological, chemical, technological, therapeutic and toxicological principles and processes involved in the development and evaluation of biotechnological pharmaceutical products, to contribute to the development of innovative, effective and safe products that improve the quality of life of patients.

**LBC4072 TOXICOLOGY**

Classify the harmful substances to which living organisms are exposed in the environment by identifying their origin, degree of toxicity, toxicokinetics and toxicodynamics, to apply national and international regulations governing toxicology in the various areas of professional development. Explain the methodology involved in the identification, characterization and evaluation of the biological consequences of the action of toxic or potentially toxic compounds of very varied origins through the

determination of the characteristics of the exposure and the terrestrial system involved, to prevent toxicological risks and poisonings.

#### **LFB4072 PHARMACEUTICAL TECHNOLOGY LAB**

Acquire skills and practical knowledge for the formulation and manufacturing operations of pharmaceuticals, through the use of the technological tools of the pharmaceutical industry to obtain safe and effective medicines.

#### **LFB4062 PHARMACEUTICAL TECHNOLOGY II**

Analyze the processes that allow the production of liquid pharmaceutical forms, through the management of the techniques of elaboration and control of medicines to ensure the quality and proper use of them.

#### **LFB4082 SELECT TOPICS 2**

Describe current and significant issues in the development of new pharmaceutical products through the integration of knowledge and methodologies to obtain, design, formulate, evaluate, register, monitor, regulate and optimize new therapeutic alternatives that promote the rational use of medicines.

#### **LFB4092 SELECT TOPICS 3**

Evaluate the most recent and significant advances in pharmacoepidemiology by understanding the principles and methods of the design, implementation and evaluation of programs that evaluate the use of drugs, their adverse reactions and their economic impact, to contribute to decision-making regarding drugs and other health technologies in different scenarios : hospital pharmacy, community pharmacy, industry and national health systems.

### **GENERAL ART ELECTIVE\***

- **ART0022 ART AND CULTURE OF THE AMERICAS**  
Identify sociocultural development in the Americas through their artistic expressions to establish an active dialogue with this past and its identity context.
- **ART0012 ART, HISTORY AND CULTURE**  
Identify how human beings define reality and express it for themselves and the world from the emergence of Western modernity, by explaining the reciprocal relationship between art, history and culture to critically argue artistic representation and expression topics.

### **GENERAL MATH ELECTIVE\***

- **MAT0012 MATH FOR THINKING**  
Apply various approaches to mathematical thinking by modeling and analyzing hypothetical and real-world phenomena, to design solutions to problems related to your studies and your physical environment.
- **MAT0022 MATH AND CULTURE**

Develop a project that integrates math with any of the expressions of culture, by modeling phenomena or indicators to make decisions that benefit society.

### GENERAL BEHAVIORAL SCIENCE ELECTIVE\*

- **COM0012 ETHICS, SOCIETY AND THE ENVIRONMENT**  
Discuss global problems and their local implications by integrating socio-economic, environmental and ethical aspects to create proposals for a tolerant society.
- **COM0022 BEHAVIOR AND HUMAN DEVELOPMENT**  
Identify human development's bio-psycho-social factors, by analyzing the variables that affect individual and social behavior and use this knowledge in their academic and professional life.

### GENERAL NATURAL SCIENCE ELECTIVE\*

- **CNE0012 FOOD AND LIFE**  
Identify the relationship between food and health through research that provides data on eating habits to choose an informed diet for your daily life.
- **CNE0022 EVOLUTION AND BIODIVERSITY**  
Describe the origin of diseases through causal factors to assess human health information sources.

### GENERAL HUMANITIES ELECTIVE\*

- **HUM0012 ECOSOPHY**  
Compare world representation systems, analyzing different epistemological proposals to reposition the current Being-Man relationship with their environment and other beings from a fundamentally ecological philosophical dimension.
- **HUM0022 HUMANISTIC THINKING**  
Study humanist thought from a socio-historical cultural perspective, based on the analysis of its different historical nuances to understand its relevance in contemporary culture.

*\*Courses that are part of the UDLAP General Education component*



MIXED MASTER'S  
DEGREES

## MASTER IN HEALTH SERVICES ADMINISTRATION

### MMK5023 MARKET ANALYSIS

Analyze market information about the motivations and attitudes of consumers during the process of consumption of goods and / or services, for the correct decision-making in organizations.

### MNE5013 BUSINESS STATISTICS

Apply statistical tools to processes related to decision-making based on quantitative information, through the construction and evaluation of statistical models, to develop and analyze solutions to organizational problems.

### REP5013 CORPORATE AND PROFESSIONAL RESPONSIBILITY

Analyze the deontological obligations and duties that correspond to each subject in the development of their activities, from a human, social and legal perspective, so that individually and collectively they develop a responsible professional practice.

### MEC5013 BUSINESS ECONOMICS

Apply the fundamental principles of microeconomics in the management of organizations, through the use of models and tools specific to the economy, to identify how markets operate and make reliable predictions of results.

### MFD5013 FINANCIAL MANAGEMENT

Analyze the financial statements of a company through the application of administrative and cost accounting tools, to facilitate planning and decision-making processes in service and manufacturing companies.

### MSA5013 HEALTH SERVICE QUALITY

Analyze the principles, tools and methods of quality in health care and client safety, through the formulation of improvement cycles and management projects, to identify the operation of a health services organization and make the necessary changes for the control and improvement of quality in the provision of health services to the client.

### MSA5023 HOSPITAL MANAGEMENT

Distinguish the structures of hospital administration, through the analysis of hospital control processes, their organization, regulations and resources, to carry out a strategic planning that allows an efficient administration of a health services organization.

### MSA5033 PUBLIC HEALTH AND EPIDEMIOLOGY

Apply the fundamental principles of public health and epidemiology, through the analysis of the health situation and health service organizations, for the development of policies, plans and management capacity in addition to facilitating efficient epidemiological surveillance by health service organizations.

### MSA5043 SERVICE MANAGEMENT

Examine the services offered by the health sector, through the analysis of the behavior and needs of clients or companies, with the aim of recommending strategies that guarantee efficient services, to ensure the competitive position of health units in the market.

**MNE5023 TALENT AND COMPANY CULTURE**

Design the processes of attraction, development and retention of talent from a strategic perspective, through the analysis of different leadership styles and the application of current theories in the management of human capital, to plan its optimal management in alignment with the corporate culture of the company.

**MNE5053 PROJECT MANAGEMENT AND CONTROL**

Combine tools for planning, management and control of projects, through the analysis and application of specialized methodologies within the context of their area of specialty and / or work, to select actions that ensure the achievement of objectives according to specific requirements of the projects.

**MSA5053 FIELD PRACTICE IN HEALTH SERVICES MANAGEMENT I**

Apply the knowledge related to the Administration of Health Services to real problems identified, through the development of an integrative project, with the aim of analyzing integral solutions and impact in the professional field.

**MSA5063 FIELD PRACTICE IN HEALTH SERVICES MANAGEMENT II**

Design a comprehensive project, through the application of knowledge related to the Administration of Health Services with the aim of establishing impact solutions to specific situations in the professional field.



GRADUATE  
CERTIFICATES

## SPECIALTY IN ANESTHESIOLOGY

### **EAA5011 HEALTH CARE WORK I**

Analyze the different clinical situations of medical practice in anesthesiology through the application of techniques, anesthetic procedures and the identification of the main possible complications, in order to select the precise medical care of high quality in patients.

### **EAA5021 HEALTH CARE SEMINAR I**

Identify the fundamental concepts, instruments and procedures related to anesthesiology, through the integration of the elements of basic science, airway management and monitoring to apply basic anesthetic procedures in patients.

### **EAA5031 RESEARCH SEMINAR I**

Distinguish the fundamentals of the scientific method as a research instrument, through the analysis and use of the methodology, strategies, instruments and techniques of medical research in anesthesiology to identify the elements that make up a research protocol.

### **EAA5041 EDUCATION SEMINAR I**

Distinguish the importance of teaching-learning in medical practice through the identification of the fundamentals and concepts of medical education to develop teaching skills.

### **EAA5051 HEALTH CARE WORK II**

Apply the different anesthetic techniques in pediatric, gynecological and surgical clinical situations, through the identification of the main possible complications, in order to select the precise medical care of high quality in the patients of these specialties.

### **EAA5061 HEALTHCARE SEMINAR II**

Integrate the techniques of the different core specialties of medicine applied to anesthesiology, through the analysis of physiological variables and cabinet and laboratory studies, clinical simulation and deliberate practice, to develop skills in the anesthetic management of various age groups.

### **EAA5071 RESEARCH SEMINAR II**

Apply the scientific method through the development of the research project with the aim of planning a study protocol in anesthesiology.

### **EAA5081 EDUCATION SEMINAR II**

Apply the different techniques and concepts of the educational methodology through the development of didactic planning, as well as the application of teaching techniques and medical education tools to establish teaching-learning strategies as a medical educator.

### **EAA5081 HEALTH CARE WORK III**

To evaluate the different clinical situations of medical practice in anesthesiology through the application of anesthetic techniques and procedures to manage pre, trans and postoperative complications.

### **EAA5101 HEALTHCARE SEMINAR III**

Establish the anesthetic management in high specialty surgeries through the analysis of the patient's conditions and the surgical procedure proposed in complex clinical cases to integrate the techniques that allow comprehensive anesthetic treatment.

**EAA5111 RESEARCH SEMINAR III**

Develop a clinical research protocol through the application of advanced techniques and tools of statistics and research communication in anesthesiology to defend the results of their research with the aim of creating sources of knowledge that benefit the development of the community and medical sciences under ethical standards and evidence-based medicine.

**EAA5121 EDUCATION SEMINAR III**

Establish effective teaching practices in the medical area through practice in clinical settings for the development of skills and abilities in medical evaluation.



EDUCATIONAL OFFER  
**Social Sciences**

## ANTHROPOLOGY

### READ1012 ARCHAEOLOGY

Understand the basic archaeological concepts and the potential of material culture in relation to the reconstruction of the cultural past through the review and discussion of texts and data on the development of archaeology, to indicate its link with the other anthropological disciplines.

### LEA1022 CULTURE AND SOCIETY

Identify the fundamental anthropology concepts by comparing the social life of human communities to understand cultural diversity.

### LDE1012 CONSTITUTIONAL LAW

Identify the set of constitutional rules and principles, through the differentiation between the organic and dogmatic part of the Magna Carta, to understand the priority role that it has in the creation of legal orders.

### LEX0112 FOREIGN LANGUAGE I \*

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### INF0012 INFORMATION TECHNOLOGIES IN THE CONSTRUCTION OF KNOWLEDGE \*

Understand relevant information using Information and Communication Technologies (ICT) to document an economic, political, cultural and/or social problem.

### READ1052 VISUAL ANTHROPOLOGY

Apply photographic techniques as an anthropological documentation tool through its application in the field, to elaborate and interpret images as sociocultural phenomena.

### ESP0012 ACADEMIC REASONING\*

Express academic arguments orally and in writing within your discipline by developing and presenting persuasive speeches, using the rudiments of communication to interact effectively in a specific academic context.

### MAT1052 STATISTICS FOR SOCIAL SCIENCES

Apply various statistical techniques through different statistical inference methods to estimate parameters of interest that contribute to decision-making in different social sciences areas.

### READ1042 HUMAN EVOLUTION

Identify evolutionary mechanisms, such as natural selection and genetic drift, by considering fossil and archaeological evidence to infer the biological and cultural development of humans during the Pleistocene.

### LEX0122 FOREIGN LANGUAGE II \*

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### **READ1032 MESOAMERICAN PRE-STATE SOCIETIES**

Identify the archaeological evidence linked to the early cultural evolution in Mesoamerica by reviewing the relevant literature, to compare the operative processes in the agricultural transition, the emergence of social inequality and the beginnings of urbanism in the various regions of this cultural area.

### **LEA2032 CITY AND STATE IN MESOAMERICA**

Compare the classical and postclassical stages in political, economic, social and ideological terms by reviewing the archaeological and ethnohistorical record and their respective interpretation, to infer the variables involved in the formation of complex societies in the various cultural sub-areas of Mesoamerica.

### **ESP0022 ACADEMIC WRITING \***

Develop academic articles of your discipline through the administration of specialized information and the application of academic and scientific conventions, for the dissemination of academic and scientific knowledge.

### **READ2022 HISTORICAL ETHNOLOGY**

Interpret the historical development of the indigenous peoples of Mexico from colonial times to the twentieth century, by inserting it within Spanish colonialism to identify the changes experienced by the native population over those centuries.

### **LEX0132 FOREIGN LANGUAGE III \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### **LEA2012 LINGUISTICS**

Understand the different fields of linguistics by identifying different speech contexts to establish recognition of their application in other branches of anthropology.

### **READ2042 ANTHROPOLOGY THEORY**

Compare the conceptual frameworks of the theoretical currents of anthropological thought, especially of the 20<sup>th</sup> century, through the comparative and critical study of the main protagonists, ideas and contributions, to identify the establishment of professional anthropology.

### **LRP2032 COMMUNICATION AND GLOBALIZATION**

Identify the influence of culture and communication on individual identity through intercultural mediation interventions in everyday contexts to understand prejudices and tendencies to stereotype.

### **READ2052 MATERIAL CULTURE STUDIES**

Identify the main techniques to study of material culture through the archaeological or ethnographic analysis of artifacts, to build and demonstrate different ways of life.

**READ2062 ANTHROPOLOGY TECHNICAL ILLUSTRATION**

Graphically construct the archaeological and/or ethnographic record using manual and electronic drawing techniques in the different aspects that need to be represented in the field work with lab artifacts to apply the basic concepts of technical illustration.

**LEA2082 ARCHAEOLOGY FIELD METHODS**

Identify the basic archaeology methods and techniques by reviewing their premises and practice with specialized instruments to apply in field research.

**LEA2072 ETHNOLOGY FIELD METHODS**

Design a logically structured methodological approach by identifying a social situation transforming it into a problem of anthropological research, to practice the ethnographic method with its techniques, as well as the importance of ethical commitment to the subjects, the information obtained, the dissemination and dissemination of research results.

**READ3022 INDIGENOUS MEXICO**

Examine the general panorama of the indigenous peoples of Mexico, getting involved in the discussion on regionalization emphasizing the distinction between ethnic groups and linguistic groups, by understanding the most important themes to which Mexican ethnography has focused to identify an overview of the theoretical frameworks that have permeated the ethnographic work in Mexico.

**READ3032 MYTH, MAGIC AND RELIGION**

Identify some of the most representative theoretical perspectives by studying empirical cases among the most relevant in the anthropological tradition of studies on myth, magic and religion to understand the cultural diversity of the five continents.

**READ3052 NAHUATL**

Identify the characteristics of Nahuatl, through linguistic tools, to analyze the historical documents written in that language and use them in fieldwork with communities that speak any of its variants.

**LEA3012 ORIGINS OF CIVILIZATION**

Understand environmental, social, technological and cultural changes through neolithic archaeological and historical evidence from Africa, Asia and Europe to interpret the emergence of social inequality and the development of first-generation cities and states in the Old World.

**LRI3012 PUBLIC POLICIES**

Analyze the characteristics of the public policy approach by highlighting their differences from other perspectives of politics and government, examining the different stages or operations constituting the policy process (agenda, definition, decision, implementation and evaluation) to identify the peculiarities and advantages of this form of government.

**LEA3042 PROFESSIONAL PRACTICE 1**

Apply the theoretical and methodological knowledge acquired in the classroom, through its use in the public, social and/or private spheres to develop professional experience in the basic interpretative management of empirical data.

**READ3082 APPLIED ANTHROPOLOGY**

Evaluate the different currents of applied anthropology by implementing their field methods in identifying and managing social problems to test the potential of their contribution to their resolution.

**READ3112 URBAN ANTHROPOLOGY**

Compare the approaches of the different currents in the field of urban anthropology through its methodological implications to analyze current urban problems.

**LEA3092 CULTURE DISSEMINATION STRATEGIES**

Design products to disseminate anthropological knowledge aimed at different audiences, through the creation of digital strategies to recommend the value of culture in contemporary contexts.

**READ3122 GLOBAL ETHNOLOGY**

Identify the main cultural areas of the world by identifying the representative sociocultural traits of each to carry out comparative ethnological studies.

**READ3102 HUMAN OSTEOLOGY**

Identify the basic concepts of human skeletal remains by reviewing relevant literature and handling human skeletal material, to create a detailed view of the relevance that the study of ancient skeletons has in the development of cultural inferences.

**LEA3072 CULTURAL HERITAGE**

Analyze the social, economic and ideological use of cultural heritage, both material and intangible, evaluating specific cases at a global level to assess their current importance.

**READ3062 SELECT TOPICS 1**

Examine in depth cutting-edge topics in archaeology through the application of theoretical, methodological and/or technical tools, to identify changes in the current social organization.

**READ4012 LEGAL ANTHROPOLOGY**

Evaluate the socio-cultural dimension of the legal phenomena of minorities by studying cases in both national and international contexts to identify legal anthropology situations.

**LBI4012 ECOLOGY AND ENVIRONMENTAL CHANGE**

Relate the structure and function of ecosystems through the analysis of the interactions between their different components (biotic and abiotic) to assess human effects and their consequences on ecosystems, particularly on climate change, as well as global remediation, mitigation and conservation measures.

**LHC4022 MUSEOGRAPHY**

Analyze specific problems faced by museography in works that have technical and environmental requirements that respond to recent trends in art and culture through the design and assembly of an exhibition to determine the complexity of the work of the museographer.

**READ4032 PROFESSIONAL PRACTICE 2**

Apply the theoretical and methodological knowledge acquired in the classroom, through professional activities in the public, private or social spheres to develop skills and capacities useful in the diagnosis, planning, evaluation and intervention to solve problems of professional practical life.

**READ4022 SELECT TOPICS 2**

Analyze current topics in Cultural Anthropology through the use of theoretical, methodological or technical tools of anthropology to interpret their practical application.

**READ4072 ECONOMIC ANTHROPOLOGY AND GLOBALIZATION**

Compare theoretical currents related to the investigation of the production, circulation, exchange, distribution, use and consumption of goods in past and contemporary societies by analyzing case studies to explain the processes that produce inequality and its implications for social development and globalization.

**READ4062 CULTURE AND CLIMATE CHANGE**

Analyze the role of culture in the adaptation of human groups to climate change through the study of archaeological and ethnographic cases, to interpret the contribution of anthropology to the current debates on the subject.

**READ4052 GENDER AND CULTURE**

Evaluate the different theoretical currents on gender in the investigation of cultures, both extinct and current, through the analysis and discussion of texts, to identify the importance of the categories of generic division in social organization, the construction of identity, and the transformations and cultural continuities of human communities.

**LEA4042 ANTHROPOLOGY PROJECTS**

Apply the methodology of research design through the analysis and interpretation of the empirical data obtained to prepare a final academic paper.

**READ4082 SELECT TOPICS 3**

Analyze current topics in Cultural History, by comparing the theoretical positions generated around, to evaluate current social problems.

**GENERAL MATH ELECTIVE\***

- **MAT0012 MATH FOR THINKING**

Apply various approaches to mathematical thinking by modeling and analyzing hypothetical and real-world phenomena, to design solutions to problems related to your studies and your physical environment.

- **MAT0022 MATH AND CULTURE**

Develop a project that integrates math with any of the expressions of culture, by modeling phenomena or indicators to make decisions that benefit society.

### GENERAL ART ELECTIVE\*

- **ART0022 ART AND CULTURE OF THE AMERICAS**

Identify sociocultural development in the Americas through their artistic expressions to establish an active dialogue with this past and its identity context.

- **ART0012 ART, HISTORY AND CULTURE**

Identify how human beings define reality and express it for themselves and the world from the emergence of Western modernity, by explaining the reciprocal relationship between art, history and culture to critically argue artistic representation and expression topics.

### GENERAL BEHAVIORAL SCIENCE ELECTIVE\*

- **COM0012 ETHICS, SOCIETY AND THE ENVIRONMENT**

Discuss global problems and their local implications by integrating socio-economic, environmental and ethical aspects to create proposals for a tolerant society.

- **COM0022 BEHAVIOR AND HUMAN DEVELOPMENT**

Identify human development's bio-psycho-social factors, by analyzing the variables that affect individual and social behavior and use this knowledge in their academic and professional life.

### GENERAL NATURAL SCIENCE ELECTIVE\*

- **CNE0012 FOOD AND LIFE**

Identify the relationship between food and health through research that provides data on eating habits to choose an informed diet for your daily life.

- **CNE0022 EVOLUTION AND BIODIVERSITY**

Describe the origin of diseases through causal factors to assess human health information sources.

### GENERAL HUMANITIES ELECTIVE\*

- **HUM0012 ECOSOPHY**

Compare world representation systems, analyzing different epistemological proposals to reposition the current Being-Man relationship with their environment and other beings from a fundamentally ecological philosophical dimension.

- **HUM0022 HUMANISTIC THINKING**

Study humanist thought from a socio-historical cultural perspective, based on the analysis of its different historical nuances to understand its relevance in contemporary culture.

*\*Courses that are part of the UDLAP General Education component*

## POLITICAL SCIENCE

### LDE1012 CONSTITUTIONAL LAW

Identify the set of constitutional rules and principles, through the differentiation between the organic and dogmatic part of the Magna Carta, to understand the priority role that it has in the creation of legal orders.

### LPT1012 POLITICAL SCIENCE FUNDAMENTALS

Identify the fundamental concepts of political science (state, government, power, authority, legitimacy, democracy, etc.) by analyzing the structures, processes and results that support political phenomena, to understand different perspectives and methodologies that explain the complexity of governments, in addition to the political reality of contemporary society.

### LEX0112 FOREIGN LANGUAGE I \*

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### INF0012 INFORMATION TECHNOLOGIES IN THE CONSTRUCTION OF KNOWLEDGE \*

Understand relevant information using Information and Communication Technologies (ICT) to document an economic, political, cultural and/or social problem.

### LRI1012 POLITICAL AND SOCIAL THEORY I

Identify the central problems and themes of political and social theory in different historical contexts, analyzing the classical authors who cemented the foundations of politics as science, as well as studies on power, society and the State, to compare the various paradigms of interpretation of governments and socio-political phenomena.

### ESP0012 ACADEMIC REASONING\*

Express academic arguments orally and in writing within your discipline by developing and presenting persuasive speeches, using the rudiments of communication to interact effectively in a specific academic context.

### MAT1052 STATISTICS FOR SOCIAL SCIENCES

Apply various statistical techniques through different statistical inference methods to estimate parameters of interest that contribute to decision-making in different social sciences areas.

### LRI1022 FUNDAMENTALS OF INTERNATIONAL RELATIONS

Identify the most important concepts in the study of international relations, through the analysis of the interaction of international actors, to evaluate political processes and their connection with economic, social and cultural processes in various parts of the world.

### LEX0122 FOREIGN LANGUAGE II \*

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**LRI1042 CONTEMPORARY MEXICAN POLITICS**

Identify the evolution of the Mexican political system from the Mexican Revolution to the current six-year term, through the analysis of its political, social, economic processes and the actors involved, to develop contextual tools and interpret national socio-political problems.

**LRI1032 POLITICAL AND SOCIAL THEORY II**

Understand modern political and social theories, as well as the axes of discussion around crucial sociopolitical issues by examining its main thinkers, to understand the wide range of perspectives in the study of the social and the political.

**LDE2022 HUMAN RIGHTS**

Learn the concept of human right in theory, legislation and jurisprudence, to examine the different means of defense that exist in the national and international legal order.

**ESP0022 ACADEMIC WRITING \***

Develop academic articles of your discipline through the administration of specialized information and the application of academic and scientific conventions, for the dissemination of academic and scientific knowledge.

**LRI2022 HISTORY OF INTERNATIONAL RELATIONS**

Examine the development of international relations from its origins to the present, by analyzing different international systems to consider past experiences as a participant in contemporary international relations.

**LEX0132 FOREIGN LANGUAGE III \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**LRI2012 SOCIAL SCIENCES RESEARCH METHODS**

Develop a research protocol, following the scientific method and its specific adaptations to the different social science disciplines, to apply epistemological and methodological knowledge when approaching a problem.

**LPT2012 COMPARATIVE POLITICS**

Compare political processes and their interconnection by analyzing economic, social and cultural processes in different parts of the world to explain the causes of the crisis of the different systems today.

**LRP2032 COMMUNICATION AND GLOBALIZATION**

Identify the influence of culture and communication on individual identity through intercultural mediation interventions in everyday contexts to understand prejudices and tendencies to stereotype.

**LPD2032 ADVANCED SOCIAL SCIENCES RESEARCH METHODS**

Apply a research, collection and analysis protocol for social sciences data, to comply with the scientific rigor of the field, by developing a project with different methodological approaches.

#### **LPT2032 SOCIAL MOVEMENTS AND CIVIL SOCIETY**

Identify the internal and external factors of the main social and economic political relations of society to examine the different causes that determined the current situation between civil society and the State through the comparative analysis of types of social movements and organizations.

#### **LPT2022 PARTIES AND PARTY SYSTEMS**

Identify the fundamental characteristics of party concepts and party systems, and their dimensions to examine their current and past peculiarities, analyzing theories and cases in Mexico and the world.

#### **LPT2042 COMPARED POLITICAL SYSTEMS**

Analyze different forms of government and politics, by classifying and categorizing the different political systems that exist in the world, to understand global problems and how they are faced by different nations.

#### **LPT3022 POLITICAL BEHAVIOR**

Identify the main approaches and mechanisms of political analysis and decision-making through the interpretation of the concept of governance to develop public policy proposals from a perspective of political behavior and behavioral analysis.

#### **LRI3042 UNITED STATES, SOCIETY AND STATE**

Examine the construction of United States' society and political system from the analysis of the great stages of its history, as well as of the political, economic and social actors to interpret the functioning of its complex democratic system and its relevance in Mexican foreign policy.

#### **LPT3032 POLITICAL INSTITUTIONS AND DEMOCRACY**

Compare the theoretical characteristics of the new institutionalism and the theory of democracy to apply and evaluate the concepts of development and political decadence through the analysis of historical and contemporary events.

#### **LRI3012 PUBLIC POLICIES**

Analyze the characteristics of the public policy approach by highlighting their differences from other perspectives of politics and government, examining the different stages or operations constituting the policy process (agenda, definition, decision, implementation and evaluation) to identify the peculiarities and advantages of this form of government.

#### **LPT3012 PROFESSIONAL PRACTICE 1**

Identify problems related to political science during their professional practice to recommend comprehensive and appropriate solutions that respond to relevant problems in social organizations, public institutions or private sector institutions through the application of the results-based management method.

### **LRI3052 CONTEMPORARY LATIN AMERICA**

Analyze the region, the recent history and politics of Latin American countries, as well as their contemporary dilemmas, through a conceptual review of the most important ideas and cases of the dominant countries, to identify this region in the current global environment, and to understand some of the academic trends.

### **LPT3052 FEDERALISM AND LOCAL GOVERNMENTS**

Analyze the main institutional attributes of federalism as a form of government through the identification of relevant types and classifications to compare the application of its characteristics in the design and functioning of local governments in Mexico.

### **LPT3082 GOVERNANCE AND PUBLIC POLICY**

Interpret the impact of governance on the formulation of public policies, to develop proposals to improve public decision-making processes and implementation of public policies, through the analysis of the importance of criteria such as citizen participation, multilevel play, deliberation, evidence, transparency, accountability, evaluation of results and vertical play in the international agenda.

### **LPT3042 LEGISLATIVE POWER WORKSHOP**

Develop legislative change proposals through the analysis of the legislative process, the institutional bases of legislative activity, its procedures, main actors, as well as the foundations of the legislative technique to create bills and opinions of law.

### **LPT3062 SELECT TOPICS 1**

Analyze cutting-edge issues on the current problems and policies of Mexico's national and international public agenda identifying contemporary conceptual and theoretical frameworks of political science to evaluate alternative solutions.

### **LPT3072 DEVELOPMENT THEORY AND PRACTICE**

Identify the foundations of international development through the analysis of the theories, concepts and methodologies that make up the discipline to understand the main debates about what is and what are the purposes of social progress.

### **LRI4022 ENVIRONMENTAL GOVERNANCE AND ENERGY**

Interpret the challenges of environmental problems and the global energy transition within the framework of the Anthropocene, by analyzing different global environmental governance approaches to design solutions to current socio-environmental problems.

### **LPT4012 POLITICAL MARKETING**

Develop an election campaign, within the framework of the U.S. political system, to apply theoretical knowledge about political marketing by evaluating five variables: political discourse, political advertising, campaign infrastructure, institutional support, and expert/specialist support.

### **LPT4052 POLICY AND NEW TECHNOLOGIES**

Develop virtual civil society platforms to allow citizens more agile access to technical information through analytical annotations derived from a critical reading of theories.

**LPT4022 PROFESSIONAL PRACTICE 2**

Apply the knowledge acquired during their studies to real scenarios of the discipline through the analysis of theoretical concepts and the method of results-based management to develop solutions to problems related to political science.

**LPT4042 GOVERNMENT WORKSHOP**

Identify government agenda problems, through the analysis of the decision-making process in government institutions under criteria of effectiveness, efficiency, impact evaluation, accountability and transparency in the exercise of government to develop diagnoses and proposals for public policy intervention.

**LPT4032 SELECT TOPICS 2**

Analyze cutting-edge topics on the different political science theoretical currents, actors and trends identifying and using current analytical tools to apply their knowledge to solve contemporary social problems.

**LPT4062 CAMPAIGN DESIGN AND ANALYSIS**

Develop a presidential election campaign strategy, within the framework of the Mexican political system, to apply the theoretical knowledge and historical evidence of previous elections, by analyzing the central variables of campaigns: electorate, candidate, system and political culture, media and discourse and policy proposals.

**LRI4122 GLOBAL POLITICAL ECONOMY**

Interpret the different dimensions of global political economy, through the analysis of the main contemporary theories and concepts on economic globalization, to relate international processes to the dynamics of global economic interaction.

**LRI4082 SECURITY STUDIES**

Apply the different branches of security studies, through critical discussion from a multidimensional perspective, to analyze security policies at the local, national and international levels.

**LPT4072 RESEARCH AND ANALYSIS WORKSHOP**

Develop a research project on social phenomena and/or public policies through the application of quantitative and qualitative techniques to apply skills of analysis and production of knowledge.

**LPT4092 PUBLIC POLICY WORKSHOP**

Develop a concrete, convincing and feasible public policy to evaluate its feasibility in solving a current public problem in Mexico through the application of practical design and research tools.

**GENERAL MATH ELECTIVE\***

- **MAT0012 MATH FOR THINKING**

Apply various approaches to mathematical thinking by modeling and analyzing hypothetical and real-world phenomena, to design solutions to problems related to your studies and your physical environment.

- **MAT0022 MATH AND CULTURE**

Develop a project that integrates math with any of the expressions of culture, by modeling phenomena or indicators to make decisions that benefit society.

**GENERAL ART ELECTIVE\***

- **ART0022 ART AND CULTURE OF THE AMERICAS**

Identify sociocultural development in the Americas through their artistic expressions to establish an active dialogue with this past and its identity context.

- **ART0012 ART, HISTORY AND CULTURE**

Identify how human beings define reality and express it for themselves and the world from the emergence of Western modernity, by explaining the reciprocal relationship between art, history and culture to critically argue artistic representation and expression topics.

**GENERAL BEHAVIORAL SCIENCE ELECTIVE\***

- **COM0012 ETHICS, SOCIETY AND THE ENVIRONMENT**

Discuss global problems and their local implications by integrating socio-economic, environmental and ethical aspects to create proposals for a tolerant society.

- **COM0022 BEHAVIOR AND HUMAN DEVELOPMENT**

Identify human development's bio-psycho-social factors, by analyzing the variables that affect individual and social behavior and use this knowledge in their academic and professional life.

**GENERAL NATURAL SCIENCE ELECTIVE\***

- **CNE0012 FOOD AND LIFE**

Identify the relationship between food and health through research that provides data on eating habits to choose an informed diet for your daily life.

- **CNE0022 EVOLUTION AND BIODIVERSITY**

Describe the origin of diseases through causal factors to assess human health information sources.

***\*Subjects that are part of the General Education component UDLAP***

## MEDIA COMMUNICATION AND PRODUCTION

### LPM1012 FUNDAMENTALS OF COMMUNICATION

Identify the basic concepts of mass media communication, and social, cultural and technological development, by understanding the dimensions of the communication phenomenon to assume responsibility as a creator of meanings and critical user of the media.

### LIV1022 FUNDAMENTALS OF DIGITAL IMAGING

Reproduce simple vector images or bitmaps using specialized digital image creation software, to design projects both on screen and in print.

### LEX0112 FOREIGN LANGUAGE I \*

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### INF0012 INFORMATION TECHNOLOGIES IN THE CONSTRUCTION OF KNOWLEDGE \*

Understand relevant information using Information and Communication Technologies (ICT) to document an economic, political, cultural and/or social problem.

### LRP1012 COMMUNICATION THEORIES

Identify the main communication theories, as well as the analysis of their main effects through the knowledge of the process of evolution to assess the importance of knowledge and application of theoretical models of communication and mass culture in the configuration of effective messages in different media.

### ESP0012 ACADEMIC REASONING\*

Express academic arguments orally and in writing within your discipline by developing and presenting persuasive speeches, using the rudiments of communication to interact effectively in a specific academic context.

### LIV1052 DIGITAL IMAGE EDITING

Design digital images to relate a visual message to a given audience by applying advanced knowledge of the use of specialized software in the production of images and thus effectively define the appropriate technical parameters of the medium in which they are reproduced.

### MAT1052 STATISTICS FOR SOCIAL SCIENCES

Apply various statistical techniques through different statistical inference methods to estimate parameters of interest that contribute to decision-making in different social sciences areas.

### LIV1072 PHOTOGRAPHY

Identify the components of a photograph by using techniques and equipment to produce images.

### LEX0122 FOREIGN LANGUAGE II \*

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### LPM1022 LANGUAGE OF CINEMA I

Identify the main milestones in the first sixty years of film history through a written analysis of a film in accordance with the evolution and use of narrative and cinematic language techniques until the late 1950s to understand the most representative authors and their contributions to the cinematographic language.

**ESP0022 ACADEMIC WRITING \***

Develop academic articles of your discipline through the administration of specialized information and the application of academic and scientific conventions, for the dissemination of academic and scientific knowledge.

**LPM2022 SCREENWRITING**

Identify the grammatical characteristics of Spanish, through its historical and social development, to explain its evolution and formation.

**LIV2022 INFOGRAPHICS AND DATA VISUALIZATION**

Design visuals and computer graphics using maps, diagrams, icons or diagrams to explain a fact or phenomenon that is published in a design product, both digital and printed.

**LEX0132 FOREIGN LANGUAGE III \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**LRI2012 SOCIAL SCIENCES RESEARCH METHODS**

Develop a research protocol, following the scientific method and its specific adaptations to the different social science disciplines, to apply epistemological and methodological knowledge when approaching a problem.

**LRP2032 COMMUNICATION AND GLOBALIZATION**

Identify the influence of culture and communication on individual identity through intercultural mediation interventions in everyday contexts to understand prejudices and tendencies to stereotype.

**LPD2032 ADVANCED SOCIAL SCIENCES RESEARCH METHODS**

Apply a research, collection and analysis protocol for social sciences data, to comply with the scientific rigor of the field, by developing a project with different methodological approaches.

**LPM2032 AUDIOVISUAL PRE-PRODUCTION**

Develop an audiovisual pre-production folder through the elements of production design, applied to short films, music videos, corporate videos or feature films to apply the most relevant knowledge of each of the stages of the audiovisual pre-production process.

**LPM2052 MULTIMEDIA CONTENT PRODUCTION**

Identify the characteristics and virtues of different digital resources and tools by designing an effective communication strategy applicable to the field of new media to develop an internet portal with interactive content.

**LPM2042 JOURNALISTIC WRITING AND STYLE**

Describe the theoretical basis and the essential instruments to develop the capacity to construct a journalistic story by applying the specific written language of print and digital media.

#### **LRP3012 NEW MEDIA ANALYSIS**

Analyze the main epistemological paradigms of contemporary theory on new media, mastering the main key concepts for the analysis and implementation of the theories learned about new media.

#### **LPM3042 ADVANCED SCREENWRITING**

Analyze alternative films to the classic Hollywood narrative model by applying theories about dramatic construction and audiovisual syntax to write an adaptation of a short film, re-write a short film and/or segmentation of a feature film.

#### **LRI3012 PUBLIC POLICIES**

Analyze the characteristics of the public policy approach by highlighting their differences from other perspectives of politics and government, examining the different stages or operations constituting the policy process (agenda, definition, decision, implementation and evaluation) to identify the peculiarities and advantages of this form of government.

#### **LPM3022 PROFESSIONAL PRACTICE 1**

Apply the knowledge and skills acquired through academic training, in projects and daily activities of an organization, which contribute to comprehensive training to create a verifiable work experience.

#### **LPM3032 RADIO PRODUCTION**

Produce auditory messages with communicative richness, through the intentional use of the expressive radio code resources and the correct operation of the digital equipment, to record and reproduce audio to explain strategic proposals within the radio world.

#### **LPM3012 AUDIOVISUAL PRODUCTION TECHNIQUES**

Identify the elements of the audiovisual message when creating of creative, technical and aesthetic pieces using the different tools and technical resources to express and broadcast audiovisual messages effectively that meet the minimum technical and aesthetic standards in their exhibition.

#### **LPM3062 DIGITAL EDITION**

Establish the background and the current state of the editing process through the different stages within the process and thus discern between the different tools and resources to understand the most appropriate between different types of projects.

#### **LRP3062 DIGITAL MEDIA STUDIOS**

Identify the historical, cultural and social context of digital media, identifying its multiple meanings, impacts and its potential use in diverse audiences to use new digital technologies and social media tools in the planning of advertising and public relations strategies.

#### **LPM3092 JOURNALISM GENRES**

Explain the different modalities of media expression through the generation of journalistic texts to identify the different expressive formulas that the journalist can adopt in the transmission of facts and opinions.

### **LPM3052 AUDIOVISUAL PRODUCTION**

Establish the functions and responsibilities of the producer within the process of elaboration of audiovisual material, identifying advanced audiovisual production techniques to create audiovisual products that meet aesthetic, creative and technical standards at a professional level.

### **LPM3072 ADVANCED RADIO PRODUCTION**

Apply the elements of the radio code in its various techniques and scopes, using them as tools in communication, to create innovative audio producers, with successful strategic proposals of radio formats.

### **LPM3082 SELECT TOPICS 1**

Analyze specific theoretical assumptions about current mass communication issues to identify the functioning and structure of the media through the analysis of communication theories.

### **LPM4042 DOCUMENTARY**

Analyze the advantages and limitations of different types of documentary forms implementing the techniques of audiovisual language to produce original documentaries.

### **LPM4022 INVESTIGATIVE JOURNALISM**

Identify the sources of journalistic research through techniques and strategies of new technologies to apply them to journalistic research.

### **LPM4062 PROFESSIONAL PRACTICE 2**

Apply the knowledge of communication and media production, through practice in audiovisual projects and media companies, to develop the skills, attitudes and experiences necessary for the exercise of the profession.

### **LPM4012 TELEVISION PRODUCTION**

Produce a television program by properly applying knowledge and techniques in the stages of pre-production, production and post-production, to express messages aimed at a target audience with specific content within a program bar.

### **LPM4032 DISTRIBUTION AND EXHIBITION WORKSHOP**

Apply the process of distribution and film exhibition to a case study through the knowledge and skills necessary to develop the logistics of a company dedicated to the commercialization of cinema in Mexico.

### **LPM4052 SELECT TOPICS 2**

Identify current issues in audiovisual media through the application of theories and communication models to analyze and carry out comprehensive production projects.

### **LPM4092 DIGITAL CINEMA**

Apply the principles and techniques of cinema to a high-resolution digital video production to develop an audiovisual project in the cinematographic style, in a creative and original way, through a short film format in digital video.

### **LPM4072 SOUND DESIGN AND EDITING**

Establish the synchronization of images, video or multimedia by applying the language of sound in the productions to identify the aesthetic and artistic guidelines.

#### **LPM4082 DESIGN AND EVALUATION OF COMMUNICATION PROJECTS**

Demonstrate a critical understanding of the concept of communication and the key terms that define it to critically determine the quality and influence of communication through integral projects in different areas.

#### **LPM4102 DIGITAL JOURNALISM**

Explain the new digital environment through the relationship between the information society and the media, to determine the importance of digital communication in our world.

#### **LPM4112 SELECT TOPICS 3**

Analyze current issues in the area of audiovisual and digital communication, making use of specific skills to develop relevant content for the contemporary sociocultural environment.

### **GENERAL ART ELECTIVE\***

- **ART0022 ART AND CULTURE OF THE AMERICAS**  
Identify sociocultural development in the Americas through their artistic expressions to establish an active dialogue with this past and its identity context.
- **ART0012 ART, HISTORY AND CULTURE**  
Identify how human beings define reality and express it for themselves and the world from the emergence of Western modernity, by explaining the reciprocal relationship between art, history and culture to critically argue artistic representation and expression topics.

### **GENERAL MATH ELECTIVE\***

- **MAT0012 MATH FOR THINKING**  
Apply various approaches to mathematical thinking by modeling and analyzing hypothetical and real-world phenomena, to design solutions to problems related to your studies and your physical environment.
- **MAT0022 MATH AND CULTURE**  
Develop a project that integrates math with any of the expressions of culture, by modeling phenomena or indicators to make decisions that benefit society.

### **GENERAL BEHAVIORAL SCIENCE ELECTIVE\***

- **COM0012 ETHICS, SOCIETY AND THE ENVIRONMENT**  
Discuss global problems and their local implications by integrating socio-economic, environmental and ethical aspects to create proposals for a tolerant society.
- **COM0022 BEHAVIOR AND HUMAN DEVELOPMENT**  
Identify human development's bio-psycho-social factors, by analyzing the variables that affect individual and social behavior and use this knowledge in their academic and professional life.

### GENERAL NATURAL SCIENCE ELECTIVE\*

- **CNE0012 FOOD AND LIFE**  
Identify the relationship between food and health through research that provides data on eating habits to choose an informed diet for your daily life.
- **CNE0022 EVOLUTION AND BIODIVERSITY**  
Describe the origin of diseases through causal factors to assess human health information sources.

### GENERAL HUMANITIES ELECTIVE\*

- **HUM0012 ECOSOPHY**  
Compare world representation systems, analyzing different epistemological proposals to reposition the current Being-Man relationship with their environment and other beings from a fundamentally ecological philosophical dimension.
- **HUM0022 HUMANISTIC THINKING**  
Study humanist thought from a socio-historical cultural perspective, based on the analysis of its different historical nuances to understand its relevance in contemporary culture.

*\*Courses that are part of the UDLAP General Education component*

## COMMUNICATION AND PUBLIC RELATIONS

### LPM1012 FUNDAMENTALS OF COMMUNICATION

Identify the basic concepts of mass media communication, and social, cultural and technological development, by understanding the dimensions of the communication phenomenon to assume responsibility as a creator of meanings and critical user of the media.

### LIV1022 FUNDAMENTALS OF DIGITAL IMAGING

Reproduce simple vector images or bitmaps using specialized digital image creation software, to design projects both on screen and in print.

### LEX0112 FOREIGN LANGUAGE I \*

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### INF0012 INFORMATION TECHNOLOGIES IN THE CONSTRUCTION OF KNOWLEDGE \*

Understand relevant information using Information and Communication Technologies (ICT) to document an economic, political, cultural and/or social problem.

### LRP1012 COMMUNICATION THEORIES

Identify the main communication theories, as well as the analysis of their main effects through the knowledge of the process of evolution to assess the importance of knowledge and application of theoretical models of communication and mass culture in the configuration of effective messages in different media.

#### **ESP0012 ACADEMIC REASONING\***

Express academic arguments orally and in writing within your discipline by developing and presenting persuasive speeches, using the rudiments of communication to interact effectively in a specific academic context.

#### **LAD1012 EFFECTIVE COMMUNICATION**

Identify the importance of effective communication in organizations through the analysis of theoretical and methodological proposals to understand possibilities that create action proposals.

#### **LIV1052 DIGITAL IMAGE EDITING**

Design digital images to relate a visual message to a given audience by applying advanced knowledge of the use of specialized software in the production of images and thus effectively define the appropriate technical parameters of the medium in which they are reproduced.

#### **MAT1052 STATISTICS FOR SOCIAL SCIENCES**

Apply various statistical techniques through different statistical inference methods to estimate parameters of interest that contribute to decision-making in different social sciences areas.

#### **LIV1072 PHOTOGRAPHY**

Identify the components of a photograph by using techniques and equipment to produce images.

#### **LMK1012 MARKETING FUNDAMENTALS**

Identify marketing strategy principles and key elements through research and use of sources published in the discipline, to create marketing strategies to improve the competitive position of a company. Apply the decisions of each marketing strategy element using market research tools, to design marketing strategies for a real company.

#### **LEX0122 FOREIGN LANGUAGE II \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

#### **ESP0022 ACADEMIC WRITING \***

Develop academic articles of your discipline through the administration of specialized information and the application of academic and scientific conventions, for the dissemination of academic and scientific knowledge.

#### **LRP2022 WRITING FOR THE MEDIA**

Develop different techniques of to organize writing, with special attention to the phenomena of mass communication, through the distinction and application of rhetorical and literary figures to identify the different genre characteristics.

#### **LIV2022 INFOGRAPHIC AND DATA VISUALIZATION**

Design visuals and computer graphics using maps, diagrams, icons or diagrams to explain a fact or phenomenon that is published in a design product, both digital and printed.

**LEX0132 FOREIGN LANGUAGE III \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**LRI2012 SOCIAL SCIENCES RESEARCH METHODS**

Develop a research protocol, following the scientific method and its specific adaptations to the different social science disciplines, to apply epistemological and methodological knowledge when approaching a problem.

**LRP2012 PRINCIPLES OF PUBLIC RELATIONS**

Identify the role of public relations within communication, as well as its evolution and function within today's society by designing persuasive ethical messages to indicate to organizations to implement effective strategic communication.

**LIV2032 SEMIOTICS AND VISUAL RHETORIC**

Identify the main contributions of semiotics and rhetoric to study visual messages, analyzing relevant theories and examples to make visual information design decisions.

**LMK2022 CONSUMER BEHAVIOR**

Explain consumer behavior in marketing practice by making use of the analysis of theories, cases and research tools to achieve effective market segmentation. Apply knowledge of consumer behavior to marketing to meet market needs, making use of market research tools in the detection of factors influencing the behavior that consumers exhibit in the search, purchase, use and disposal of products or services

**LRP2032 COMMUNICATION AND GLOBALIZATION**

Identify the influence of culture and communication on individual identity through intercultural mediation interventions in everyday contexts to understand prejudices and tendencies to stereotype.

**LPD2032 ADVANCED SOCIAL SCIENCES RESEARCH METHODS**

Apply a research, collection and analysis protocol for social sciences data, to comply with the scientific rigor of the field, by developing a project with different methodological approaches.

**LPM2052 MULTIMEDIA CONTENT PRODUCTION**

Identify the characteristics and virtues of different digital resources and tools by designing an effective communication strategy applicable to the field of new media to develop an internet portal with interactive content.

**LRP3012 NEW MEDIA ANALYSIS**

Analyze the main epistemological paradigms of contemporary theory on new media, mastering the main key concepts for the analysis and implementation of the theories learned about new media.

### **LRP3032 DISCURSIVE COMMUNICATION ANALYSIS**

Competently and appropriately analyze the discursive analyses of various media through a review of the narrative, discursive and persuasive communication processes to present a critical judgment on the diegetic potential of the media, both analog, digital and emerging.

### **LMK3032 COMPREHENSIVE MARKETING COMMUNICATION**

Design integral communication campaigns through different integral marketing communication tools to convince the client of the products or services offered by the organization and achieve their successful commercialization in the market.

### **LRI3012 PUBLIC POLICIES**

Analyze the characteristics of the public policy approach by highlighting their differences from other perspectives of politics and government, examining the different stages or operations constituting the policy process (agenda, definition, decision, implementation and evaluation) to identify the peculiarities and advantages of this form of government.

### **LRP3022 PROFESSIONAL PRACTICE 1**

Apply the knowledge and skills of communication and public relations acquired during their studies, in projects and daily activities of an organization, which contribute to comprehensive training to develop verifiable work experience

### **LRP3042 VERBAL AND NONVERBAL COMMUNICATION**

Identify the elements of verbal and nonverbal communication by analyzing theories that explain communicative intentions in different contexts to produce efficient messages for different audiences and platforms.

### **LRP3072 COMMUNICATION AND ORGANIZATIONAL DEVELOPMENT**

Identify the conceptual and operational management of organizational communication, the historical contextualization and the elements of its internal and external application in different types of organizations, applying appropriate analysis methods to design internal communication strategies that favor the organizational culture and climate.

### **LRP3062 DIGITAL MEDIA STUDIOS**

Identify the historical, cultural and social context of digital media, identifying its multiple meanings, impacts and its potential use in diverse audiences to use new digital technologies and social media tools in the planning of advertising and public relations strategies.

### **LRP3052 PERSUASION AND PUBLIC OPINION**

Identify the theoretical approaches and historical evolution of the concept of public opinion in different contexts by carrying out an analysis of it in its immediate context to link its effects with social, political and economic reality.

### **LRP3082 SELECT TOPICS 1**

Analyze current communication topics on specific theoretical assumptions to identify the functioning and structure of public relations in the current professional environment of the discipline through identified organizational problems.

**LRP3092 CRITICAL THEORY AND CULTURAL STUDIES**

Critically analyze the patterns, structures and social processes that influence the behavior of individuals as consumers of information by underpinning systems of critical content dissemination to analyze contemporary media.

**LPT4012 POLITICAL MARKETING**

Develop an election campaign, within the framework of the U.S. political system, to apply theoretical knowledge about political marketing by evaluating five variables: political discourse, political advertising, campaign infrastructure, institutional support, and expert/specialist support.

**LMK4012 SOCIAL MARKETING**

Design social marketing strategies using knowledge and tools to plan programs to run non-profit organizations, public institutions or policies.

**LRP4022 PUBLIC RELATIONS PLANNING**

Design a professional and ethical public relations strategic plan by applying the theories, models, tools and basic techniques of communication, to identify customer expectations.

**LPT4052 POLICY AND NEW TECHNOLOGIES**

Develop virtual civil society platforms to allow citizens more agile access to technical information through analytical annotations derived from a critical reading of theories.

**LRP4012 PROFESSIONAL PRACTICE 2**

Apply the knowledge of communication and public relations through practice in social, commercial and corporate projects to develop the skills, attitudes and experiences necessary in the exercise of the profession.

**LRP4032 SELECT TOPICS 2**

Analyze current issues on corporate communication through the analysis of communication and multidimensional organization to develop comprehensive public relations projects.

**LRP4042 STRATEGIC CAMPAIGNS IN DIGITAL MEDIA**

Develop persuasive communication strategies through social networks, which allow organizations to achieve their public relations objectives and build a brand image to integrate the audience based on their consumption of social networks.

**LRP4052 CRISIS COMMUNICATION**

Develop a crisis communication plan by applying theories and techniques of communication to real cases through evaluating communication materials to prepare the organization in critical situations that put its reputation and image at risk.

**LRP4062 BRAND BUILDING AND CORPORATE REPUTATION**

Diagnose the value and advantage of creating strong brands that manage to adapt to time and place through image and performance audits to develop comprehensive communication strategies that support and build their positioning and reputation.

**LPM4082 DESIGN AND EVALUATION OF COMMUNICATION PROJECTS**

Demonstrate a critical understanding of the concept of communication and the key terms that define it to critically determine the quality and influence of communication through integral projects in different areas.

**LRP4072 SELECT TOPICS 3**

Analyze current issues in specific theoretical assumptions on the environment of communication, public relations and related areas, by studying public relations and the means to identify the operation and structure of comprehensive public relations projects.

**GENERAL ART ELECTIVE\***

- **ART0022 ART AND CULTURE OF THE AMERICAS**  
Identify sociocultural development in the Americas through their artistic expressions to establish an active dialogue with this past and its identity context.
- **ART0012 ART, HISTORY AND CULTURE**  
Identify how human beings define reality and express it for themselves and the world from the emergence of Western modernity, by explaining the reciprocal relationship between art, history and culture to critically argue artistic representation and expression topics.

**GENERAL MATH ELECTIVE\***

- **MAT0012 MATH FOR THINKING**  
Apply various approaches to mathematical thinking by modeling and analyzing hypothetical and real-world phenomena, to design solutions to problems related to your studies and your physical environment.
- **MAT0022 MATH AND CULTURE**  
Develop a project that integrates math with any of the expressions of culture, by modeling phenomena or indicators to make decisions that benefit society.

**GENERAL BEHAVIORAL SCIENCE ELECTIVE\***

- **COM0012 ETHICS, SOCIETY AND THE ENVIRONMENT**  
Discuss global problems and their local implications by integrating socio-economic, environmental and ethical aspects to create proposals for a tolerant society.
- **COM0022 BEHAVIOR AND HUMAN DEVELOPMENT**  
Identify human development’s bio-psycho-social factors, by analyzing the variables that affect individual and social behavior and use this knowledge in their academic and professional life.

**GENERAL NATURAL SCIENCE ELECTIVE\***

- **CNE0012 FOOD AND LIFE**  
Identify the relationship between food and health through research that provides data on eating habits to choose an informed diet for your daily life.
- **CNE0022 EVOLUTION AND BIODIVERSITY**  
Describe the origin of diseases through causal factors to assess human health information sources.

**GENERAL HUMANITIES ELECTIVE\***

- **HUM0012 ECOSOPHY**  
Compare world representation systems, analyzing different epistemological proposals to reposition the current Being-Man relationship with their environment and other beings from a fundamentally ecological philosophical dimension.
- **HUM0022 HUMANISTIC THINKING**  
Study humanist thought from a socio-historical cultural perspective, based on the analysis of its different historical nuances to understand its relevance in contemporary culture.

*\*Courses that are part of the UDLAP General Education component*

**LAW**

**LDE1012 CONSTITUTIONAL LAW**

Identify the set of constitutional rules and principles, through the differentiation between the organic and dogmatic part of the Magna Carta, to understand the priority role that it has in the creation of legal orders.

**LDE1032 LAW HISTORY**

Identify the stages of formation of legal ideas, through the distinction of their main characteristics, to describe the origins of law, in general and of its institutions.

**LEX0112 FOREIGN LANGUAGE I \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**INF0012 INFORMATION TECHNOLOGIES IN THE CONSTRUCTION OF KNOWLEDGE \***

Understand relevant information using Information and Communication Technologies (ICT) to document an economic, political, cultural and/or social problem.

**LDE1022 LAW THEORY**

Identify the peculiarities of legal regulations compared to other normative systems, as well as their structural and valuative elements, through the study of the most representative theories, to understand the different dimensions of the legal phenomenon.

**ESP0012 ACADEMIC REASONING\***

Express academic arguments orally and in writing within your discipline by developing and presenting persuasive speeches, using the rudiments of communication to interact effectively in a specific academic context.

**LDE1042 ADMINISTRATIVE LAW**

Identify the rules and functions of the Mexican state, through knowledge of the laws that regulate the acts of the different institutions, to analyze administrative structures and acts in depth.

**LDE1072 CRIMINAL OFFENSES**

Understand criminal science principles, foundations, regulations and postulates by relating the different schools, theories and doctrines of criminal dogmatics applicable to the Mexican criminal legal system, to describe the constituent elements of the crime and its commissive forms.

**LEX0122 FOREIGN LANGUAGE II \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**LDE1062 PERSONS AND FAMILY**

Identify the person as the sole holder of rights and obligations, both in their physical and legal manifestation, and the family as the organization protected by law; through the knowledge of the attributes that correspond to them in the constitution and the civil legislation, to confirm the knowledge and resolution of legal disputes of the same.

**LDE1052 RESEARCH AND LEGAL REASONING WORKSHOP**

Identify the methodological tools on which the legal reasoning is articulated, which allow the management of the sources, from the identification of the legislative, jurisdictional and doctrinal formulations in the law to interpret and give solution to legal problems.

**LDE2032 PROPERTY AND SUCCESSION**

Identify the legal nature and regulation of the estate and successions, understanding the Mexican rules and doctrine that regulate them, to apply them properly in legal practice.

**LDE2012 CORPORATE LAW**

Examine the different regimes that involve commercial companies through Mexican regulatory analysis, to identify the mechanisms and different legal institutions that influence their operation.

### **LDE2042 CRIMINAL PROCEDURAL LAW**

Develop the criminal procedure structure by analyzing each of the stages that make it up, to identify it, observing and enforcing the guarantees and human rights recognized in the Mexican constitution.

### **LDE2022 HUMAN RIGHTS**

Learn the concept of human right in theory, legislation and jurisprudence, to examine the different means of defense that exist in the national and international legal order.

### **ESP0022 ACADEMIC WRITING \***

Develop academic articles of your discipline through the administration of specialized information and the application of academic and scientific conventions, for the dissemination of academic and scientific knowledge.

### **LEX0132 FOREIGN LANGUAGE III \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### **LDE2072 INTELLECTUAL PROPERTY LAW**

Apply the national and international legal framework on intellectual property, based on its theoretical and practical knowledge, to classify intellectual property in the company in its different processes, products or services.

### **LDE2052 TAX LAW**

Analyze the different tax provisions that regulate the relationship between the active and passive subjects of the taxes, by comparing the constituent elements of direct and indirect taxes.

### **LDE2062 LABOR LAW**

Compare the rules that regulate labor in Mexico and the world, by analyzing the functioning of companies and unions, to explain how better legal bases can be laid to develop the creation and improvement of employment in the country.

### **LDE2082 BANKING AND FINANCIAL OPERATIONS**

Interpret the legal, jurisprudential and regulatory provisions issued by the Bank of Mexico that regulate the active and passive subjects involved in credit institutions and banking auxiliaries, through the analysis of the legal elements to relate decision-making in banking business.

### **LDE2102 ORAL TRIAL SEMINAR**

Develop oral and written expression skills, through the simulation of oral trials applying techniques of case theory, interrogations and argumentation, to identify the stages and hearings of the adversarial accusatory system.

### **LDE2092 GENERAL THEORY OF OBLIGATIONS**

Examine the concept of obligation, elements, sources, transmission and extinction, through the doctrinal legal and jurisprudential study to evaluate legal acts and facts.

### **LDE3012 FOREIGN TRADE AND INTERNATIONAL TREATIES**

Analyze the regulation of foreign trade operations, investigating the applicable regulations at national and international level, to identify international trade problems.

### **LDE3042 CIVIL AND COMMERCIAL CONTRACTS**

Compare the different types of civil and commercial contracts, through a doctrinal, legislative and jurisprudential approach, to identify their elements of validity and existence.

### **LDE3022 PUBLIC INTERNATIONAL LAW**

Identify the constituent elements of treaties, international custom and general principles and doctrines of international law, through the analysis of contemporary theories, conventional and customary norms, the binding and non-binding determinations of the different international institutions in which Mexico participates, to apply them to practical cases.

### **LRI3012 PUBLIC POLICIES**

Analyze the characteristics of the public policy approach by highlighting their differences from other perspectives of politics and government, examining the different stages or operations constituting the policy process (agenda, definition, decision, implementation and evaluation) to identify the peculiarities and advantages of this form of government.

### **LDE3052 PROFESSIONAL PRACTICE 1**

Identify the knowledge of law, through practice in different public or private organizations, to develop the skills, attitudes and experiences necessary for their profession.

### **LDE3032 LEGAL WRITING WORKSHOP**

Design legal documents, through the analysis of facts and interpretation of legal arguments, to identify the elements that allow a cause, reason or motives to be expressed with consistency and coherence.

### **LDE3082 RIGHT OF AMPARO**

Identify the principles under which the right of amparo is governed, as well as its origin, through the analysis of national legislation and jurisprudential criteria, to develop written claims.

### **LDE3102 PRIVATE INTERNATIONAL LAW**

Identify the main legal systems in private international law, through the analysis of the national and international legal systems, to establish solutions to problems related to nationality, foreign, judicial processes and legal status of foreign natural and legal persons.

### **LDE3092 CIVIL AND COMMERCIAL PROCEDURAL LAW**

Understand the structure of civil and commercial procedures, by analyzing the stages that make it up, to identify the procedure and take the necessary actions contemplated in these procedures.

### **LDE3062 FISCAL AND ADMINISTRATIVE PROCEDURAL LAW**

Analyze in the media of defense the strategies through the doctrinal, legal and jurisprudential provisions, to develop defense skills in administrative and tax matters.

#### **LDE3072 ALTERNATIVE DISPUTE RESOLUTION MECHANISMS AND ALTERNATIVE SOLUTIONS TO CRIMINAL PROCEEDINGS**

Analyze the procedures of alternative dispute resolution or early conclusion of the criminal process by identifying the rules, procedures, resources, terms and legal instances corresponding to each contentious, litigious, jurisdictional or quasi-jurisdictional case to design an effective and efficient legal strategy in the cases of mediation, conciliation, arbitration, reparatory agreement, simplified procedure and conditional suspension of the process.

#### **LPT3042 LEGISLATIVE POWER WORKSHOP**

Develop legislative change proposals through the analysis of the legislative process, the institutional bases of legislative activity, its procedures, main actors, as well as the foundations of the legislative technique to create bills and opinions of law.

#### **LDE4032 LEGAL ARGUMENTATION**

Interpret normative assumptions and relevant facts, by constructing a justified line of argument, to examine problems in the normative premise and the factual premise.

#### **LDE4012 INTERNATIONAL CONTRACTS AND ARBITRATION**

Design international contracts and arbitration agreements using national and international regulations to identify the legal structuring of international commercial transactions.

#### **LDE4042 CONSTITUTIONAL PROCEDURAL LAW**

Identify the rules and procedures to defend the Constitution, through the analysis of legal institutions that combine elements of the three branches of government, the states, civil society, and the international arena. to understand the factors that guarantee democracy and the rule of law.

#### **LRI4022 ENVIRONMENTAL GOVERNANCE AND ENERGY**

Interpret the challenges of environmental problems and the global energy transition within the framework of the Anthropocene, by analyzing different global environmental governance approaches to design solutions to current socio-environmental problems.

#### **LDE4022 PROFESSIONAL PRACTICE 2**

Apply legal experience, through the development of processes in practice in different public or private organizations to relate the skills, attitudes and experiences necessary in the exercise of the profession.

#### **LDE4052 ORAL LITIGATION TECHNIQUES**

Relate the knowledge acquired in various legal disciplines, using techniques and speeches prepared or improvised that contain exposition and legal substantiation, to develop an oral litigation or alternative dispute resolution mechanism.

### **LDE4062 LAW PHILOSOPHY**

Understand the different approaches that have existed, in terms of the analysis of the legal phenomenon, from the reconstruction of the most important features of the dominant conceptions in legal thought such as iuspositivism, iusnaturalism and iusrealism, in order to obtain reflective skills, regarding the theoretical and ideological implications that underlie the judgments of duty in contemporary legal systems.

### **LDE4072 CASE SIMULATION SEMINAR**

Evaluate legal problems in the different disciplines of the public and private sphere at national and international level, through procedural simulation and substantive implementation of applicable law, to develop forensic skills and competencies in different areas of law.

### **LDE4082 SELECT TOPICS 1**

Analyze current issues in the field of public law, at the national or international level, through the analysis of facts, conflicts, doctrines, practical cases, normative principles, laws or treaties to propose theoretical, practical, documentary or oral solutions within the applicable legal framework.

### **LDE4092 SELECT TOPICS 2**

Examine cutting-edge topics in new legal paradigms in the delivery and administration of justice, through the evaluation of institutions and legal figures, to apply the legal mechanisms corresponding to the area of law.

### **LDE4102 SELECT TOPICS 3**

Analyze cutting-edge issues in private law through the analysis of its legal structure, to identify the normative characteristics, its scope of competence, as well as its rights and obligations.

## **GENERAL ART ELECTIVE\***

- **ART0022 ART AND CULTURE OF THE AMERICAS**  
Identify sociocultural development in the Americas through their artistic expressions to establish an active dialogue with this past and its identity context.
- **ART0012 ART, HISTORY AND CULTURE**  
Identify how human beings define reality and express it for themselves and the world from the emergence of Western modernity, by explaining the reciprocal relationship between art, history and culture to critically argue artistic representation and expression topics.

## **GENERAL MATH ELECTIVE\***

- **MAT0012 MATH FOR THINKING**  
Apply various approaches to mathematical thinking by modeling and analyzing hypothetical and real-world phenomena, to design solutions to problems related to your studies and your physical environment.
- **MAT0022 MATH AND CULTURE**

Develop a project that integrates math with any of the expressions of culture, by modeling phenomena or indicators to make decisions that benefit society.

### **GENERAL BEHAVIORAL SCIENCE ELECTIVE\***

- **COM0012 ETHICS, SOCIETY AND THE ENVIRONMENT**  
Discuss global problems and their local implications by integrating socio-economic, environmental and ethical aspects to create proposals for a tolerant society.
- **COM0022 BEHAVIOR AND HUMAN DEVELOPMENT**  
Identify human development's bio-psycho-social factors, by analyzing the variables that affect individual and social behavior and use this knowledge in their academic and professional life.

### **GENERAL NATURAL SCIENCE ELECTIVE\***

- **CNE0012 FOOD AND LIFE**  
Identify the relationship between food and health through research that provides data on eating habits to choose an informed diet for your daily life.
- **CNE0022 EVOLUTION AND BIODIVERSITY**  
Describe the origin of diseases through causal factors to assess human health information sources.

### **GENERAL HUMANITIES ELECTIVE\***

- **HUM0012 ECOSOPHY**  
Compare world representation systems, analyzing different epistemological proposals to reposition the current Being-Man relationship with their environment and other beings from a fundamentally ecological philosophical dimension.
- **HUM0022 HUMANISTIC THINKING**  
Study humanist thought from a socio-historical cultural perspective, based on the analysis of its different historical nuances to understand its relevance in contemporary culture.

***\*Courses that are part of the UDLAP General Education component***

## PEDAGOGY

### **LDE1012 CONSTITUTIONAL LAW**

Identify the set of constitutional rules and principles, through the differentiation between the organic and dogmatic part of the Magna Carta, to understand the priority role that it has in the creation of legal orders.

### **LPD1012 HISTORY OF EDUCATION IN MEXICO**

Analyze the historical processes of the educational system, the profession, institutions and organizations of education in Mexico from documents and audiovisual supports to relate these processes with current conditions and events and identify their possible consequences.

### **LEX0112 FOREIGN LANGUAGE I \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### **INF0012 INFORMATION TECHNOLOGIES IN THE CONSTRUCTION OF KNOWLEDGE \***

Understand relevant information using Information and Communication Technologies (ICT) to document an economic, political, cultural and/or social problem.

### **LPD1022 EDUCATIONAL THEORY**

Analyze the different philosophical currents in education comparing their principles and applications to support their philosophical position and use it to base an educational proposal.

### **ESP0012 ACADEMIC REASONING\***

Express academic arguments orally and in writing within your discipline by developing and presenting persuasive speeches, using the rudiments of communication to interact effectively in a specific academic context.

### **MAT1052 STATISTICS FOR SOCIAL SCIENCES**

Apply various statistical techniques through different statistical inference methods to estimate parameters of interest that contribute to decision-making in different social sciences areas.

### **LEX0122 FOREIGN LANGUAGE II \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### **LPD1032 TEACHING PLANNING AND STRATEGIES**

Identify different elements of didactic planning through the analysis of various proposals to plan and base teaching and learning situations from different approaches.

**LPA1022 CHILDHOOD AND ADOLESCENCE PSYCHOLOGY**

Identify the characteristics of the different stages of childhood and adolescence development through physical, cognitive, emotional and social variables to integrate a complete vision of child and adolescent development.

**LPD1042 LEARNING AND TEACHING THEORIES**

Understand the main learning and teaching theories by identifying their fundamentals to use in the analysis and design of teaching situations in the classroom.

**LPD2022 EDUCATIONAL COMMUNICATION AND INTERACTION**

Apply communication strategies in the classroom considering the different teaching methods and learning styles, the climate of the classroom, intrapersonal, interpersonal and small group communication, verbal and nonverbal communication and, especially, ethical issues such as respect, discrimination, racism, violence, to solve communication problems.

**ESP0022 ACADEMIC WRITING \***

Develop academic articles of your discipline through the administration of specialized information and the application of academic and scientific conventions, for the dissemination of academic and scientific knowledge.

**LEX0132 FOREIGN LANGUAGE III \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**LRI2012 SOCIAL SCIENCES RESEARCH METHODS**

Develop a research protocol, following the scientific method and its specific adaptations to the different social science disciplines, to apply epistemological and methodological knowledge when approaching a problem.

**LPA2012 COGNITIVE PROCESSES**

Analyze the main theories, methods and paradigms focused on the study of cognitive processes, by identifying possible applications to link the approaches of cognitive sciences to the different fields that study behavior.

**LPD2012 EDUCATIONAL TECHNOLOGY AND INSTRUCTIONAL DESIGN**

Design teaching-learning experiences by selecting and applying different models of instructional design proposed by the educational technology area to solve problems related to human learning.

**LPD2042 CURRICULUM DESIGN**

Identify the foundations of the curriculum of an educational institution of your choice, by analyzing its philosophy, learning theories, society, culture and curricular theory that serve as a basis to determine its relevance in the context in which it is located.

**LPD2032 ADVANCED SOCIAL SCIENCES RESEARCH METHODS**

Apply a research, collection and analysis protocol for social sciences data, to comply with the scientific rigor of the field, by developing a project with different methodological approaches.

**LPD2052 FORMAL EDUCATION PROJECT**

Analyze the educational processes in the classroom related to the field of formal education through the design and application of diagnostic techniques and instruments (diagnosis of needs and capacities, learning difficulties.) to propose a concrete educational intervention that responds to the needs detected.

**LPA2042 ADULTHOOD AND OLD AGE PSYCHOLOGY**

Identify the characteristics of the different stages of development of adulthood and old age by comparing biological, psychological and sociocultural factors to integrate a complete view of adult development and senectitude.

**LPA2032 CHILD AND ADOLESCENT PSYCHOPATHOLOGY**

Evaluate the psycho-emotional health condition in child development and adolescence stages through the analysis of the clinical description, etiology and differential diagnosis of early age disorders to establish a clinical psychological diagnosis and identify possible treatments in an ethical, critical, respectful and creative way.

**LPD3062 EDUCATIONAL EVALUATION**

Develop complete evaluation plans for different levels such as the classroom, the institution and the system, selecting the type of evaluation relevant to a given educational situation, through the design and application of the appropriate instruments, creating a final report of results to identify opportunities for improvement of learning, performance and in general of educational quality.

**LPD3052 ICT IN ORGANIZATIONS**

Design a project that incorporates the use of Information and Communication Technologies (ICT) in an organization as a strategic part to form individuals and groups, considering the contexts of the organization, society and the current literature on this subject.

**LPD3022 ORGANIZATION AND MANAGEMENT OF EDUCATIONAL INSTITUTIONS**

Apply the principles of theory and organizational behavior to the integration and management of educational institutions through the analysis of contextual variables to strengthen existing and operational non-financial administrative processes.

**LPD3032 EDUCATIONAL GUIDANCE AND ADVICE**

Identify models, principles and approaches of educational, school and professional guidance through case analysis to design appropriate counselling strategies for different groups, contexts and educational objectives.

#### **LRI3012 PUBLIC POLICIES**

Analyze the characteristics of the public policy approach by highlighting their differences from other perspectives of politics and government, examining the different stages or operations constituting the policy process (agenda, definition, decision, implementation and evaluation) to identify the peculiarities and advantages of this form of government.

#### **LPD3012 PROFESSIONAL PRACTICE 1**

Design an internship project in a formal or non-formal organization based on the analysis of identity, field, professional linkage and the diagnosis of educational needs to apply and relate the learning developed throughout the program.

#### **LPD3042 SOCIO-EDUCATIONAL THEORIES**

Apply socio-educational theories that explain human development throughout life in the theoretical and methodological construction of a real pedagogical intervention, based on the analysis of the context, as well as interdisciplinary discussions to identify global and local problems that impact the educational environment, social and sustainable development.

#### **LRP3072 COMMUNICATION AND ORGANIZATIONAL DEVELOPMENT**

Identify the conceptual and operational management of organizational communication, the historical contextualization and the elements of its internal and external application in different types of organizations, applying appropriate analysis methods to design internal communication strategies that favor the organizational culture and climate.

#### **LPD3092 DETECTION OF EDUCATIONAL NEEDS IN ORGANIZATIONS**

Identify educational, training and human resources development needs in an organization, applying the appropriate methodologies to ensure the accuracy and objectivity of the results obtained.

#### **LPD3112 DISTANCE EDUCATION**

Select appropriate methods and strategies to develop distance and online learning experiences, based on educational theory, teaching and learning principles, organizational structure and national education policy.

#### **LPD3102 DIFFERENTIAL EDUCATION**

Identify the different models of educational intervention appropriate to different individuals, groups and contexts from social inequality, sociocultural contexts, minorities, gender, sexual diversity, poverty, ethnocentrism, social exclusion, marginalization and migration to consider the diversity of students and the complexities in the learning process.

### **LPD3082 EDUCATION IN ORGANIZATIONS**

Identify, in any type of organization, the basic elements of the theory and organizational behavior that characterize it to relate them to the educational processes of teaching and learning that could occur in each of the types of organization analyzed through the theoretical categories reviewed in the course.

### **LPD3072 EDUCATION LEGISLATION AND POLICIES**

Analyze the background, evolution and current situation of the legal framework that regulates educational activity in Mexico through the discussion of educational legislation and policies to identify areas of opportunity and proposals for improvement in educational matters.

### **LPD4042 TRAINING AND DEVELOPMENT IN ORGANIZATIONS**

Design relevant and feasible training plans and programs to address the development and/or training needs in specific contexts of specific populations in an organization, through the application of adult learning theories and affective processes, as well as instructional design models, appropriate methods and techniques.

### **LPD4022 COMPARATIVE EDUCATION**

Identify the different approaches used in comparative education studies by analyzing studies carried out on some of the recent issues that are on the global agenda regarding this field to contrast the current conditions of society and education in the world.

### **LPD4052 ADULT TRAINING**

Design plans, programs and training activities for adults considering their context and sociocultural particularities through the contrast of methodologies and strategies that have greater impact on the education of this age group.

### **LPD4012 PROFESSIONAL PRACTICE 2**

Apply the project in the organization according to the context and the recipients, permanently analyzing the experience from the theoretical perspectives, the relevance of the planning, the profile and the professional identity to put into practice the learning obtained throughout the program.

### **LPD4032 NON-FORMAL EDUCATION PROJECT**

Design instruments to diagnose and detect variables based on rigorous systematization to justify a specific educational action (diagnosis of needs, capacities, factors of exclusion and social discrimination, learning difficulties, etc.) in the field of non-formal education.

### **LPD4072 CONTEMPORARY EDUCATIONAL DEBATES AND TRENDS**

Analyze the nature and purposes of education in the 21<sup>st</sup> century and the political, social and conjunctural contexts in which the purposes of Education are defined or implemented through the discussion of contemporary educational issues to engage with the different situations that affect the country and involve global society.

### **LPD4062 APPLIED EDUCATIONAL PROJECT**

Design an educational innovation project in an organization through the joint and interdisciplinary integration of knowledge according to the learnings developed during the degree to propose solutions and improvements that favor the learning of the subjects involved.

### **LPD4082 SELECT TOPICS 1**

Examine the different agents, areas and spaces in which subjects are formed in formal education in Mexico and in the world to identify the needs of pedagogical intervention through the analysis of nature, conditions, experiences and specific problems.

### **LPD4092 SELECT TOPICS 2**

Relate the different agents, areas and spaces in which subjects are formed in non-formal education in Mexico and in the world to identify the needs of pedagogical intervention through the analysis of nature, conditions, experiences and specific problems.

### **LPD4102 SELECT TOPICS 3**

Examine the different agents, areas and spaces in which subjects are formed in informal education in Mexico and in the world to identify the needs of pedagogical intervention through the analysis of nature, conditions, experiences and specific problems.

## **GENERAL ART ELECTIVE\***

- **ART0022 ART AND CULTURE OF THE AMERICAS**  
Identify sociocultural development in the Americas through their artistic expressions to establish an active dialogue with this past and its identity context.
- **ART0012 ART, HISTORY AND CULTURE**  
Identify how human beings define reality and express it for themselves and the world from the emergence of Western modernity, by explaining the reciprocal relationship between art, history and culture to critically argue artistic representation and expression topics.

## **GENERAL MATH ELECTIVE\***

- **MAT0012 MATH FOR THINKING**  
Apply various approaches to mathematical thinking by modeling and analyzing hypothetical and real-world phenomena, to design solutions to problems related to your studies and your physical environment.
- **MAT0022 MATH AND CULTURE**  
Develop a project that integrates math with any of the expressions of culture, by modeling phenomena or indicators to make decisions that benefit society.

**GENERAL BEHAVIORAL SCIENCE ELECTIVE\***

- **COM0012 ETHICS, SOCIETY AND THE ENVIRONMENT**  
Discuss global problems and their local implications by integrating socio-economic, environmental and ethical aspects to create proposals for a tolerant society.
- **COM0022 BEHAVIOR AND HUMAN DEVELOPMENT**  
Identify human development’s bio-psycho-social factors, by analyzing the variables that affect individual and social behavior and use this knowledge in their academic and professional life.

**GENERAL NATURAL SCIENCE ELECTIVE\***

- **CNE0012 FOOD AND LIFE**  
Identify the relationship between food and health through research that provides data on eating habits to choose an informed diet for your daily life.
- **CNE0022 EVOLUTION AND BIODIVERSITY**  
Describe the origin of diseases through causal factors to assess human health information sources.

**GENERAL HUMANITIES ELECTIVE\***

- **HUM0012 ECOSOPHY**  
Compare world representation systems, analyzing different epistemological proposals to reposition the current Being-Man relationship with their environment and other beings from a fundamentally ecological philosophical dimension.
- **HUM0022 HUMANISTIC THINKING**  
Study humanist thought from a socio-historical cultural perspective, based on the analysis of its different historical nuances to understand its relevance in contemporary culture.

*\*Courses that are part of the UDLAP General Education component*

## CLINICAL PSYCHOLOGY

**LMR1032 ANATOMIC PHYSIOLOGY**

Evaluate the fundamentals of the morphology and normal functioning of the organism, by analyzing the structure and normal function of the different systems to obtain a broad view on the physical configuration of the human being.

**LEA1022 CULTURE AND SOCIETY**

Identify the fundamental anthropology concepts by comparing the social life of human communities to understand cultural diversity.

**LPA1012 FUNDAMENTALS OF PSYCHOLOGY**

Identify the object of psychology by analyzing its implications to understand the scope of psychological science.

**LEX0112 FOREIGN LANGUAGE I \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**INF0012 INFORMATION TECHNOLOGIES IN THE CONSTRUCTION OF KNOWLEDGE \***

Understand relevant information using Information and Communication Technologies (ICT) to document an economic, political, cultural and/or social problem.

**ESP0012 ACADEMIC REASONING\***

Express academic arguments orally and in writing within your discipline by developing and presenting persuasive speeches, using the rudiments of communication to interact effectively in a specific academic context.

**MAT1052 STATISTICS FOR SOCIAL SCIENCES**

Apply various statistical techniques through different statistical inference methods to estimate parameters of interest that contribute to decision-making in different social sciences areas.

**LEX0122 FOREIGN LANGUAGE II \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**LPA1032 PERSONALITY AND SOCIAL BEHAVIOR**

Identify the different perspectives that address the study of personality through the comparison of the basic constructs and postulates of each perspective, as well as the authors who developed them to understand the main contributions and their application in the various areas of psychology.

**LPA1022 CHILDHOOD AND ADOLESCENT PSYCHOLOGY**

Identify the characteristics of the different stages of childhood and adolescence development through physical, cognitive, emotional and social variables to integrate a complete vision of child and adolescent development.

**ESP0022 ACADEMIC WRITING \***

Develop academic articles of your discipline through the administration of specialized information and the application of academic and scientific conventions, for the dissemination of academic and scientific knowledge.

**LEX0132 FOREIGN LANGUAGE III \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**LRI2012 SOCIAL SCIENCES RESEARCH METHODS**

Develop a research protocol, following the scientific method and its specific adaptations to the different social science disciplines, to apply epistemological and methodological knowledge when approaching a problem.

**LPA2012 COGNITIVE PROCESSES**

Analyze the main theories, methods and paradigms focused on the study of cognitive processes, by identifying possible applications to link the approaches of cognitive sciences to the different fields that study behavior.

**LPA2022 PSYCHOBIOLOGY**

Identify the structures that make up the nervous system through the analysis of neuronal functioning and changes in the nervous system to define anatomical damage, chemical and/or physiological alterations that can create changes in behavior from information processing to basic functions.

**LRP2032 COMMUNICATION AND GLOBALIZATION**

Identify the influence of culture and communication on individual identity through intercultural mediation interventions in everyday contexts to understand prejudices and tendencies to stereotype.

**LPA2052 HUMAN EMOTIONS**

Explain the role of emotions in human behavior in the individual and interpersonal spheres, by understanding healthy emotional regulation mechanisms from pathological ones.

**LPD2032 ADVANCED SOCIAL SCIENCES RESEARCH METHODS**

Apply a research, collection and analysis protocol for social sciences data, to comply with the scientific rigor of the field, by developing a project with different methodological approaches.

**LPA2042 ADULTHOOD AND OLD AGE PSYCHOLOGY**

Identify the characteristics of the different stages of development of adulthood and old age by comparing biological, psychological and sociocultural factors to integrate a complete view of adult development and senectitude.

**LPA2032 CHILD AND ADOLESCENT PSYCHOPATHOLOGY**

Evaluate the psycho-emotional health condition in child development and adolescence stages through the analysis of the clinical description, etiology and differential diagnosis of early age disorders to establish a clinical psychological diagnosis and identify possible treatments in an ethical, critical, respectful and creative way.

#### **LPA3032 SYSTEMIC BEHAVIORAL ANALYSIS**

Apply the knowledge of descriptive and inferential statistics using statistical programs in social sciences (SPSS), to produce parametric and nonparametric analyses in quantitative data from various studies in the field of psychology.

#### **LPA3052 CRISIS INTERVENTION**

Apply theoretical models to manage critical situations through the identification of the factors associated with the physical, cognitive, affective and behavioral responses of people of different ages, in a situation of crisis, disaster or other traumatic event to understand the intervention process in a responsible and ethical way.

#### **LRI3012 PUBLIC POLICIES**

Analyze the characteristics of the public policy approach by highlighting their differences from other perspectives of politics and government, examining the different stages or operations constituting the policy process (agenda, definition, decision, implementation and evaluation) to identify the peculiarities and advantages of this form of government.

#### **LPA3042 PROFESSIONAL PRACTICE 1**

Design a scientific project by applying the principles and techniques of the research methodology to analyze proposals that contribute to the field of psychology.

#### **LPA3012 PSYCHOPHYSIOLOGY**

Analyze the functioning of the neuroendocrine system by understanding neurophysiological mechanisms to explain the multiple and diverse behavior manifestations.

#### **LPA3022 INTERVIEW THEORY AND TECHNIQUE**

Apply the different psychological interview phases by analyzing ethical aspects and communication skills to develop a simulated psychological interview of clinical cases.

#### **LPA3072 BEHAVIOR MODIFICATION LAB**

Apply the mechanisms of animal and human behavior regulation through the design and performance of lab experiments, to identify the intervention process to control behavior.

#### **LPA3062 PSYCHOPHARMACOLOGY**

Describe the effects of psychopharmaceuticals on the central nervous system through the analysis of the processes of pharmacokinetics, pharmacodynamics and the modulation of synaptic transmission to evaluate their usefulness as an adjuvant auxiliary of psychotherapy in the treatment of mental disorders of adolescents and adults.

### **LPA3092 PSYCHOMETRY**

Apply the procedures and techniques of psychological construct evaluations, by obtaining the psychometric properties of the instruments, to develop standardized, valid and reliable psychological tests.

### **LPA3102 PSYCHOPATHOLOGY I**

Evaluate the psycho-emotional state of adult patients through the analysis of the clinical description, etiology and differential diagnosis based on the use of the most current classification manuals of mental disorders to establish a clinical diagnosis of personality disorders, psychotic disorders and dissociative disorders in an ethical, critical, respectful and creative way.

### **LPA3112 PSYCHOTHERAPY**

Compare the different psychotherapeutic approaches, analyzing the evidence of their clinical efficacy to understand the treatment option in a responsible and ethical manner.

### **LMR3022 PUBLIC HEALTH AND EPIDEMIOLOGY IN HEALTH SCIENCES**

Identify the importance of epidemiology by applying the epidemiological variables of time, place and person to study the population health situation. Evaluate the health indicators of communities and populations by identifying health problems to design programs that comply with a public health policy.

### **LPA3082 SELECT TOPICS**

Analyze cutting-edge topics in neuroscience through the theoretical study of the most current research on neurological and psychological diseases to develop proposals for new methods of evaluation and treatment in the area of mental health.

### **LPA4022 PSYCHOLOGICAL EVALUATION I**

Evaluate the results of psychological tests through the analysis of the fundamentals of measurement instruments to assess the aptitudes and intellectual abilities of the subjects examined.

### **LPA4032 NEUROSCIENCE LAB**

Identify the functional organization of the central nervous system, using histological methods, and psychophysiological and behavioral observation techniques, to relate physiological variables with behavioral ones.

### **LPA4052 PROFESSIONAL PRACTICE 2**

Perform a clinical intervention, identifying the proposed steps from the initial evaluation to the evaluation of the results obtained, considering the ethical principles that regulate the psychologist's activity to develop the professional competencies corresponding to the psychological discipline.

### **LMR4012 HEALTH PSYCHOLOGY**

Select the procedures and techniques that best suit different situations, assessing the health aspect from an interdisciplinary way, reviewing biological, social and psychological aspects, to determine the factors that affect the mental pathology of the patient. Analyze personality disorders and other diseases, by classifying each of them and knowing the main traits, to develop medical practice.

### **LPA4062 PSYCHOPATHOLOGY II**

Evaluate the psycho-emotional state of adult patients analyzing clinical description, etiology and differential diagnosis based on the use of the classification manuals of the most current mental illnesses to establish a clinical diagnosis of depressive, bipolar, anxiety, trauma-related disorders, and obsessive-compulsive disorder in an ethical, critical, respectful and creative manner.

### **LPA4042 SELECT TOPICS 2**

Analyze cutting-edge topics in psychological processes of creativity by identifying the technical and conceptual tools to develop and stimulate your creative process.

### **LPA4082 PSYCHOLOGICAL EVALUATION II**

Interpret the results of psychological tests through the analysis of the fundamentals of the measuring instruments to evaluate the personality of the subjects examined.

### **LPA4112 GENDER AND SEXUALITY**

Analyze the psychosocial variables that influence gender through the identification of contemporary gender and sexuality study theories, to identify the context in which they are formed and manifest their different paradigms.

### **LPA4092 NEUROPSYCHOLOGY**

Evaluate the psychophysiology of higher mental processes by applying neuropsychological and neuropsychiatric tests to establish the diagnosis of neurocognitive disorders, in an ethical, critical, respectful and creative manner.

### **LPA4072 FOOD PSYCHOLOGY**

Evaluate disruptive eating behaviors of individuals through the analysis of cognitions and social aspects, to identify eating disorders and recommend a healthy lifestyle.

### **LPA4122 CONTEMPORARY PSYCHOTHERAPIES**

Compare the main components of third-generation psychological therapies through the analysis of the mechanisms of operation of each of them to develop proposals for an intervention program in a specific clinical case.

### **LPA4102 SELECT TOPICS 3**

Analyze cutting-edge topics in positive psychology by identifying the factors that promote psychological well-being to develop interventions focused on improving people's quality of life.

### **GENERAL ART ELECTIVE\***

- **ART0022 ART AND CULTURE OF THE AMERICAS**  
Identify sociocultural development in the Americas through their artistic expressions to establish an active dialogue with this past and its identity context.

- **ART0012 ART, HISTORY AND CULTURE**

Identify how human beings define reality and express it for themselves and the world from the emergence of Western modernity, by explaining the reciprocal relationship between art, history and culture to critically argue artistic representation and expression topics.

### GENERAL MATH ELECTIVE\*

- **MAT0012 MATH FOR THINKING**

Apply various approaches to mathematical thinking by modeling and analyzing hypothetical and real-world phenomena, to design solutions to problems related to your studies and your physical environment.

- **MAT0022 MATH AND CULTURE**

Develop a project that integrates math with any of the expressions of culture, by modeling phenomena or indicators to make decisions that benefit society.

### GENERAL BEHAVIORAL SCIENCE ELECTIVE\*

- **COM0012 ETHICS, SOCIETY AND THE ENVIRONMENT**

Discuss global problems and their local implications by integrating socio-economic, environmental and ethical aspects to create proposals for a tolerant society.

- **COM0022 BEHAVIOR AND HUMAN DEVELOPMENT**

Identify human development's bio-psycho-social factors, by analyzing the variables that affect individual and social behavior and use this knowledge in their academic and professional life.

### GENERAL NATURAL SCIENCE ELECTIVE\*

- **CNE0012 FOOD AND LIFE**

Identify the relationship between food and health through research that provides data on eating habits to choose an informed diet for your daily life.

- **CNE0022 EVOLUTION AND BIODIVERSITY**

Describe the origin of diseases through causal factors to assess human health information sources.

### GENERAL HUMANITIES ELECTIVE\*

- **HUM0012 ECOSOPHY**

Compare world representation systems, analyzing different epistemological proposals to reposition the current Being-Man relationship with their environment and other beings from a fundamentally ecological philosophical dimension.

- **HUM0022 HUMANISTIC THINKING**

Study humanist thought from a socio-historical cultural perspective, based on the analysis of its different historical nuances to understand its relevance in contemporary culture.

*\*Courses that are part of the UDLAP General Education component*

## **ORGANIZATIONAL PSYCHOLOGY**

### **LEA1022 CULTURE AND SOCIETY**

Identify the fundamental anthropology concepts by comparing the social life of human communities to understand cultural diversity.

### **LDE1012 CONSTITUTIONAL LAW**

Identify the set of constitutional rules and principles, through the differentiation between the organic and dogmatic part of the Magna Carta, to understand the priority role that it has in the creation of legal orders.

### **LPA1012 FUNDAMENTALS OF PSYCHOLOGY**

Identify the object of psychology by analyzing its implications to understand the scope of psychological science.

### **LEX0112 FOREIGN LANGUAGE I \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### **INF0012 INFORMATION TECHNOLOGIES IN THE CONSTRUCTION OF KNOWLEDGE**

Understand relevant information using Information and Communication Technologies (ICT) to document an economic, political, cultural and/or social problem.

### **ESP0012 ACADEMIC REASONING\***

Express academic arguments orally and in writing within your discipline by developing and presenting persuasive speeches, using the rudiments of communication to interact effectively in a specific academic context.

### **MAT1052 STATISTICS FOR SOCIAL SCIENCES**

Apply various statistical techniques through different statistical inference methods to estimate parameters of interest that contribute to decision-making in different social sciences areas.

### **LEX0122 FOREIGN LANGUAGE II \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### **LPA1032 PERSONALITY AND SOCIAL BEHAVIOR**

Identify the different perspectives that address the study of personality through the comparison of the basic constructs and postulates of each perspective, as well as the authors who developed them to understand the main contributions and their application in the various areas of psychology.

### **LPA1022 CHILDHOOD AND ADOLESCENT PSYCHOLOGY**

Identify the characteristics of the different stages of childhood and adolescence development through physical, cognitive, emotional and social variables to integrate a complete vision of child and adolescent development.

### **ESP0022 ACADEMIC WRITING \***

Develop academic articles of your discipline through the administration of specialized information and the application of academic and scientific conventions, for the dissemination of academic and scientific knowledge.

### **LPA2042 ADULTHOOD AND OLD AGE PSYCHOLOGY**

Identify the characteristics of the different stages of development of adulthood and old age by comparing biological, psychological and sociocultural factors to integrate a complete view of adult development and senectitude.

### **LPA3032 SYSTEMIC BEHAVIORAL ANALYSIS**

Apply the knowledge of descriptive and inferential statistics using statistical programs in social sciences (SPSS), to produce parametric and nonparametric analyses in quantitative data from various studies in the field of psychology.

### **LDE2062 LABOR LAW**

Compare the rules that regulate labor in Mexico and the world, by analyzing the functioning of companies and unions, to explain how better legal bases can be laid to develop the creation and improvement of employment in the country.

### **LPO3012 PSYCHOLOGICAL INTERVIEW IN ORGANIZATIONS**

Identify the different types of interviews, their characteristics and objectives in organizational contexts by analyzing the stages, areas to be investigated, communication skills required and ethical aspects to carry out an effective psychological interview.

### **LRI3012 PUBLIC POLICIES**

Analyze the characteristics of the public policy approach by highlighting their differences from other perspectives of politics and government, examining the different stages or operations constituting the policy process (agenda, definition, decision, implementation and evaluation) to identify the peculiarities and advantages of this form of government.

### **LPO3022 PROFESSIONAL PRACTICE 1**

Apply the theoretical knowledge and disciplinary skills acquired through the realization of supervised professional practices in an organization belonging to the public, private or social sphere to develop solutions to real problems of organizational psychology.

#### **LPO3032 STAFF RECRUITMENT AND SELECTION**

Understand the stages of human resources management through the analysis of the personnel recruitment and selection process to properly apply the recruitment and induction of the staff of a specific position.

#### **LPO3062 ORGANIZATIONAL DIAGNOSIS**

Apply the main functions of organizational diagnosis, through the analysis of conceptual elements and methodological tools, to build proposals that ensure organizational quality and continuous improvement of working life.

#### **LPO3052 GROUP FACILITATOR**

Explain the functioning of small groups through analysis of group dynamics, to effectively develop group activities.

#### **LPO3092 COLLECTIVE GROUPS AND PROCESSES**

Analyze the various theories focused on the study of collective groups and processes through the identification of psychosocial variables related to group dynamics to explain the influence that the group has on the daily life of the individual and their social practices.

#### **LPO3042 TECHNOLOGICAL MEDIATIONS OF PSYCHOSOCIAL PROCESSES**

Analyze contemporary theories in technological mediations by identifying the ways in which technological mediation generates effects in psychosocial processes to apply different forms of subjectivation processes, the context in which these are formed and manifested.

#### **LPO3082 CONSUMER PSYCHOLOGY**

Understand the principles of marketing, through the evaluation of opportunities, the identification and prediction of consumer behavior, as well as the required decision-making capacity, to identify the process of making strategic decisions in the use and manufacture of the product.

#### **LPA3092 PSYCHOMETRY**

Apply the psychological construct evaluations procedures and techniques, to obtain the psychometric properties of the instruments, to develop standardized, valid and reliable psychological tests.

#### **LPO3072 SELECT TOPICS 1**

Examine current issues in intervention in the various fields of action of the organizational psychologist from the analysis of socio-economic factors to evaluate their effects on the formation of the identity of workers.

#### **LPO4012 DIAGNOSIS AND PSYCHOSOCIAL INTERVENTION TECHNIQUES**

Compare the different intervention techniques through the analysis of theoretical-practical methodologies to identify the psychosocial diagnosis process.

#### **LPA4022 PSYCHOLOGICAL EVALUATION I**

Evaluate the results of psychological tests through the analysis of the fundamentals of measurement instruments to assess the aptitudes and intellectual abilities of the subjects examined.

#### **LPO4052 LEADERSHIP, NEGOTIATION AND CONFLICT**

Assess the characteristics of leaders by analyzing the skills and attitudes employed in negotiation to identify how they are used in conflict resolution.

#### **LPO4042 PROFESSIONAL PRACTICE 2**

Apply an intervention in the field of organizational psychology at any level, by identifying the proposed steps from the initial evaluation to the evaluation of the results obtained, to analyze their impact on organizations based on the ethical principles that regulate the professional activity of the psychologist.

#### **LPO4022 ORGANIZATIONAL PSYCHOLOGY**

Identify the role and functions of the psychologist in labor organizations, through the development of critical and reflective thinking based on the theoretical bases of human behavior in work contexts to contribute significantly to humanize work and improve the quality of people's working life.

#### **LPO4032 SELECT TOPICS 2**

Analyze cutting-edge topics on methods and strategies of the creative process by applying techniques and theories of the business context to identify elements that promote change and innovation in organizational environments.

#### **LPO4072 WORK ATTITUDES AND SATISFACTION**

Identify the characteristics that define work attitudes through the analysis of its components to develop change strategies in organizations that increase work satisfaction.

#### **LPA4082 PSYCHOLOGICAL EVALUATION II**

Interpret the results of psychological tests through the analysis of the fundamentals of the measuring instruments to evaluate the personality of the subjects examined.

#### **LPA4112 GENDER AND SEXUALITY**

Analyze the psychosocial variables that influence gender through the identification of contemporary gender and sexuality study theories, to identify the context in which they are formed and manifest their different paradigms.

#### **LPO4062 COMMUNITY PSYCHOLOGY**

Analyze contemporary community psychology theories by identifying the ethical foundations and intervention techniques to understand the context in which they are formed and manifested.

#### **LPO4092 PSYCHOLOGY AND PERSONAL DEVELOPMENT**

Analyze the integral development of people within labor organizations through the identification of the factors that contribute to their well-being to examine those elements that promote the quality of life at work.

### **LPO4082 SELECT TOPICS 3**

Analyze cutting-edge issues in organizational change, as well as the functions of the occupational psychologist through the application of evaluation techniques to develop proposals that allow an environment of well-being.

### **GENERAL ART ELECTIVE\***

- **ART0022 ART AND CULTURE OF THE AMERICAS**  
Identify sociocultural development in the Americas through their artistic expressions to establish an active dialogue with this past and its identity context.
- **ART0012 ART, HISTORY AND CULTURE**  
Identify how human beings define reality and express it for themselves and the world from the emergence of Western modernity, by explaining the reciprocal relationship between art, history and culture to critically argue artistic representation and expression topics.

### **GENERAL MATH ELECTIVE\***

- **MAT0012 MATH FOR THINKING**  
Apply various approaches to mathematical thinking by modeling and analyzing hypothetical and real-world phenomena, to design solutions to problems related to your studies and your physical environment.
- **MAT0022 MATH AND CULTURE**  
Develop a project that integrates math with any of the expressions of culture, by modeling phenomena or indicators to make decisions that benefit society.

### **GENERAL BEHAVIORAL SCIENCE ELECTIVE\***

- **COM0012 ETHICS, SOCIETY AND THE ENVIRONMENT**  
Discuss global problems and their local implications by integrating socio-economic, environmental and ethical aspects to create proposals for a tolerant society.
- **COM0022 BEHAVIOR AND HUMAN DEVELOPMENT**  
Identify human development's bio-psycho-social factors, by analyzing the variables that affect individual and social behavior and use this knowledge in their academic and professional life.

### **GENERAL NATURAL SCIENCE ELECTIVE\***

- **CNE0012 FOOD AND LIFE**  
Identify the relationship between food and health through research that provides data on eating habits to choose an informed diet for your daily life.

- **CNE0022 EVOLUTION AND BIODIVERSITY**

Describe the origin of diseases through causal factors to assess human health information sources.

**GENERAL HUMANITIES ELECTIVE\***

- **HUM0012 ECOSOPHY**

Compare world representation systems, analyzing different epistemological proposals to reposition the current Being-Man relationship with their environment and other beings from a fundamentally ecological philosophical dimension.

- **HUM0022 HUMANISTIC THINKING**

Study humanist thought from a socio-historical cultural perspective, based on the analysis of its different historical nuances to understand its relevance in contemporary culture.

*\*Courses that are part of the UDLAP General Education component*

## INTERNATIONAL RELATIONS

**LDE1012 CONSTITUTIONAL LAW**

Identify the set of constitutional rules and principles, through the differentiation between the organic and dogmatic part of the Magna Carta, to understand the priority role that it has in the creation of legal orders.

**LPT1012 POLITICAL SCIENCE FUNDAMENTALS**

Identify the fundamental concepts of political science (state, government, power, authority, legitimacy, democracy, etc.) by analyzing the structures, processes and results that support political phenomena, to understand different perspectives and methodologies that explain the complexity of governments, in addition to the political reality of contemporary society.

**LEX0112 FOREIGN LANGUAGE I \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**INF0012 INFORMATION TECHNOLOGIES IN THE CONSTRUCTION OF KNOWLEDGE \***

Understand relevant information using Information and Communication Technologies (ICT) to document an economic, political, cultural and/or social problem.

**LRI1012 POLITICAL AND SOCIAL THEORY I**

Identify the central problems and themes of political and social theory in different historical contexts, analyzing the classical authors who cemented the foundations of politics as science, as well as studies on power, society and the State, to compare the various paradigms of interpretation of governments and socio-political phenomena.

**ESP0012 ACADEMIC REASONING\***

Express academic arguments orally and in writing within your discipline by developing and presenting persuasive speeches, using the rudiments of communication to interact effectively in a specific academic context.

**MAT1052 STATISTICS FOR SOCIAL SCIENCES**

Apply various statistical techniques through different statistical inference methods to estimate parameters of interest that contribute to decision-making in different social sciences areas.

**LRI1022 FUNDAMENTALS OF INTERNATIONAL RELATIONS**

Identify the most important concepts in the study of international relations, through the analysis of the interaction of international actors, to evaluate political processes and their connection with economic, social and cultural processes in various parts of the world.

**LEX0122 FOREIGN LANGUAGE II \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**LRI1042 CONTEMPORARY MEXICAN POLITICS**

Identify the evolution of the Mexican political system from the Mexican Revolution to the current six-year term, through the analysis of its political, social, economic processes and the actors involved, to develop contextual tools and interpret national socio-political problems.

**LRI1032 POLITICAL AND SOCIAL THEORY II**

Understand modern political and social theories, as well as the axes of discussion around crucial sociopolitical issues by examining its main thinkers, to understand the wide range of perspectives in the study of the social and the political.

**LDE2022 HUMAN RIGHTS**

Learn the concept of human right in theory, legislation and jurisprudence, to examine the different means of defense that exist in the national and international legal order.

**ESP0022 ACADEMIC WRITING \***

Develop academic articles of your discipline through the administration of specialized information and the application of academic and scientific conventions, for the dissemination of academic and scientific knowledge.

### **LRI2022 INTERNATIONAL RELATIONS HISTORY**

Examine the development of international relations from its origins to the present, by analyzing different international systems to consider past experiences as a participant in contemporary international relations.

### **LEX0132 FOREIGN LANGUAGE III \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### **LRI2012 SOCIAL SCIENCES RESEARCH METHODS**

Develop a research protocol, following the scientific method and its specific adaptations to the different social science disciplines, to apply epistemological and methodological knowledge when approaching a problem.

### **LRI2032 INTERNATIONAL RELATIONS THEORY**

Analyze the evolution of the main approaches to international relations, by comparing their characteristics and value, to identify the disciplinary bases in international affairs.

### **LRP2032 COMMUNICATION AND GLOBALIZATION**

Identify the influence of culture and communication on individual identity through intercultural mediation interventions in everyday contexts to understand prejudices and tendencies to stereotype.

### **LRI2042 GLOBAL GOVERNANCE**

Analyze the main variables involved in Governance and Globalization processes by identifying the structural characteristics of their composition to examine regional and global impact.

### **LPD2032 ADVANCED SOCIAL SCIENCES RESEARCH METHODS**

Apply a research, collection and analysis protocol for social sciences data, to comply with the scientific rigor of the field, by developing a project with different methodological approaches.

### **LRI2052 MEXICAN FOREIGN POLICY**

Understand the historical stages and principles of Mexico's foreign policy from its independence to date, through the analysis of government decision-making, to identify Mexico's priority agenda and position in the international context.

### **LPT2042 COMPARED POLITICAL SYSTEMS**

Analyze different forms of government and politics, by classifying and categorizing the different political systems that exist in the world, to understand global problems and how they are faced by different nations.

### **LDE3022 PUBLIC INTERNATIONAL LAW**

Identify the constituent elements of treaties, international custom and general principles and doctrines of international law, through the analysis of contemporary theories, conventional and customary norms,

the binding and non-binding determinations of the different international institutions in which Mexico participates, to apply them to practical cases.

#### **LRI3042 UNITED STATES, SOCIETY AND STATE**

Examine the construction of United States' society and political system from the analysis of the great stages of its history, as well as of the political, economic and social actors to interpret the functioning of its complex democratic system and its relevance in Mexican foreign policy.

#### **LRI3032 GEOPOLITICS AND STRATEGIC ANALYSIS**

Examine the main classical and contemporary approaches to the study of geopolitics, by relating the problems of emerging powers, international security, nuclear proliferation, migratory phenomena, the threat of terrorism, environmental security and access to natural resources, and apply them to strategic analysis in the contemporary global agenda and its consequences in different countries and regions.

#### **LRI3012 PUBLIC POLICIES**

Analyze the characteristics of the public policy approach by highlighting their differences from other perspectives of politics and government, examining the different stages or operations constituting the policy process (agenda, definition, decision, implementation and evaluation) to identify the peculiarities and advantages of this form of government.

#### **LRI3022 PROFESSIONAL PRACTICE 1**

Apply the knowledge acquired during their studies through the analysis of problems related to international relations in their professional practice to develop proposals for comprehensive and appropriate solutions to relevant problems in social organizations, public institutions or private sector institutions.

#### **LRI3052 CONTEMPORARY LATIN AMERICA**

Analyze the region, the recent history and politics of Latin American countries, as well as their contemporary dilemmas, through a conceptual review of the most important ideas and cases of the dominant countries, to identify this region in the current global environment, and to understand some of the academic trends.

#### **LRI3082 CONSULAR DIPLOMATIC LAW AND PRACTICE**

Examine domestic and international legislation on diplomatic and consular matters by analyzing the practical and theoretical aspects of the relationship between diplomatic and consular practice to develop a historical-comparative perspective of Mexico's diplomatic and consular practice.

#### **LRI3092 NORTH AMERICAN STUDIES**

Analyze the actors, processes, institutions and political, economic and social dynamics in North America, through examining theories and concepts to identify the characteristics and problems of regional interaction, as well as their influence on the definition of Mexican foreign policy.

**LRI3062 ASIAN STUDIES**

Analyze the main economic, political, social and security variables in the national and regional processes of the Asian continent, relating the factors that influence them to explain their contemporary situation and their impact at a global level.

**LRI3102 ADVANCED MEXICAN FOREIGN POLICY ISSUES**

Analyze the social, political and economic transformations of Mexico, the United States, Latin America and the rest of the world, by examining the national and international actors that affect the construction of international agendas to interpret the impact they have on the development of Mexico's contemporary foreign policy.

**LRI3072 SELECT TOPICS 1**

Analyze the cutting-edge issues that define Mexico's global agenda for the 21<sup>st</sup> century, such as migration, terrorism, environment, security, development, armed conflicts, energy, among others, using contemporary conceptual and theoretical international relations frameworks to evaluate their influence and impact on the country.

**LRI4052 EUROPEAN UNION STUDIES**

Analyze the structure, institutions, dynamics and decision-making of the European Union by examining treaties and theories to identify the main economic, political, social and security processes of the region, and its global environment.

**LRI4022 ENVIRONMENTAL GOVERNANCE AND ENERGY**

Interpret the challenges of environmental problems and the global energy transition within the framework of the Anthropocene, by analyzing different global environmental governance approaches to design solutions to current socio-environmental problems.

**LRI4062 INTERNATIONAL MIGRATION**

Analyze the actors, patterns and dynamics of contemporary international migration, to identify their influence on regional processes and cooperation among states, using analysis models and international relations theories.

**LRI4012 NEGOTIATION AND INTERNATIONAL CONFLICT**

Evaluate different negotiation strategies with reference to the international context, applying the knowledge acquired to develop proposals for the peaceful resolution of international conflicts.

**LRI4032 PROFESSIONAL PRACTICE 2**

Apply the knowledge acquired during their studies through the analysis of problems related to international relations in their professional practice to develop proposals for comprehensive and

appropriate solutions to relevant problems in social organizations, public institutions or private sector institutions.

#### **LRI4042 SELECT TOPICS 2**

Analyze cutting-edge approaches in the discussion of international relations through the identification and use of current analytical tools to apply their knowledge to the resolution of contemporary global problems.

#### **LRI4122 GLOBAL POLITICAL ECONOMY**

Interpret the different dimensions of global political economy, through the analysis of the main contemporary theories and concepts on economic globalization, to relate international processes to the dynamics of global economic interaction.

#### **LRI4092 AFRICAN STUDIES**

Analyze the events and actors in the African and global historical context through evaluating the diversity of African countries, to explain conjunctural and long-term phenomena as well as the structural changes that they have generated, as well as the relevance of the region in Mexican foreign policy.

#### **LRI4072 MIDDLE EAST STUDIES**

Analyze the characterization of the broad reality of the Middle East, by comparing the main political, social, economic, ideological-religious and strategic issues, and define the causes of the crisis of the different states today and the place of the region in the agenda of Mexican foreign policy.

#### **LRI4082 SECURITY STUDIES**

Apply the different branches of security studies, through critical discussion from a multidimensional perspective, to analyze security policies at the local, national and international levels.

#### **LRI4112 FOREIGN POLICY OF THE GREAT POWERS**

Interpret the foreign policy of the great powers, applying an approach that studies all the aspects derived from the global order to identify the coincidences and differences between each of the great powers with a multidimensional perspective.

#### **LRI4102 SELECT TOPICS 3**

Analyze the main cutting-edge issues of the contemporary global agenda through the evaluation of the main international mechanisms and instruments that exist to identify possible resolutions of problems in the fields of economy, politics, society, security and environment.

#### **GENERAL ART ELECTIVE\***

- **ART0022 ART AND CULTURE OF THE AMERICAS**  
Identify sociocultural development in the Americas through their artistic expressions to establish an active dialogue with this past and its identity context.
- **ART0012 ART, HISTORY AND CULTURE**

Identify how human beings define reality and express it for themselves and the world from the emergence of Western modernity, by explaining the reciprocal relationship between art, history and culture to critically argue artistic representation and expression topics.

### GENERAL MATH ELECTIVE\*

- **MAT0012 MATH FOR THINKING**

Apply various approaches to mathematical thinking by modeling and analyzing hypothetical and real-world phenomena, to design solutions to problems related to your studies and your physical environment.

- **MAT0022 MATH AND CULTURE**

Develop a project that integrates math with any of the expressions of culture, by modeling phenomena or indicators to make decisions that benefit society.

### GENERAL BEHAVIORAL SCIENCE ELECTIVE\*

- **COM0012 ETHICS, SOCIETY AND THE ENVIRONMENT**

Discuss global problems and their local implications by integrating socio-economic, environmental and ethical aspects to create proposals for a tolerant society.

- **COM0022 BEHAVIOR AND HUMAN DEVELOPMENT**

Identify human development's bio-psycho-social factors, by analyzing the variables that affect individual and social behavior and use this knowledge in their academic and professional life.

### GENERAL NATURAL SCIENCE ELECTIVE\*

- **CNE0012 FOOD AND LIFE**

Identify the relationship between food and health through research that provides data on eating habits to choose an informed diet for your daily life.

- **CNE0022 EVOLUTION AND BIODIVERSITY**

Describe the origin of diseases through causal factors to assess human health information sources.

### GENERAL HUMANITIES ELECTIVE\*

- **HUM0012 ECOSOPHY**

Compare world representation systems, analyzing different epistemological proposals to reposition the current Being-Man relationship with their environment and other beings from a fundamentally ecological philosophical dimension.

- **HUM0022 HUMANISTIC THINKING**

Study humanist thought from a socio-historical cultural perspective, based on the analysis of its different historical nuances to understand its relevance in contemporary culture.

*\*Courses that are part of the UDLAP General Education component*

## MULTICULTURAL RELATIONS

### **LEA1022 CULTURE AND SOCIETY**

Identify the fundamental anthropology concepts by comparing the social life of human communities to understand cultural diversity.

### **LDE1012 CONSTITUTIONAL LAW**

Identify the set of constitutional rules and principles, through the differentiation between the organic and dogmatic part of the Magna Carta, to understand the priority role that it has in the creation of legal orders.

### **ADM1012 MANAGEMENT FUNDAMENTALS**

Describe the nature of management theory by explaining the administrative process and functional areas to identify an organization's integral administrative work.

### **LEX0112 FOREIGN LANGUAGE I \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### **INF0012 INFORMATION TECHNOLOGIES IN THE CONSTRUCTION OF KNOWLEDGE \***

Understand relevant information using Information and Communication Technologies (ICT) to document an economic, political, cultural and/or social problem.

### **ESP0012 ACADEMIC REASONING\***

Express academic arguments orally and in writing within your discipline by developing and presenting persuasive speeches, using the rudiments of communication to interact effectively in a specific academic context.

### **CON1012 ACCOUNTING**

Identify the various financial information elements through operations accounting records financial statements in service and commercial companies to control results.

### **ECO1012 BUSINESS AND ECONOMICS**

Identify the essential aspects of economic problems by examining the basic microeconomic analysis concepts and methods to interpret the decisions of individuals, companies, and their interaction in markets.

### **MAT1052 STATISTICS FOR SOCIAL SCIENCES**

Apply various statistical techniques through different statistical inference methods to estimate parameters of interest that contribute to decision-making in different social sciences areas.

#### **LMK1012 MARKETING FUNDAMENTALS**

Identify marketing strategy principles and key elements through research and use of sources published in the discipline, to create marketing strategies to improve the competitive position of a company. Apply the decisions of each marketing strategy element using market research tools, to design marketing strategies for a real company.

#### **LRI1022 FUNDAMENTALS OF INTERNATIONAL RELATIONS**

Identify the most important concepts in the study of international relations, through the analysis of the interaction of international actors, to evaluate political processes and their connection with economic, social and cultural processes in various parts of the world.

#### **LEX0122 FOREIGN LANGUAGE II \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

#### **LDE2022 HUMAN RIGHTS**

Learn the concept of human right in theory, legislation and jurisprudence, to examine the different means of defense that exist in the national and international legal order.

#### **ECO2012 MACROECONOMIC ENVIRONMENT**

Identify the basic macroeconomics indicators and models by analyzing long and short-term macroeconomic theories to infer the implications of different economic events and government policies in a country.

#### **ESP0022 ACADEMIC WRITING \***

Develop academic articles of your discipline through the administration of specialized information and the application of academic and scientific conventions, for the dissemination of academic and scientific knowledge.

#### **LEX0132 FOREIGN LANGUAGE III \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

#### **LRI2012 SOCIAL SCIENCES RESEARCH METHODS**

Develop a research protocol, following the scientific method and its specific adaptations to the different social science disciplines, to apply epistemological and methodological knowledge when approaching a problem.

#### **READ2042 ANTHROPOLOGY THEORY**

Compare the conceptual frameworks of the theoretical currents of anthropological thought, especially of the 20<sup>th</sup> century, through the comparative and critical study of the main protagonists, ideas and contributions, to identify the establishment of professional anthropology.

**LRI2032 INTERNATIONAL RELATIONS THEORY**

Analyze the evolution of the main approaches to international relations, by comparing their characteristics and value, to identify the disciplinary bases in international affairs.

**LRP2032 COMMUNICATION AND GLOBALIZATION**

Identify the influence of culture and communication on individual identity through intercultural mediation interventions in everyday contexts to understand prejudices and tendencies to stereotype.

**LNI1012 INTERNATIONAL BUSINESS STUDIES**

Identify the concepts and fundamental elements that influence the management of international business using theoretical models to develop a comprehensive perspective of the challenges and opportunities that economic globalization represents in society, government and business.

**LRI2042 GLOBAL GOVERNANCE**

Analyze the main variables involved in Governance and Globalization processes by identifying the structural characteristics of their composition to examine regional and global impact.

**LEA2072 ETHNOLOGY FIELD METHODS**

Design a logically structured methodological approach by identifying a social situation transforming it into a problem of anthropological research, to practice the ethnographic method with its techniques, as well as the importance of ethical commitment to the subjects, the information obtained, the dissemination and dissemination of research results.

**LDE3022 PUBLIC INTERNATIONAL LAW**

Identify the constituent elements of treaties, international custom and general principles and doctrines of international law, through the analysis of contemporary theories, conventional and customary norms, the binding and non-binding determinations of the different international institutions in which Mexico participates, to apply them to practical cases.

**LRI3032 GEOPOLITICS AND STRATEGIC ANALYSIS**

Examine the main classical and contemporary approaches to the study of geopolitics, by relating the problems of emerging powers, international security, nuclear proliferation, migratory phenomena, the threat of terrorism, environmental security and access to natural resources, and apply them to strategic analysis in the contemporary global agenda and its consequences in different countries and regions.

**LRM3012 ANCIENT MESOAMERICA**

Understand the different paradigms used in the study of the pre-Hispanic past of Mexico, to analyze the uses of the pre-Hispanic heritage, by evaluating the relationship between the empirical database and the theoretical constructions around the emergence of the complex societies of Mesoamerica and the main processes involved in the emergence of social inequality.

### **LRI3012 PUBLIC POLICIES**

Analyze the characteristics of the public policy approach by highlighting their differences from other perspectives of politics and government, examining the different stages or operations constituting the policy process (agenda, definition, decision, implementation and evaluation) to identify the peculiarities and advantages of this form of government.

### **LRM3022 PROFESSIONAL PRACTICE 1**

Apply the knowledge acquired from a multicultural and interdisciplinary studies through their employment in the field, company, organization or research center, to develop professional experience.

### **LRM3032 MULTICULTURAL THEORY**

Explain the theoretical models associated with multiculturalism by analyzing their implications and apply them in conflict situations derived from cultural difference.

### **LRI3052 CONTEMPORARY LATIN AMERICA**

Analyze the region, the recent history and politics of Latin American countries, as well as their contemporary dilemmas, through a conceptual review of the most important ideas and cases of the dominant countries, to identify this region in the current global environment, and to understand some of the academic trends.

### **READ3082 APPLIED ANTHROPOLOGY**

Evaluate the different currents of applied anthropology by implementing their field methods in identifying and managing social problems to test the potential of their contribution to their resolution.

### **LRP3072 COMMUNICATION AND ORGANIZATIONAL DEVELOPMENT**

Identify the conceptual and operational management of organizational communication, the historical contextualization and the elements of its internal and external application in different types of organizations, applying appropriate analysis methods to design internal communication strategies that favor the organizational culture and climate.

### **READ3122 GLOBAL ETHNOLOGY**

Identify the main cultural areas of the world by identifying the representative sociocultural traits of each to carry out comparative ethnological studies.

### **LMK3102 INTERNATIONAL MARKETING**

Identify the concepts and theoretical bases related to international and global marketing, through the application of analysis tools to develop successful strategies of products and services in international markets to improve the position of the company in the market.

### **LEA3072 CULTURAL HERITAGE**

Analyze the social, economic and ideological use of cultural heritage, both material and intangible, evaluating specific cases at a global level to assess their current importance.

### **LRM3042 SELECT TOPICS 1**

Analyze cutting-edge topics in anthropology, through the application of methodological and/or technical tools to identify the current currents of the discipline.

### **READ4012 LEGAL ANTHROPOLOGY**

Evaluate the socio-cultural dimension of the legal phenomena of minorities by studying cases in both national and international contexts to identify legal anthropology situations.

### **LRM4032 PRE-HISPANIC ART AND ARCHITECTURE**

Construct a chronological-stylistic framework of the pre-Hispanic artistic production in Mesoamerica to examine its concepts and functions, analyzing the relationship between these and sociopolitical systems, worldview, ritual and ideology.

### **LRI4012 NEGOTIATION AND INTERNATIONAL CONFLICT**

Evaluate different negotiation strategies with reference to the international context, applying the knowledge acquired to develop proposals for the peaceful resolution of international conflicts.

### **LRM4022 PROFESSIONAL PRACTICE 2**

Apply the technical and methodological knowledge acquired in the classroom, through professional activities in the business, social and/or research fields, to develop useful skills in the diagnosis, planning, evaluation and intervention in the solution of problems of professional practical life.

### **LRM4012 SELECT TOPICS 2**

Examine cutting-edge topics in management and business skills by analyzing theoretical, methodological and technical tools to understand their practical application in multicultural contexts.

### **READ4072 ECONOMIC ANTHROPOLOGY AND GLOBALIZATION**

Compare theoretical currents related to the investigation of the production, circulation, exchange, distribution, use and consumption of goods in past and contemporary societies by analyzing case studies to explain the processes that produce inequality and its implications for social development and globalization.

### **LRM4052 DESIGN AND EVALUATION OF MULTICULTURAL PROJECTS**

Design a viable project with a multicultural approach, through the evaluation of a social problem, to develop proposals with a multicultural approach whose execution contributes to the adequate solution of that problem.

### **LRM4062 ANTHROPOLOGICAL STUDIES ON CONFLICT**

Assess the root causes of social conflicts and their outcomes through the anthropological analysis of contemporary cases, to interpret the processes of change at different scales, genocide, iconoclasm and the formulation of new cultural and national identities.

### **LRM4042 SELECT TOPICS 3**

Examine cutting-edge topics related to international sociopolitical analysis by comparing theoretical and/or methodological positions to interpret different multicultural contexts.

### **GENERAL ART ELECTIVE\***

- **ART0022 ART AND CULTURE OF THE AMERICAS**  
Identify sociocultural development in the Americas through their artistic expressions to establish an active dialogue with this past and its identity context.
- **ART0012 ART, HISTORY AND CULTURE**  
Identify how human beings define reality and express it for themselves and the world from the emergence of Western modernity, by explaining the reciprocal relationship between art, history and culture to critically argue artistic representation and expression topics.

### **GENERAL MATH ELECTIVE\***

- **MAT0012 MATH FOR THINKING**  
Apply various approaches to mathematical thinking by modeling and analyzing hypothetical and real-world phenomena, to design solutions to problems related to your studies and your physical environment.
- **MAT0022 MATH AND CULTURE**  
Develop a project that integrates math with any of the expressions of culture, by modeling phenomena or indicators to make decisions that benefit society.

### **GENERAL BEHAVIORAL SCIENCE ELECTIVE\***

- **COM0012 ETHICS, SOCIETY AND THE ENVIRONMENT**  
Discuss global problems and their local implications by integrating socio-economic, environmental and ethical aspects to create proposals for a tolerant society.
- **COM0022 BEHAVIOR AND HUMAN DEVELOPMENT**  
Identify human development's bio-psycho-social factors, by analyzing the variables that affect individual and social behavior and use this knowledge in their academic and professional life.

### **GENERAL NATURAL SCIENCE ELECTIVE\***

- **CNE0012 FOOD AND LIFE**  
Identify the relationship between food and health through research that provides data on eating habits to choose an informed diet for your daily life.
- **CNE0022 EVOLUTION AND BIODIVERSITY**  
Describe the origin of diseases through causal factors to assess human health information sources.

#### **GENERAL HUMANITIES ELECTIVE\***

- **HUM0012 ECOSOPHY**  
Compare world representation systems, analyzing different epistemological proposals to reposition the current Being-Man relationship with their environment and other beings from a fundamentally ecological philosophical dimension.
- **HUM0022 HUMANISTIC THINKING**  
Study humanist thought from a socio-historical cultural perspective, based on the analysis of its different historical nuances to understand its relevance in contemporary culture.

***\*Courses that are part of the UDLAP General Education component***



MIXED MASTER'S  
DEGREES

## MASTER IN COMMUNICATION AND DIGITAL MEDIA

### **MCM5013 COMMUNICATION AND CULTURAL PROCESSES**

Analyze the cultural processes and practices of individuals and societies, applying the main approaches from which the processes have been approached and the media have been used, with the aim of identifying areas of opportunity for the development, design and implementation of communication strategies in digital media.

### **MCM5023 LANGUAGE AND STORYTELLING IN DIGITAL MEDIA**

Analyze what the ontology of the digital paradigm consists of, applying the main concepts about language and narration in new media, to generate narrative strategies with content and form, according to the current digitalization process.

### **REP5013 CORPORATE AND PROFESSIONAL RESPONSIBILITY**

Analyze the deontological obligations and duties that correspond to each subject in the development of their activities, from a human, social and legal perspective, so that individually and collectively they develop a responsible professional practice.

### **MCM5033 COMMUNICATION AND GLOBALIZATION**

Examine the main debates on globalization and the new digital ecosystem, through the critical analysis of the current influence of communication, to generate comparative and multicultural studies of the global society.

### **MCM5043 TRANSMEDIA CONTENTS**

Identify the key concepts of the phenomenon of the transmedia and contemporary transmedia, through the detailed analysis of the functioning of the entertainment industry, to develop analytical and narrative skills that allow the creation of transmedia content.

### **MPD5043 DIGITAL PUBLICATIONS**

Design basic digital publications, from the multiplatform editorial concept and layout to the generation of digital files that guarantee the publication of editorial content, through the design of reading experiences.

### **MMK5053 CONSUMER BEHAVIOR**

Apply the knowledge of the study of consumer behavior in business, through the use of marketing techniques for segmentation, targeting and positioning, with the aim of developing strategies that effectively impact the consumer in the political, social, economic and financial environment.

### **MMK5023 MARKET ANALYSIS**

Analyze market information about the motivations and attitudes of consumers during the process of consumption of goods and / or services, for the correct decision-making in organizations.

### **MPD5073 SOCIAL MEDIA DESIGN**

Build a digital strategy in social networks, using specific methodologies to correctly design organic and paid publications, in order that a brand can position itself better in relation to its competition.

### **MCM5053 DIGITAL COMMUNICATION STRATEGIES**

Examine the importance of digital strategies, through the design, development and implementation of strategies, to build solutions to the digital communication needs of public, private or community organizations.

**MMK5013 STRATEGIC MARKETING**

Develop marketing strategies, through the analysis of the concepts of product, service and brand, as well as the mechanisms of promotion, prices, distribution and communications, to recommend actions that guarantee a company its positioning, as well as its participation in new potential markets.

**MCM5063 FIELD PRACTICE IN COMMUNICATION AND DIGITAL MEDIA I**

Apply the knowledge related to Communication and Digital Media to real problems identified, through the development of an integrative project, with the aim of analyzing integral solutions and impact in the professional field.

**MCM5073 FIELD PRACTICE IN COMMUNICATION AND DIGITAL MEDIA II**

Design a comprehensive project, through the application of knowledge related to Communication and Digital Media, with the aim of establishing impact solutions to specific situations in the professional field.

## **MASTER IN CORPORATE LAW**

**MLC5011 CONSTITUTIONAL LAW SEMINAR**

Analyze the fundamental concepts linked to the organic and dogmatic part of the Constitution, through the study of its provisions and its sources, in order to distinguish the current constitutional framework for professional practice.

**MFD5013 FINANCIAL MANAGEMENT**

Analyze the financial statements of a company through the application of administrative and cost accounting tools, to facilitate planning and decision-making processes in service and manufacturing companies.

**REP5013 CORPORATE AND PROFESSIONAL RESPONSIBILITY**

Analyze the deontological obligations and duties that correspond to each subject in the development of their activities, from a human, social and legal perspective, so that individually and collectively they develop a responsible professional practice.

**MDS5013 TAX LAW**

Apply the foundations, mechanics, structure and regulations inherent in the current constitutional and fiscal system, through the applicable tax doctrines and principles, for the identification of errors and violations in the establishment of taxes by the State.

**MLC5021 INTELLECTUAL PROPERTY INTERNATIONAL REGULATION**

To compare the political, regulatory and technological trends that influence the development of intellectual property in Mexico and in the world, through the analysis and evaluation of the legal framework and the content of the debates related to the evolution of these rights in the framework of the Fourth Industrial Revolution, to apply them in the business sphere.

#### **MLC5031 TRADE AGREEMENTS**

Evaluate the content of trade agreements concluded by Mexico through the analysis of the scope and restrictions of market access, with the aim of developing strategies that consider the benefits and risks in the development of commercial activities.

#### **MLC5041 INTERNATIONAL CONTRACTS**

Evaluate commercial transactions at the international level, of goods or services through the analysis of the applicable internal and transnational regulations, to avoid risks of a transactional nature.

#### **MLC5051 E-COMMERCE INTERNATIONAL REGULATION**

Analyze the regulations applicable to international trade in goods and services, including those involving decentralized digital environments, by identifying the various legal traditions applicable to commercial transactions to distinguish their applications in electronic commercial activities.

#### **MLC5061 COMPANY LAW**

Evaluate the legal field applicable to the business activity, through the comprehensive study of the national legal regime, as well as the impact that has on its development the commercial private contracting and the applicable conventional law, to solve the legal problems in the modern company.

#### **MLC5071 ALTERNATIVE MEANS IN BUSINESS DISPUTE RESOLUTION**

Identify and analyze the main causes and effects of conflicts that arise in the business environment, through the knowledge and application of alternative dispute resolution mechanisms such as negotiation, mediation and arbitration, in order to prevent and resolve them effectively and thus minimize the impact of disputes on the optimal functioning of the organization.

#### **MDS5033 INCOME TAX OF COMPANIES**

Compare the various regimes in which legal entities operate and the differences in the taxation of each of them, through the analysis of the applicable tax legislation, to propose the work schemes in tax matters according to the purposes and functions of each of them.

#### **MLC5081 FIELD PRACTICE IN CORPORATE LAW I**

Apply the knowledge related to Corporate Law to real problems identified, through the development of an integrative project, with the aim of analyzing integral solutions and impact in the professional field.

#### **MLC5091 FIELD PRACTICE IN CORPORATE LAW II**

Design a comprehensive project, through the application of knowledge related to Corporate Law, with the aim of establishing impact solutions to specific situations in the professional field.

## **MASTER IN TAX LAW**

### **MLC5011 CONSTITUTIONAL LAW SEMINAR**

Analyze the basic elements of the theory of the constitution, the juridical-political structure that it establishes in the Mexican State, constitutional and conventional protection procedures, as well as reforms and additions of institutional significance.

### **MFD5013 FINANCIAL MANAGEMENT**

Analyze the financial statements of a company through the application of administrative and cost accounting tools, to facilitate planning and decision-making processes in service and manufacturing companies.

### **REP5013 CORPORATE AND PROFESSIONAL RESPONSIBILITY**

Analyze the deontological obligations and duties that correspond to each subject in the development of their activities, from a human, social and legal perspective, so that individually and collectively they develop a responsible professional practice.

### **MDS5013 TAX LAW**

Apply the foundations, mechanics, structure and regulations inherent in the current constitutional and fiscal system, through the applicable tax doctrines and principles, for the identification of errors and violations in the establishment of taxes by the State.

### **MDS5023 PERSONAL INCOME TAX**

Evaluate the different operations and inscriptions in the various taxes that occupy natural persons, through the analysis of the tax obligations that correspond to them, to develop strategies that allow the economic and legal efficiency of the performance of the activities within the applicable tax regimes.

### **MNS5053 CORPORATE FINANCE**

Apply financial math tools by valuing financial instruments and short- and long-term financing to determine the optimal capital structure in a company.

### **MDS5033 INCOME TAX OF LEGAL ENTITIES**

Compare the various regimes in which legal entities operate and the differences in the taxation of each of them, through the analysis of the applicable tax legislation, to propose the work schemes in tax matters according to the purposes and functions of each of them.

### **MDS5043 CONSUMPTION TAX**

Analyze the operations and processes related to the taxes that tax the consumption of goods and services, by evaluating the impact that these taxes have on the activity of the obligated subjects, to design the correct tax strategies for their payment and settlement.

### **MDS5053 MEANS OF DEFENSE IN TAX MATTERS**

Analyze the procedures in fiscal and administrative matters, the acts of authority and the existing means of defense, from the study of the tax legislation and the jurisprudence in tax matters, to obtain the nullity due to the illegality of an administrative resolution issued by the authority in fiscal matters.

### **MLC5061 COMPANY LAW**

Evaluate the legal field applicable to the business activity, through the comprehensive study of the national legal regime, as well as the impact that has on its development the commercial private contracting and the applicable conventional law, to solve the legal problems in the modern company.

**MDS5063 TAX CRIMINAL LAW**

Examine the different behaviors considered as fiscal crimes, through the analysis of the Fiscal Code of the Federation, to distinguish the sanctions derived from the fiscal activities of various subjects and implement preventive actions.

**MDS5073 FIELD PRACTICE IN TAX LAW I**

Apply the knowledge related to Tax Law to real problems identified, through the development of an integrative project, with the aim of analyzing integral solutions and impact in the professional field.

**MDS5083 FIELD PRACTICE IN TAX LAW II**

Design a comprehensive project, through the application of knowledge related to Tax Law, with the aim of establishing impact solutions to specific situations in the professional field.

## **MASTER IN GOVERNANCE AND GLOBALIZATION**

**MGG5013 GOVERNANCE AND POLITICAL THEORY**

Examine Political Theory and its relationship to the concept of Governance by analyzing different actors, such as the State, the market and society, to distinguish its applications in public policies and power structures at the regional, national and global levels.

**MGG5023 INTERNATIONAL STUDIES AND INSTITUTIONS**

Examine the debates of the discipline of International Studies at an advanced level through the analysis of the empirical conjuncture and theoretical-conceptual framework to distinguish existing foreign policies and their application in international institutions.

**REP5013 CORPORATE AND PROFESSIONAL RESPONSIBILITY**

Analyze the deontological obligations and duties that correspond to each subject in the development of their activities, from a human, social and legal perspective, so that individually and collectively they develop a responsible professional practice.

**MGG5033 GLOBAL POLITICAL ECONOMY**

To analyze processes and perspectives of the Global Political Economy through examining theories on the recent transformations of the world economy in order to detect their repercussions at the national and international levels.

**MCM5033 COMMUNICATION AND GLOBALIZATION**

Examine the main debates on globalization and the new digital ecosystem, through the critical analysis of the current influence of communication, to generate comparative and multicultural studies of the global society.

#### **MLC5011 CONSTITUTIONAL LAW SEMINAR**

Analyze the fundamental concepts linked to the organic and dogmatic part of the Constitution, through the study of its provisions and its sources, in order to distinguish the current constitutional framework for professional practice.

#### **MGG5043 REGIONAL STUDIES**

Analyze the main processes that have shaped the international system in the field of regional studies, through comparing regional theories and models to explain their relationship with globalization and regionalism; as well as the tensions that exist between the two dynamics.

#### **MGG5053 LOBBYING**

Relate the concept of lobbying with that of Governance and Political Development by analyzing the theory and the positive and negative aspects of lobbying in contemporary societies to interpret the dilemmas of lobbying and type of political institutions.

#### **MGG5063 ENVIRONMENTAL GOVERNANCE AND GLOBALIZATION**

Identify the challenges of the global socio-environmental problem through analyzing different theoretical approaches to Environmental Governance to build effective solutions to this problem.

#### **MIM5133 INTERNATIONAL BUSINESS**

Examine the international business environment, through the analysis of the foreign market in order to develop expansion strategies of a product / company and industry.

#### **MGG5073 NATIONAL SECURITY IN A GLOBAL CONTEXT**

Evaluate the different Security Theories and the main concepts that converge on the subject through analyzing global and national phenomena to apply security policies according to the context of each case.

#### **MGG5083 FIELD PRACTICE IN GOVERNANCE AND GLOBALIZATION I**

Apply theories of Governance and Globalization to real problems identified through the development of an intervention project to propose integral solutions and impact in the professional field.

#### **MGG5093 FIELD PRACTICE IN GOVERNANCE AND GLOBALIZATION II**

Apply an intervention program through using the strategies and techniques of the research methodology on issues of Governance and Globalization to establish practical impact solutions to specific situations in the professional field.

## **MASTER IN ORGANIZATIONAL PSYCHOLOGY**

### **MOR5013 HUMAN TALENT MANAGEMENT**

Examine the characteristics of candidates for a position in an organization, by identifying the processes of personnel selection, competencies and management of administrative processes, for the selection of individuals who meet the profile required to efficiently perform functions within an organization.

### **MNE5013 STATISTICS FOR BUSINESS**

Apply statistical tools to processes related to decision-making based on quantitative information, through the construction and evaluation of statistical models, to develop and analyze solutions to organizational problems.

### **REP5013 CORPORATE AND PROFESSIONAL RESPONSIBILITY**

Analyze the deontological obligations and duties that correspond to each subject in the development of their activities, from a human, social and legal perspective, so that individually and collectively they develop a responsible professional practice.

### **MOR5023 ORGANIZATIONAL DIAGNOSIS**

Analyze the aspects of the organizational diagnosis, by identifying the main factors of evaluation of the organizational processes, in order to apply continuous improvements that ensure the quality of the corporation.

### **MNE5023 TALENT AND COMPANY CULTURE**

Design the processes of attraction, development and retention of talent from a strategic perspective, through the analysis of different leadership styles and the application of current theories in the management of human capital, to plan its optimal management in alignment with the corporate culture of the company.

### **MOR5033 INTERVIEW TECHNIQUE**

Compare the different types of interviews used in psychology according to their characteristics and purposes, through the application of the main instrumental techniques of psychology, to select the ideal psychological interview in its different modalities.

### **MMK5013 STRATEGIC MARKETING**

Develop marketing strategies, through the analysis of the concepts of product, service and brand, as well as the mechanisms of promotion, prices, distribution and communications, to recommend actions that guarantee a company its positioning, as well as its participation in new potential markets.

### **MCM5013 COMMUNICATION AND CULTURAL PROCESSES**

Analyze the cultural processes and practices of individuals and societies, applying the main approaches from which the processes have been approached and the media have been used, with the aim of identifying areas of opportunity for the development, design and implementation of communication strategies in digital media.

### **MOR5043 ORGANIZATIONAL CHANGE**

Apply the tools to assess the behavior of individuals as fundamental pieces in the development of organization, through the relevant diagnosis that allows the planning of interventions, to contribute to the change of the work culture.

**MOR5053 ORGANIZATIONAL CONSULTING**

Apply solutions to the main problems that exist in an organization, by identifying the role of the consultancy, as well as the processes, designs and interventions, to achieve purposes and objectives raised in the organization.

**MOR5063 LEADERSHIP AND DECISION MAKING**

Distinguish the role of leadership within organizations, by identifying their main attributions, and their implications in decision-making, to plan and implement changes within the organization.

**MOR5073 FIELD PRACTICE IN ORGANIZATIONAL PSYCHOLOGY I**

Apply the knowledge of Organizational Psychology, to real problems identified, through the development of an intervention project, with the aim of analyzing integral solutions and impact in the professional field.

**MOR5083 FIELD PRACTICE IN ORGANIZATIONAL PSYCHOLOGY II**

Apply an intervention program, using the strategies and techniques of Organizational Psychology, to establish impact solutions to specific situations in the professional field.



EDUCATIONAL OFFER

**Engineering**

## ENVIRONMENTAL ENGINEERING

### LQI1012 MATTER BALANCE

Develop a clear and systematic methodology using the engineering approach to solving matter balance problems with and without chemical reaction.

### QUI1022 GENERAL CHEMISTRY LAB

Develop analytical and practical skills through the observation and development of experiments measuring properties and transformations of matter and its velocity, to identify elementary techniques and thus become familiar with how to handle chemistry glass material, instruments and equipment.

### LEX0112 FOREIGN LANGUAGE I \*

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### MAT1012 UNIVERSITY MATH

Learn algebraic language to interpret and use mathematical expressions, including their corresponding graphics, to formulate and solve problems.

### QUI1012 GENERAL CHEMISTRY

Identify the properties and transformations of matter and the change rates, by describing the atomic structure and reactivity of substances, to describe the reasons why chemistry is useful in your area and in daily life. Systematically describe inorganic substances by correctly applying the rules of nomenclature to identify chemical formulas.

### INF0012 INFORMATION TECHNOLOGIES IN THE CONSTRUCTION OF KNOWLEDGE \*

Understand relevant information using Information and Communication Technologies (ICT) to document an economic, political, cultural and/or social problem.

### MAT1032 LINEAR ALGEBRA

Solve systems of equations by applying the theoretical processes of linear algebra and using technological resources to model phenomena in applied sciences.

### ESP0012 ACADEMIC REASONING\*

Express academic arguments orally and in writing within your discipline by developing and presenting persuasive speeches, using the rudiments of communication to interact effectively in a specific academic context.

### MAT1022 CALCULUS I

Apply derivative and integral functions of a variable to solve engineering, finance, management and science problems by modeling the speed of change of its indicators.

**FIS1012 GENERAL PHYSICS I**

Apply the laws of Newtonian mechanics using mathematical algebra and calculus techniques to solve mechanics problems.

**FIS1022 GENERAL PHYSICS LAB I**

Apply the fundamentals of Newtonian kinematics and mechanics using lab equipment and supplies to compare experimental results with theoretical models.

**QUI1042 ORGANIC CHEMISTRY LAB I**

Understand the equipment used in organic chemistry and perform synthesis, separation, purification and identification of substances operations, using personal safety regulations, good lab practices and handling of hazardous waste to be able to measure properties of matter and make basic organic chemistry reactions.

**LEX0122 FOREIGN LANGUAGE II \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**QUI1032 ORGANIC CHEMISTRY I**

Describe the functional groups, properties and simple transformations of organic compounds using different organic structures and chemical equations to identify the relationship between the structures of organic compounds and their properties. Correctly identify organic compounds by applying IUPAC nomenclature rules to systematically understand different organic compounds.

**WHO2012 BIOCHEMISTRY I**

Identify biochemistry fundamentals through the review of chemistry, macromolecule structure and basic equations to interpret and analyze metabolism. Describe the relationships between macromolecules through their comparison at different scales, to relate their structure to the function they perform and their consequences at the cellular and organismal scales.

**MAT2012 CALCULUS II**

Apply directional derivatives and multiple integrals of variable functions through the modeling of the rate of change of their indicators to solve engineering, finance and science problems.

**ESP0022 ACADEMIC WRITING \***

Develop academic articles of your discipline through the administration of specialized information and the application of academic and scientific conventions, for the dissemination of academic and scientific knowledge.

**QUI2102 ANALYTICAL CHEMISTRY LAB**

Develop analytical and practical skills through the observation and development of experiments to identify and quantify the components of a substance through different methods of analysis, to skillfully manipulate the material and lab equipment used in analytical chemistry.

**QUI2052 CHEMICAL THERMODYNAMICS LAB**

Analyze data from heat transfer processes by correctly generating and interpreting the graphs to obtain information on thermodynamic parameters.

**LEX0132 FOREIGN LANGUAGE III \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**QUI2092 ANALYTICAL CHEMISTRY**

Identify a substance's components using different analysis, separation, identification and determination of the ions and molecules methods.

**QUI2042 CHEMICAL THERMODYNAMICS**

Describe the various energy exchange processes in physical and chemical changes, through the appropriate use of the principles of thermodynamics, to interpret physicochemical phenomena and their implications in the associated processes.

**MAT2052 ORDINARY DIFFERENTIAL EQUATIONS**

Apply different solutions techniques to differential equations using the existing classic ordinary differential equations methodologies to apply them in practical problems.

**LBC2022 MICROBIOLOGY LAB**

Develop microbiological techniques by practicing the methods used in the lab for the isolation, identification, culture and control of microorganisms.

**LQI2012 THERMAL MACHINES**

Explain the different types of machines and turbines, using thermodynamics as a basic technique, to apply energy analysis, calculate the efficiency of thermal machines and analyze basic and complex thermodynamic cycles.

**LBC2012 MICROBIOLOGY**

Identify the fundamentals of the morphology and functioning of microorganisms, by reviewing their structure and metabolism to analyze the phenomena related to the world of microorganisms. Describe the interrelationships between microorganisms and their environment by reviewing their physiological activities to establish beneficial and harmful effects.

**MAT2082 PROBABILITY AND STATISTICS**

Apply various probability and statistical techniques through different probability models and descriptive and inferential statistical methodologies to estimate parameters that contribute to decision-making.

**LIN3032 SUSTAINABLE ENGINEERING**

Analyze the main problems related to the sustainable use of natural resources and the various sources of energy; use environmental criteria to identify the environmental impact, to apply this knowledge in the implementation of comprehensive proposals for sustainable use of resources.

**LQI3052 TRANSPORT PROCESSES LAB I**

Identify the mechanisms of heat transfer by developing experimental practices to establish the physical properties of fluids.

**LIN3012 PROFESSIONAL PRACTICE 1**

Analyze basic practical problems of the environmental protection industry related to environmental engineering, applying technical knowledge to design solutions and solve problems in the various topics and developing skills of the licenciatura in environmental engineering.

**LQI3012 TRANSPORT PROCESSES I**

Compare the fundamental concepts of fluid flow and heat transfer, using the theoretical and mathematical analysis of the principles of time and heat transfer to apply them to the calculation of flow in pipes and heat transfer equipment.

**LIN3022 SAFETY IN CHEMICAL PROCESSES**

Explain the conceptual foundations and application of occupational safety, process safety and occupational health applicable to industries by using theories, models and regulations to understand safety systems.

**LIN3052 ENVIRONMENTAL BIOTECHNOLOGY**

Design biotechnological systems using computational tools to identify organic pollutant degradation and biochemical reactor specification, operating conditions, and nutrient and aeration requirements.

**LQI3132 FLUID FLOW AND HEAT UNIT OPERATIONS LAB**

Analyze the operation of the different equipment related to fluid flow and heat transfer through the development of lab practices to identify fluid flow and heat measurement instruments.

**LQI3102 HEAT FLOW UNIT OPERATIONS**

Analyze the behavior of heat flow in equipment, by using the laws and theories associated with heat transfer to design heat transfer equipment in various industrial applications of the chemical and environmental industry.

**LQI3082 FLUID FLOW UNIT OPERATIONS**

Analyze the behavior of fluids using the properties of fluids and laws associated with equipment design, in order to apply this knowledge to solving fluid displacement problems in engineering and selecting the most appropriate equipment.

**LQI3072 TRANSPORT PROCESSES II**

Define the fundamental concepts of mass transfer, through the theoretical and mathematical analysis of the principles of mass transfer to apply them to the processes of transformation of industry and natural processes.

#### **LIN3042 SELECT TOPICS 1**

Analyze cutting-edge issues related to the principles of contaminant minimization, quality and regulations of products and processes in the environmental protection industry through the analysis of theories to identify environmental, industrial and service problems.

#### **LIN4052 ENVIRONMENTAL ANALYSIS**

Analyze pollutants in water, air and soil by describing the technical principles and applying the experimental methodology to identify organic, inorganic and biological pollutants and assess the levels of pollution and quality of operation of water, air and soil treatment systems.

#### **LIN4032 ATMOSPHERIC EMISSIONS CONTROL**

Classify environmental pollutants and specify air pollutant control systems using emission regulations, mathematical dispersion models and design to explain air pollution levels and determine the risks of air pollutants.

#### **LQI4062 MASS TRANSFER UNIT OPERATIONS LAB**

Evaluate the processes related to mass transfer, distillation and extraction through lab practices to develop experimental skills in the operation of the different types of distillation and extraction towers that exist in the chemical industry.

#### **LQI4012 MASS TRANSFER UNIT OPERATIONS**

Evaluate the different unitary operations involving models of equilibrium stages, such as distillation, absorption, desorption and extraction, by applying the principles of phase balance and the fundamental laws of mass and energy conservation, to design the appropriate process to separate and purify products.

#### **LIN4012 PROFESSIONAL PRACTICE 2**

Identify practical problems of the environmental protection industry, by applying advanced technical knowledge and practical methodologies to develop environmental engineering skills.

#### **LIN4022 SELECT TOPICS 2**

Examine current issues in innovation and process redesign and implementation of environmental management systems through the analysis of concepts and simulations to understand the design and process management strategies of the environmental industry.

#### **LIN4042 WASTEWATER TREATMENT**

Analyze the principles of wastewater treatment systems by incorporating the preliminary, primary and secondary stages to identify the discharge parameters in the water receiving bodies and promoting reuse.

#### **LIN4072 ENVIRONMENTAL SYSTEMS DESIGN**

Design environmental systems through the development of environmental engineering techniques and tactics acquired in previous subjects of the curriculum to create environmental pollution controls.

#### **LIN4062 CONVENTIONAL AND NON-CONVENTIONAL ENERGIES**

Analyze the types and uses of conventional and non-conventional energies in an appropriate economic model by applying the theories and technologies of generation, transformation and use of energies to select those that generate less adverse impacts to the environment.

#### **LIN4112 ENVIRONMENTAL IMPACT**

Analyze the factors that are integrated for the evaluation of the environmental impact of industrial processes through the application of mitigation measures of adverse impacts to identify the planning and environmental protection tools and propose the actions required in the manifestation of the environmental impact of projects.

#### **LIN4102 ENVIRONMENTAL PROTECTION**

Apply the concepts and criteria on safety and environmental protection in industries by using theoretical and legal foundations of safety and environmental protection to apply this knowledge in the implementation of environmental safety and environmental protection systems.

#### **LIN4082 SELECT TOPICS 3**

Understand cutting-edge topics in environmental optimization, life cycle analysis and eco-efficiency by applying the processes and methods of environmental engineering to develop proposals to protect the environment.

#### **LIN4092 WASTE TREATMENT**

Identify the different types of waste and the characteristics of its composition and physical and chemical properties through the analysis, contrast and design of regulations, theoretical and mathematical models to design systems for the treatment and final disposal of solid waste including energy recovery, reuse and recycling.

### **GENERAL ART ELECTIVE\***

- **ART0022 ART AND CULTURE OF THE AMERICAS**  
Identify sociocultural development in the Americas through their artistic expressions to establish an active dialogue with this past and its identity context.
- **ART0012 ART, HISTORY AND CULTURE**  
Identify how human beings define reality and express it for themselves and the world from the emergence of Western modernity, by explaining the reciprocal relationship between art, history and culture to critically argue artistic representation and expression topics.

### **GENERAL MATH ELECTIVE\***

- **MAT0012 MATH FOR THINKING**

Apply various approaches to mathematical thinking by modeling and analyzing hypothetical and real-world phenomena, to design solutions to problems related to your studies and your physical environment.

- **MAT0022 MATH AND CULTURE**

Develop a project that integrates math with any of the expressions of culture, by modeling phenomena or indicators to make decisions that benefit society.

### **GENERAL BEHAVIORAL SCIENCE ELECTIVE\***

- **COM0012 ETHICS, SOCIETY AND THE ENVIRONMENT**

Discuss global problems and their local implications by integrating socio-economic, environmental and ethical aspects to create proposals for a tolerant society.

- **COM0022 BEHAVIOR AND HUMAN DEVELOPMENT**

Identify human development's bio-psycho-social factors, by analyzing the variables that affect individual and social behavior and use this knowledge in their academic and professional life.

### **GENERAL NATURAL SCIENCE ELECTIVE\***

- **CNE0012 FOOD AND LIFE**

Identify the relationship between food and health through research that provides data on eating habits to choose an informed diet for your daily life.

- **CNE0022 EVOLUTION AND BIODIVERSITY**

Describe the origin of diseases through causal factors to assess human health information sources.

### **GENERAL HUMANITIES ELECTIVE\***

- **HUM0012 ECOSOPHY**

Compare world representation systems, analyzing different epistemological proposals to reposition the current Being-Man relationship with their environment and other beings from a fundamentally ecological philosophical dimension.

- **HUM0022 HUMANISTIC THINKING**

Study humanist thought from a socio-historical cultural perspective, based on the analysis of its different historical nuances to understand its relevance in contemporary culture.

***\*Courses that are part of the UDLAP General Education component***

## BIOMEDICAL ENGINEERING

### LIS1012 ALGORITHMS AND PROGRAMMING

Apply algorithmic thinking using control structures in the denotation of sequences, conditions, cycles, and appropriate data structures to develop solutions that can be implemented in a programming language.

### QUI1022 GENERAL CHEMISTRY LAB

Develop analytical and practical skills through the observation and development of experiments measuring properties and transformations of matter and its velocity, to identify elementary techniques and thus become familiar with how to handle chemistry glass material, instruments and equipment.

### LEX0112 FOREIGN LANGUAGE I \*

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### MAT1012 UNIVERSITY MATH

Learn algebraic language to interpret and use mathematical expressions, including their corresponding graphics, to formulate and solve problems.

### QUI1012 GENERAL CHEMISTRY

Identify the properties and transformations of matter and the change rates, by describing the atomic structure and reactivity of substances, to describe the reasons why chemistry is useful in your area and in daily life. Systematically describe inorganic substances by correctly applying the rules of nomenclature to identify chemical formulas.

### INF0012 INFORMATION TECHNOLOGIES IN THE CONSTRUCTION OF KNOWLEDGE \*

Understand relevant information using Information and Communication Technologies (ICT) to document an economic, political, cultural and/or social problem.

### MAT1032 LINEAR ALGEBRA

Solve systems of equations by applying the theoretical processes of linear algebra and using technological resources to model phenomena in applied sciences.

### ESP0012 ACADEMIC REASONING\*

Express academic arguments orally and in writing within your discipline by developing and presenting persuasive speeches, using the rudiments of communication to interact effectively in a specific academic context.

### MAT1022 CALCULUS I

Apply derivative and integral functions of a variable to solve engineering, finance, management and science problems by modeling the speed of change of its indicators.

**FIS1012 GENERAL PHYSICS I**

Apply the laws of Newtonian mechanics using mathematical algebra and calculus techniques to solve mechanics problems.

**FIS1022 GENERAL PHYSICS LAB I**

Apply the fundamentals of Newtonian kinematics and mechanics using lab equipment and supplies to compare experimental results with theoretical models.

**QUI1042 ORGANIC CHEMISTRY LAB I**

Understand the equipment used in organic chemistry and perform synthesis, separation, purification and identification of substances operations, using personal safety regulations, good lab practices and handling of hazardous waste to be able to measure properties of matter and make basic organic chemistry reactions.

**LEX0122 FOREIGN LANGUAGE II \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**QUI1032 ORGANIC CHEMISTRY I**

Describe the functional groups, properties and simple transformations of organic compounds using different organic structures and chemical equations to identify the relationship between the structures of organic compounds and their properties. Correctly identify organic compounds by applying IUPAC nomenclature rules to systematically understand different organic compounds.

**MAT2012 CALCULUS II**

Apply directional derivatives and multiple integrals of variable functions through the modeling of the rate of change of their indicators to solve engineering, finance and science problems.

**LRT2012 ELECTRICAL CIRCUITS**

Identify the techniques of decomposition of electrical circuits, through the analysis and design of resistive, inductive and capacitive circuits with the purpose of applying them to more complex electrical circuits.

**LRT2022 DIGITAL DESIGN**

Identify the basics of digital system design by using hardware description language (HDL) to analyze the operation of modern digital systems.

**ESP0022 ACADEMIC WRITING \***

Develop academic articles of your discipline through the administration of specialized information and the application of academic and scientific conventions, for the dissemination of academic and scientific knowledge.

**FIS2012 GENERAL PHYSICS II**

Apply the laws governing electrical and magnetic phenomena using mathematical algebra and calculus techniques to develop solutions to electromagnetic problems.

**LRT2032 ELECTRICAL CIRCUIT LAB**

Identify circuit analysis with dependent sources, operational amplifier, and inductive and capacitive elements by using simulation tools to analyze and implement their behavior in the time domain.

**FIS2022 GENERAL PHYSICS LAB II**

Apply the fundamentals of electrostatics, electrical properties of materials, electrical circuits and magnetism using lab equipment and material to compare experimental results with theoretical models.

**LEX0132 FOREIGN LANGUAGE III \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**WHO2012 BIOCHEMISTRY I**

Identify biochemistry fundamentals through the review of chemistry, macromolecule structure and basic equations to interpret and analyze metabolism. Describe the relationships between macromolecules through their comparison at different scales, to relate their structure to the function they perform and their consequences at the cellular and organismal scales.

**MAT2052 ORDINARY DIFFERENTIAL EQUATIONS**

Apply different solutions techniques to differential equations using the existing classic ordinary differential equations methodologies to apply them in practical problems.

**LRT2042 INTEGRATED ELECTRONICS**

Design both analog and digital electronic circuits using the design methodologies that exist and the equations that govern their operation to relate them to the construction of electronic circuits that satisfy the requirements imposed on the embedded systems that are part of the current technological solutions.

**LRT2052 INTEGRATED ELECTRONICS LAB**

Analyze the behavior of semiconductor elements such as diodes and transistors, as well as the applications of linear devices and low-scale integrated circuits by examining the theoretical foundations of integrated electronics to use in everyday electronic solutions.

**QUI2052 CHEMICAL THERMODYNAMICS LAB**

Analyze data from heat transfer processes by correctly generating and interpreting the graphs to obtain information on thermodynamic parameters.

**MAT2082 PROBABILITY AND STATISTICS**

Apply various probability and statistical techniques through different probability models and descriptive and inferential statistical methodologies to estimate parameters that contribute to decision-making.

**QUI2042 CHEMICAL THERMODYNAMICS**

Describe the various energy exchange processes in physical and chemical changes, through the appropriate use of the principles of thermodynamics, to interpret physicochemical phenomena and their implications in the associated processes.

### **LBC3022 ANATOMY AND PHYSIOLOGY**

Identify the organism's tissues, organs, devices and systems with their physiological functions, through the review and analysis of their parts and characteristics, to correlate it with the state of health of the person or to diagnose or treat a pathology.

### **LBM3022 BIOMEDICAL INSTRUMENTATION I**

Identify the most common sensors in the measurement of typical variables in the human body to apply them in the design of biomedical instruments by developing signal detection and conditioning systems appropriate to each type of sensor.

### **LBC3032 ANATOMY AND PHYSIOLOGY LAB**

Apply the basic principles of human anatomy and physiology through different experiments that reflect functionality, to develop the practical skills to interpret physiological functions tests of the organism and its anatomy.

### **LBM3032 BIOMEDICAL INSTRUMENTATION LAB I**

Design electronic circuits using sensors, operational amplifiers, analog-digital and digital-analog converters to interpret the theoretical foundations of the acquisition and conditioning of signals and/or physical variables.

### **LBM3012 PROFESSIONAL PRACTICE 1**

Integrate the knowledge acquired in biomedical and health engineering such as imaging systems, clinical and rehabilitation engineering, anatomy and physiology, biochemistry, biomaterials, biomedical instrumentation among others, to apply them to solve problems specific to your profession by critically analyzing, summarizing and evaluating the decisions taken aimed at achieving a set of realistic specifications in the production sector or in research centers .

### **LBM3052 BIOMATERIALS**

Identify the different classes of biomaterials by analyzing the theoretical foundations of the structure of materials and tissues to select and apply them in biomedical equipment aimed at assisting in medicine, clinical analysis and rehabilitation.

### **LBM3042 BIOMECHANICS**

Identify the biological and mechanical bases of human movement to analyze the biomechanical behavior of various joints and components of the human body, applying principles of classical mechanics.

### **LIS3072 TECHNOLOGICAL INNOVATION**

Illustrate technological innovation and patent registration processes using defined strategies and diagnostic and new knowledge creation processes to develop proposals that foster creativity, intellectual property in innovation and learning in an organization.

### **LBM3082 BIOMEDICAL INSTRUMENTATION II**

Identify the elements and subsystems that make up specialized biomedical measurement instruments to develop and evaluate biomedical instruments, integrating the census and processing stages that make up a biomedical instrument.

**LBM3072 SIGNAL PROCESSING LAB**

Understand the behavior of signal processing systems using the appropriate software tools and the analysis, simulation and implementation of filtering circuits to develop the design stage of signal processing modules.

**LBM3062 SIGNAL PROCESSING**

Analyze the fundamental principles and techniques of analog and digital filter design using simulations in MATLAB to identify their application in the construction of audio equalizers, noise suppressors in the 60 Hz line, electromagnetic noise removal, and voice and audio processing.

**LRT3082 CONTROL SYSTEMS**

Design control systems using time and frequency techniques, mathematical models and physical laws of equilibrium to examine the constraints and specifications of the system under analysis.

**LBM4052 CLINICAL ENGINEERING**

Apply specialized equipment to develop a correct diagnosis and treatment of patients through using techniques aimed at providing service, verifying performance and evaluating the environmental effects of biomedical equipment.

**LBM4012 PROFESSIONAL PRACTICE 2**

Develop a biomedical and/or health engineering project that involves topics of rehabilitation engineering, biomaterials, imaging, biomedical instrumentation, anatomy and physiology, among others, using the learning approach based on experience within the productive sector or in research centers to recommend innovative products or that improve systems or procedures in engineering and/or health.

**LBM4022 COMMUNICATION SYSTEMS**

Identify the techniques used in digital communication systems by analyzing the theoretical foundations and their software implementation, to apply them in advanced topics such as wireless communications, communication networks, telemedicine, or collaborative robotics.

**LBM4032 SELECT TOPICS 1**

Analyze cutting-edge topics with a critical and interdisciplinary point of view in regenerative medicine and medical image processing through the application of algorithms and specialized software tools to identify research opportunities and develop innovative solutions.

**LBM4042 SELECT TOPICS 2**

Analyze cutting-edge issues in a critical way in the areas of systems, equipment and electronic biomedical devices of life support by analyzing the devices implanted in the human body to develop proposals that contribute to improve the quality of life of human beings.

**LBM4072 BIOMEDICAL SYSTEM DESIGN**

Develop biomedical systems by applying the theoretical knowledge of biomedical engineering to design a biomedical system or device subject to a set of operating and safety specifications.

**LBM4092 REHABILITATION ENGINEERING**

Understand the different types of joint replacements by properly selecting the necessary materials and production processes to apply them to different joints of the human body and design replacements.

### **LBM4112 BIOMEDICAL SYSTEMS TELECOMMUNICATIONS LAB**

Evaluate the methods and techniques of communication currently used, as well as the main channels of information transmission, through the approach and practical implementation of experiments to apply these concepts in the design of biomedical systems.

### **LBM4062 IMAGING SYSTEMS**

Analyze the different imaging methods that exist, through their analysis and comparison, to apply them clinically in general, along with their indications and contraindications in the accurate and timely diagnosis of the pathology and the undesirable effects that it may present.

### **LBM4102 BIOMEDICAL SYSTEMS TELECOMMUNICATIONS**

Analyze information and communication technologies, the TCP/IP model and communication services (ensuring the security and privacy of medical data) using communications network protocols to remotely monitor the health status of patients in treatment.

### **LBM4082 SELECT TOPICS 3**

Examine cutting-edge topics in medical technology management and safety regulations, through the application of strategies for the analysis and design of biomedical systems, equipment and devices, to develop solutions to public health problems and rehabilitation of the disabled.

## **GENERAL ART ELECTIVE\***

- **ART0022 ART AND CULTURE OF THE AMERICAS**  
Identify sociocultural development in the Americas through their artistic expressions to establish an active dialogue with this past and its identity context.
- **ART0012 ART, HISTORY AND CULTURE**  
Identify how human beings define reality and express it for themselves and the world from the emergence of Western modernity, by explaining the reciprocal relationship between art, history and culture to critically argue artistic representation and expression topics.

## **GENERAL MATH ELECTIVE\***

- **MAT0012 MATH FOR THINKING**  
Apply various approaches to mathematical thinking by modeling and analyzing hypothetical and real-world phenomena, to design solutions to problems related to your studies and your physical environment.
- **MAT0022 MATH AND CULTURE**  
Develop a project that integrates math with any of the expressions of culture, by modeling phenomena or indicators to make decisions that benefit society.

## **GENERAL BEHAVIORAL SCIENCE ELECTIVE\***

- **COM0012 ETHICS, SOCIETY AND THE ENVIRONMENT**  
Discuss global problems and their local implications by integrating socio-economic, environmental and ethical aspects to create proposals for a tolerant society.

- **COM0022 BEHAVIOR AND HUMAN DEVELOPMENT**

Identify human development's bio-psycho-social factors, by analyzing the variables that affect individual and social behavior and use this knowledge in their academic and professional life.

### GENERAL NATURAL SCIENCE ELECTIVE\*

- **CNE0012 FOOD AND LIFE**

Identify the relationship between food and health through research that provides data on eating habits to choose an informed diet for your daily life.

- **CNE0022 EVOLUTION AND BIODIVERSITY**

Describe the origin of diseases through causal factors to assess human health information sources.

### GENERAL HUMANITIES ELECTIVE\*

- **HUM0012 ECOSOPHY**

Compare world representation systems, analyzing different epistemological proposals to reposition the current Being-Man relationship with their environment and other beings from a fundamentally ecological philosophical dimension.

- **HUM0022 HUMANISTIC THINKING**

Study humanist thought from a socio-historical cultural perspective, based on the analysis of its different historical nuances to understand its relevance in contemporary culture.

*\*Courses that are part of the UDLAP General Education component*

## CIVIL ENGINEERING

### LIC1012 APPLIED DRAWING IN CIVIL ENGINEERING LAB

Develop solutions to drawing problems in two and three dimensions by using specialized software tools to identify the fundamentals of graphic representation typical of civil engineering.

### QUI1022 GENERAL CHEMISTRY LAB

Develop analytical and practical skills through the observation and development of experiments measuring properties and transformations of matter and its velocity, to identify elementary techniques and thus become familiar with how to handle chemistry glass material, instruments and equipment.

### **LEX0112 FOREIGN LANGUAGE I \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### **MAT1012 UNIVERSITY MATH**

Learn algebraic language to interpret and use mathematical expressions, including their corresponding graphics, to formulate and solve problems.

### **QUI1012 GENERAL CHEMISTRY**

Identify the properties and transformations of matter and the change rates, by describing the atomic structure and reactivity of substances, to describe the reasons why chemistry is useful in your area and in daily life. Systematically describe inorganic substances by correctly applying the rules of nomenclature to identify chemical formulas.

### **INF0012 INFORMATION TECHNOLOGIES IN THE CONSTRUCTION OF KNOWLEDGE \***

Understand relevant information using Information and Communication Technologies (ICT) to document an economic, political, cultural and/or social problem.

### **MAT1032 LINEAR ALGEBRA**

Solve systems of equations by applying the theoretical processes of linear algebra and using technological resources to model phenomena in applied sciences.

### **ESP0012 ACADEMIC REASONING\***

Express academic arguments orally and in writing within your discipline by developing and presenting persuasive speeches, using the rudiments of communication to interact effectively in a specific academic context.

### **MAT1022 CALCULUS I**

Apply derivative and integral functions of a variable to solve engineering, finance, management and science problems by modeling the speed of change of its indicators.

### **FIS1012 GENERAL PHYSICS I**

Apply the laws of Newtonian mechanics using mathematical algebra and calculus techniques to solve mechanics problems.

### **FIS1022 GENERAL PHYSICS LAB I**

Apply the fundamentals of Newtonian kinematics and mechanics using lab equipment and supplies to compare experimental results with theoretical models.

### **LIC1032 TOPOGRAPHY LAB**

Plan basic planimetric and altimetric surveys using current technological methods and resources, in addition to working as a team to develop solutions to basic topography problems.

### **LEX0122 FOREIGN LANGUAGE II \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### **LIC1022 TOPOGRAPHY**

Understand the methods of measuring distance and horizontal and vertical angles, by using calculation tools and equipment to identify the elements of the topographic survey.

### **MAT2012 CALCULUS II**

Apply directional derivatives and multiple integrals of variable functions through the modeling of the rate of change of their indicators to solve engineering, finance and science problems.

### **ESP0022 ACADEMIC WRITING \***

Develop academic articles of your discipline through the administration of specialized information and the application of academic and scientific conventions, for the dissemination of academic and scientific knowledge.

### **LIC2012 INTRODUCTION TO STRUCTURAL ENGINEERING**

Understand the different systems of forces acting on particles and rigid bodies by developing free-body diagrams to analyze their equilibrium conditions, as well as their fastening or bonding devices with other structural elements.

### **LIC2022 BUILDING MATERIALS LAB**

Identify the mechanical properties of building materials by running destructive, non-destructive and other quality control tests to understand their relationship and function in a construction site.

### **LEX0132 FOREIGN LANGUAGE III \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### **LAR2012 CONSTRUCTION MATERIALS AND PROCEDURES**

Identify construction materials as fundamental elements, through the relationship of their properties and characteristics to understand optimization mechanisms of a building's construction procedure.

### **LIC2042 MATERIAL BEHAVIOR**

Examine the states of deformation and stress of deformable solids to evaluate their behavior, strength, rigidity and stability at different solicitations and/or combinations, by analyzing the pure axial load, shear force and flexor moment.

### **MAT2052 ORDINARY DIFFERENTIAL EQUATIONS**

Apply different solutions techniques to differential equations using the existing classic ordinary differential equations methodologies to apply them in practical problems.

### **LIC2032 ISOSTATIC STRUCTURES**

Identify the different structural elements and their internal and external unions by analyzing their structural composition to evaluate their degree of static indeterminacy and hyperstaticity.

### **LIC2052 STRUCTURAL LAB**

Explain structural systems subjected to various load and support conditions using bench-scale models to illustrate the application of the principles of solid mechanics in structural engineering.

### **MAT2082 PROBABILITY AND STATISTICS**

Apply various probability and statistical techniques through different probability models and descriptive and inferential statistical methodologies to estimate parameters that contribute to decision-making.

### **LIC3032 STRUCTURE MATRIX ANALYSIS**

Apply the matrix method of rigidities (displacements method) to the analysis of asymmetric and symmetrical planar lattice structures to construct diagrams of the respective internal actions.

### **LIC3012 GENERAL HYDRAULICS**

Examine the fundamental principles of hydraulics by analyzing hydrostatics and water flow in pipes and canals to design, pipes, canals and identify the strength of water in submerged bodies.

### **LIC3042 BASIC INSTALLATIONS**

Establish the relevant installations by applying standardized procedures, regulations and representation elements.

### **LIC3022 GENERAL HYDRAULICS LAB**

Examine the physical properties of water relevant to hydrostatics, water flow in pipes and canals to analyze the principles of fluid mechanics by applying bench-scale equipment and the corresponding instruments.

### **LIC3052 SOIL MECHANICS I**

Understand the different types of soils according to their physical and mechanical properties by applying standardized classification systems to define their behavior under various conditions of stress and hydraulic flow

### **LIC3062 PROFESSIONAL PRACTICE 1**

Apply the knowledge acquired in your studies in work environments to identify, diagnose, evaluate and take part in the solution of problems by analyzing real situations of your profession.

### **LAR3072 CONSTRUCTION COSTS**

Understand the methodology used to determine the cost of a work, applying it when elaborating a construction budget, using the main existing manual and computerized systems.

### **LIC3092 STRUCTURAL DESIGN**

Analyze the behavior, mode and fail mechanism of reinforced concrete elements by applying the theoretical-experimental criteria on which the ultimate resistance method is based to develop the sizing of structural elements of reinforced concrete.

### **LIC3082 HYDROLOGY**

Apply the fundamentals of surface and underground hydrology through the analysis of the components of the hydrological cycle to evaluate patterns of precipitation, infiltration, evapotranspiration and direct runoff.

### **LIC3122 SOIL MECHANICS LAB**

Identify the physical properties of the soil and characterize its load capacity by running lab tests with altered and unaltered samples to originate the relevant parameters of the foundation design.

### **LIC3112 SOIL MECHANICS II**

Analyze the fundamentals of soil consolidation and its shear stresses through the study of theories of carrying capacity to define the behavior of soil mass in situations of soil thrust, slope stability and compaction.

### **LIC3072 DRINKING WATER AND SEWAGE SYSTEMS**

Design the components of a drinking water, sanitary sewer, and storm sewer system by applying hydraulic fundamentals and computer tools to develop solutions to problems related to drinking water supply and wastewater and stormwater collection.

### **LIC3102 SELECT TOPICS 1**

Analyze cutting-edge issues in construction by applying modern procedures and tools to identify emerging construction techniques and procedures.

### **LAR4062 CONSTRUCTION MANAGEMENT**

Evaluate the different processes of organization and planning of the construction through the development of architectural projects to program the best administration and management of the construction process.

### **LIC4032 SEISMIC ANALYSIS AND DESIGN**

Analyze the behavior of materials and structural systems before seismic action through the application of static and dynamic methods to identify the origin and causes of the earthquake damage and its effects on the constructions.

### **LIC4052 GEOMETRIC ROAD DESIGN**

Analyze the design procedures to select the route and horizontal and vertical alignment of a road, through examining the specifications and current regulations.

### **LIC4022 WATER QUALITY LAB**

Identify the physical, chemical and biological characteristics relevant to the treatment of drinking and wastewater through the application of bench-scale equipment and the corresponding instruments to define the necessary physical-chemical and microbiological parameters.

### **LIC4062 PROFESSIONAL PRACTICE 2**

Evaluate civil engineering problems by applying technical knowledge in work environments to recommend specific, objective, creative and critical solutions to real problems.

### **LIC4012 WATER QUALITY PROCESSES**

Identify the treatment needs of municipal drinking and wastewater to design conventional treatment systems by analyzing their physical, chemical and biological principles.

### **LIC4042 SELECT TOPICS 2**

Examine current issues in the environmental area by analyzing theoretical concepts to understand the techniques of analysis of emerging pollutants of air, water and soil.

### **LIC4072 ANALYSIS AND DESIGN OF HYDRAULIC USES**

Design storage dams and their components, as well as pumping systems applying standardized procedures to develop solutions to problems of hydraulic works.

### **LIC4082 COMPUTER STRUCTURAL ANALYSIS AND DESIGN**

Use computer tools to analyze and design reinforced concrete and steel structures through examining various living load conditions and seismic action.

### **LIC4122 FOUNDATIONS**

Apply standardized procedures to design surface and underground foundations from the analysis of information obtained in subsurface and geophysical exploration studies.

### **LIC4102 PAVEMENT DESIGN AND CONSERVATION**

Analyze the current methodologies to characterize the mechanical behavior of rigid and flexible pavements by identifying the properties of their components to design and preserve them properly.

### **LIC4112 PAVEMENT LAB**

Identify the physical properties of the soil, as well as the standardized tests that exist to develop its characterization and classification by running lab tests.

### **LIC4092 SELECT TOPICS 3**

Examine current topics in structures from the identification of theoretical proposals to analyze the behavior of structures under various load solicitations.

## **GENERAL ART ELECTIVE\***

- **ART0022 ART AND CULTURE OF THE AMERICAS**  
Identify sociocultural development in the Americas through their artistic expressions to establish an active dialogue with this past and its identity context.
- **ART0012 ART, HISTORY AND CULTURE**  
Identify how human beings define reality and express it for themselves and the world from the emergence of Western modernity, by explaining the reciprocal relationship between art, history and culture to critically argue artistic representation and expression topics.

## **GENERAL MATH ELECTIVE\***

- **MAT0012 MATH FOR THINKING**  
Apply various approaches to mathematical thinking by modeling and analyzing hypothetical and real-world phenomena, to design solutions to problems related to your studies and your physical environment.
- **MAT0022 MATH AND CULTURE**  
Develop a project that integrates math with any of the expressions of culture, by modeling phenomena or indicators to make decisions that benefit society.

### GENERAL BEHAVIORAL SCIENCE ELECTIVE\*

- **COM0012 ETHICS, SOCIETY AND THE ENVIRONMENT**  
Discuss global problems and their local implications by integrating socio-economic, environmental and ethical aspects to create proposals for a tolerant society.
- **COM0022 BEHAVIOR AND HUMAN DEVELOPMENT**  
Identify human development's bio-psycho-social factors, by analyzing the variables that affect individual and social behavior and use this knowledge in their academic and professional life.

### GENERAL NATURAL SCIENCE ELECTIVE\*

- **CNE0012 FOOD AND LIFE**  
Identify the relationship between food and health through research that provides data on eating habits to choose an informed diet for your daily life.
- **CNE0022 EVOLUTION AND BIODIVERSITY**  
Describe the origin of diseases through causal factors to assess human health information sources.

### GENERAL HUMANITIES ELECTIVE\*

- **HUM0012 ECOSOPHY**  
Compare world representation systems, analyzing different epistemological proposals to reposition the current Being-Man relationship with their environment and other beings from a fundamentally ecological philosophical dimension.
- **HUM0022 HUMANISTIC THINKING**  
Study humanist thought from a socio-historical cultural perspective, based on the analysis of its different historical nuances to understand its relevance in contemporary culture.

*\*Courses that are part of the UDLAP General Education component*

## ENERGY ENGINEERING

### LIS1012 ALGORITHMS AND PROGRAMMING

Apply algorithmic thinking using control structures in the denotation of sequences, conditions, cycles, and appropriate data structures to develop solutions that can be implemented in a programming language.

### LQI1012 MATTER BALANCE

Develop a clear and systematic methodology using the engineering approach to solving matter balance problems with and without chemical reaction.

**QUI1022 GENERAL CHEMISTRY LAB**

Develop analytical and practical skills through the observation and development of experiments measuring properties and transformations of matter and its velocity, to identify elementary techniques and thus become familiar with how to handle chemistry glass material, instruments and equipment.

**LEX0112 FOREIGN LANGUAGE I \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**MAT1012 UNIVERSITY MATH**

Learn algebraic language to interpret and use mathematical expressions, including their corresponding graphics, to formulate and solve problems.

**QUI1012 GENERAL CHEMISTRY**

Identify the properties and transformations of matter and the change rates, by describing the atomic structure and reactivity of substances, to describe the reasons why chemistry is useful in your area and in daily life. Systematically describe inorganic substances by correctly applying the rules of nomenclature to identify chemical formulas.

**INF0012 INFORMATION TECHNOLOGIES IN THE CONSTRUCTION OF KNOWLEDGE \***

Understand relevant information using Information and Communication Technologies (ICT) to document an economic, political, cultural and/or social problem.

**MAT1032 LINEAR ALGEBRA**

Solve systems of equations by applying the theoretical processes of linear algebra and using technological resources to model phenomena in applied sciences.

**ESP0012 ACADEMIC REASONING\***

Express academic arguments orally and in writing within your discipline by developing and presenting persuasive speeches, using the rudiments of communication to interact effectively in a specific academic context.

**MAT1022 CALCULUS I**

Apply derivative and integral functions of a variable to solve engineering, finance, management and science problems by modeling the speed of change of its indicators.

**FIS1012 GENERAL PHYSICS I**

Apply the laws of Newtonian mechanics using mathematical algebra and calculus techniques to solve mechanics problems.

**FIS1022 GENERAL PHYSICS LAB I**

Apply the fundamentals of Newtonian kinematics and mechanics using lab equipment and supplies to compare experimental results with theoretical models.

**QUI1042 ORGANIC CHEMISTRY LAB I**

Understand the equipment used in organic chemistry and perform synthesis, separation, purification and identification of substances operations, using personal safety regulations, good lab practices and handling of hazardous waste to be able to measure properties of matter and make basic organic chemistry reactions.

**LEX0122 FOREIGN LANGUAGE II \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**QUI1032 ORGANIC CHEMISTRY I**

Describe the functional groups, properties and simple transformations of organic compounds using different organic structures and chemical equations to identify the relationship between the structures of organic compounds and their properties. Correctly identify organic compounds by applying IUPAC nomenclature rules to systematically understand different organic compounds.

**MAT2012 CALCULUS II**

Apply directional derivatives and multiple integrals of variable functions through the modeling of the rate of change of their indicators to solve engineering, finance and science problems.

**ESP0022 ACADEMIC WRITING \***

Develop academic articles of your discipline through the administration of specialized information and the application of academic and scientific conventions, for the dissemination of academic and scientific knowledge.

**QUI2052 CHEMICAL THERMODYNAMICS LAB**

Analyze data from heat transfer processes by correctly generating and interpreting the graphs to obtain information on thermodynamic parameters.

**LEX0132 FOREIGN LANGUAGE III \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**QUI2042 CHEMICAL THERMODYNAMICS**

Describe the various energy exchange processes in physical and chemical changes, through the appropriate use of the principles of thermodynamics, to interpret physicochemical phenomena and their implications in the associated processes.

**LRT2012 ELECTRICAL CIRCUITS**

Identify the techniques of decomposition of electrical circuits, through the analysis and design of resistive, inductive and capacitive circuits with the purpose of applying them to more complex electrical circuits.

**MAT2052 ORDINARY DIFFERENTIAL EQUATIONS**

Apply different solutions techniques to differential equations using the existing classic ordinary differential equations methodologies to apply them in practical problems.

**LRT2032 ELECTRICAL CIRCUIT LAB**

Identify circuit analysis with dependent sources, operational amplifier, and inductive and capacitive elements by using simulation tools to analyze and implement their behavior in the time domain.

### **LQJ2012 THERMAL MACHINES**

Explain the different types of machines and turbines, using thermodynamics as a basic technique, to apply energy analysis, calculate the efficiency of thermal machines and analyze basic and complex thermodynamic cycles.

### **MAT2082 PROBABILITY AND STATISTICS**

Apply various probability and statistical techniques through different probability models and descriptive and inferential statistical methodologies to estimate parameters that contribute to decision-making.

### **LIY3042 ADVANCED ELECTRICAL CIRCUITS**

Design complex circuits by using the Laplace transform and two-port network parameters to develop circuit and cascade connection analysis of multiple circuits, as well as specify advanced electrical systems required for electrical power handling.

### **LIY3012 BASIC ELECTRONICS**

Analyze the operation of systems through the study of cases and solution of real problems to identify electronic systems that support the storage, distribution, control and management of energy activities and have greater efficiency and lower production costs.

### **LIY3052 ADVANCED ELECTRICAL CIRCUIT LAB**

Design alternating current electrical circuits by interconnecting its different elements to identify the behavior and operation of each one.

### **LQI3052 TRANSPORT PROCESSES LAB I**

Identify the mechanisms of heat transfer by developing experimental practices to establish the physical properties of fluids.

### **LIY3022 PROFESSIONAL PRACTICE 1**

Analyze the problems of the energy industry through professional practices to develop skills and stay updated in terms of product development, control and process innovation in the energy industry.

### **LQI3012 TRANSPORT PROCESSES I**

Compare the fundamental concepts of fluid flow and heat transfer, using the theoretical and mathematical analysis of the principles of time and heat transfer to apply them to the calculation of flow in pipes and heat transfer equipment.

### **LIY3032 PROCESS SAFETY AND ENVIRONMENTAL PROTECTION**

Identify the conceptual foundations and application of safety and protection of the work environment in industries using models and computational tools of the energy industry, as well as the associated regulations to apply safety systems in the energy industry.

### **LIY3092 GEOTHERMAL, HYDRAULIC AND NUCLEAR ENERGY**

Build energy production systems by taking advantage of geothermal, hydraulic and nuclear energy sources, to create more efficient renewable resources and reduce monetary costs in their generation, distribution, storage and quality.

**LIY3072 SOLAR AND WIND ENERGY**

Create solar and wind energy production designs, by applying the different energy propagation systems to identify renewable resources and reduce monetary costs in their generation, distribution, storage and quality.

**LIY3102 INSTRUMENTATION AND CONTROL**

Relate the characteristics of an electronic instrumentation system with control alternatives by using sensor theory of different parameters, controllers and actuators to develop instruments and control of energy systems.

**LIY3062 INSTRUMENTATION AND CONTROL LAB**

Analyze the different types of electronic instruments, through the use of experimental LAB equipment to identify the parameters, as well as the selection and specification of electronic control models of energy systems.

**LQI3132 FLUID AND HEAT FLOW UNIT OPERATIONS LAB**

Analyze the operation of the different equipment related to fluid flow and heat transfer through the development of lab practices to identify fluid flow and heat measurement instruments.

**LIY3082 FLUID AND HEAT FLOW UNIT OPERATIONS**

Analyze the behavior of fluids using the properties and laws associated with heat transfer, to apply this knowledge in the solution of engineering problems, selection and design of equipment more suitable to avoid energy losses.

**LQI3072 TRANSPORT PROCESSES II**

Define the fundamental concepts of mass transfer, through the theoretical and mathematical analysis of the principles of mass transfer to apply them to the processes of transformation of industry and natural processes.

**LIY4042 PETROCHEMICAL PROCESS ENGINEERING**

Compare the input and output interfaces of a process simulator, by simultaneously solving the balance of matter, energy and entropy of the system, as well as the thermodynamic properties of the components involved and the design parameters of each of the existing equipment, to consider the simulator as a tool for the evaluation of the flowsheet of a petrochemical process.

**LIY4052 PETROCHEMICAL PROCESS ENGINEERING LAB**

Compare different flowcharts of petrochemical processes by using a business process simulator to evaluate the effect of different design and operation variables on process efficiency.

**LQI4062 MASS TRANSFER UNIT OPERATIONS LAB**

Evaluate the processes related to mass transfer, distillation and extraction through lab practices to develop experimental skills in the operation of the different types of distillation and extraction towers that exist in the chemical industry.

**LMT3052 ELECTRICAL MACHINES**

Understand the basic principles of operation and control of direct current machines, transformers and alternating current machines, by analyzing their electromagnetic properties and their different industrial applications, to describe the preponderant role of electrical machines in a full-power electrical system.

#### **LQI4012 MASS TRANSFER UNIT OPERATIONS**

Evaluate the different unitary operations involving models of equilibrium stages, such as distillation, absorption, desorption and extraction, by applying the principles of phase balance and the fundamental laws of mass and energy conservation, to design the appropriate process to separate and purify products.

#### **LIY4012 PROFESSIONAL PRACTICE 2**

Apply advanced technical knowledge by analyzing industry problems in energy, to identify solutions in various topics.

#### **LIY4032 PETROLEUM CHEMISTRY AND CATALYTIC REACTORS**

Evaluate the best operating conditions of catalytic reactors by comparing various models, characterization methods of oil fractions, presence of metals, heteroatoms or asphaltenes; to organize the process of elaboration, separation, conversion and innovation of its products and its derivatives.

#### **LIY4022 SELECT TOPICS 1**

Analyze cutting-edge issues in regulations, energy policy and operation of the energy and fuel industry, through the analysis of theories and methodologies to relate their characteristics to energy engineering.

#### **LIY4072 BIOENERGIES**

Analyze the main problems related to obtaining energy from biological materials and various energy sources; use design criteria and energy balances to apply this knowledge in the design of new strategies to ensure that biofuel production proposals respect the environment, the economy and public policies.

#### **LIY4062 ENERGY PROJECT DESIGN**

Design an energy generation, use, transmission and/or storage project using specific technical, logistical, legal, economic and environmental guidelines to understand the requirements and guidelines in the management of energy projects.

#### **LIY4092 FOSSIL ENERGY REFINING AND PROCESSING**

Analyze the unitary operations that make up the processing of fossil energy; using the theoretical foundations related to the origin, exploration, exploitation, management, distribution and storage of fossil fuels, with the purpose of applying this knowledge in the resolution of engineering problems of oil and gas production, and refining in the petrochemical industry.

#### **LIY4082 SELECT TOPICS 2**

Examine cutting-edge topics related to the behavior and operation of hydrocarbon deposits and the mechanical properties of rocks, through simulations, calculations and applied research to identify the process of hydrocarbon exploitation in a context of efficiency.

#### **LIY4102 SELECT TOPICS 3**

Analyze cutting-edge issues related to the management and specification of electrical distribution systems in low and high voltage electricity networks, through the analysis of methodologies to identify lighting, heating, ventilation and air conditioning systems with electric energy.

### GENERAL ART ELECTIVE\*

- **ART0022 ART AND CULTURE OF THE AMERICAS**  
Identify sociocultural development in the Americas through their artistic expressions to establish an active dialogue with this past and its identity context.
- **ART0012 ART, HISTORY AND CULTURE**  
Identify how human beings define reality and express it for themselves and the world from the emergence of Western modernity, by explaining the reciprocal relationship between art, history and culture to critically argue artistic representation and expression topics.

### GENERAL MATH ELECTIVE\*

- **MAT0012 MATH FOR THINKING**  
Apply various approaches to mathematical thinking by modeling and analyzing hypothetical and real-world phenomena, to design solutions to problems related to your studies and your physical environment.
- **MAT0022 MATH AND CULTURE**  
Develop a project that integrates math with any of the expressions of culture, by modeling phenomena or indicators to make decisions that benefit society.

### GENERAL BEHAVIORAL SCIENCE ELECTIVE\*

- **COM0012 ETHICS, SOCIETY AND THE ENVIRONMENT**  
Discuss global problems and their local implications by integrating socio-economic, environmental and ethical aspects to create proposals for a tolerant society.
- **COM0022 BEHAVIOR AND HUMAN DEVELOPMENT**  
Identify human development's bio-psycho-social factors, by analyzing the variables that affect individual and social behavior and use this knowledge in their academic and professional life.

### GENERAL NATURAL SCIENCE ELECTIVE\*

- **CNE0012 FOOD AND LIFE**  
Identify the relationship between food and health through research that provides data on eating habits to choose an informed diet for your daily life.
- **CNE0022 EVOLUTION AND BIODIVERSITY**  
Describe the origin of diseases through causal factors to assess human health information sources.

### GENERAL HUMANITIES ELECTIVE\*

- **HUM0012 ECOSOPHY**

Compare world representation systems, analyzing different epistemological proposals to reposition the current Being-Man relationship with their environment and other beings from a fundamentally ecological philosophical dimension.

- **HUM0022 HUMANISTIC THINKING**

Study humanist thought from a socio-historical cultural perspective, based on the analysis of its different historical nuances to understand its relevance in contemporary culture.

*\*Courses that are part of the UDLAP General Education component*

## **FOOD INDUSTRY ENGINEERING**

### **LQI1012 MATTER BALANCE**

Develop a clear and systematic methodology using the engineering approach to solving matter balance problems with and without chemical reaction.

### **QUI1022 GENERAL CHEMISTRY LAB**

Develop analytical and practical skills through the observation and development of experiments measuring properties and transformations of matter and its velocity, to identify elementary techniques and thus become familiar with how to handle chemistry glass material, instruments and equipment.

### **LEX0112 FOREIGN LANGUAGE I \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### **MAT1012 UNIVERSITY MATH**

Learn algebraic language to interpret and use mathematical expressions, including their corresponding graphics, to formulate and solve problems.

### **QUI1012 GENERAL CHEMISTRY**

Identify the properties and transformations of matter and the change rates, by describing the atomic structure and reactivity of substances, to describe the reasons why chemistry is useful in your area and in daily life. Systematically describe inorganic substances by correctly applying the rules of nomenclature to identify chemical formulas.

### **INF0012 INFORMATION TECHNOLOGIES IN THE CONSTRUCTION OF KNOWLEDGE \***

Understand relevant information using Information and Communication Technologies (ICT) to document an economic, political, cultural and/or social problem.

### **MAT1032 LINEAR ALGEBRA**

Solve systems of equations by applying the theoretical processes of linear algebra and using technological resources to model phenomena in applied sciences.

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Express academic arguments orally and in writing within your discipline by developing and presenting persuasive speeches, using the rudiments of communication to interact effectively in a specific academic context.

**MAT1022 CALCULUS I**

Apply derivative and integral functions of a variable to solve engineering, finance, management and science problems by modeling the speed of change of its indicators.

**FIS1012 GENERAL PHYSICS I**

Apply the laws of Newtonian mechanics using mathematical algebra and calculus techniques to solve mechanics problems.

**FIS1022 GENERAL PHYSICS LAB I**

Apply the fundamentals of Newtonian kinematics and mechanics using lab equipment and supplies to compare experimental results with theoretical models.

**QUI1042 ORGANIC CHEMISTRY LAB I**

Understand the equipment used in organic chemistry and perform synthesis, separation, purification and identification of substances operations, using personal safety regulations, good lab practices and handling of hazardous waste to be able to measure properties of matter and make basic organic chemistry reactions.

**LEX0122 FOREIGN LANGUAGE II \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**QUI1032 ORGANIC CHEMISTRY I**

Describe the functional groups, properties and simple transformations of organic compounds using different organic structures and chemical equations to identify the relationship between the structures of organic compounds and their properties. Correctly identify organic compounds by applying IUPAC nomenclature rules to systematically understand different organic compounds.

**WHO2012 BIOCHEMISTRY I**

Identify biochemistry fundamentals through the review of chemistry, macromolecule structure and basic equations to interpret and analyze metabolism. Describe the relationships between macromolecules through their comparison at different scales, to relate their structure to the function they perform and their consequences at the cellular and organismal scales.

**MAT2012 CALCULUS II**

Apply directional derivatives and multiple integrals of variable functions through the modeling of the rate of change of their indicators to solve engineering, finance and science problems.

**ESP0022 ACADEMIC WRITING \***

Develop academic articles of your discipline through the administration of specialized information and the application of academic and scientific conventions, for the dissemination of academic and scientific knowledge.

**LNA2012 PHYSICAL PROPERTIES OF FOOD LAB**

Evaluate different physical properties of food through the development of experiments using equipment and processes, as well as the associated thermodynamic fundamentals, to generate information for the design and analysis of processes related to food processing.

**QUI2102 ANALYTICAL CHEMISTRY LAB**

Develop analytical and practical skills through the observation and development of experiments to identify and quantify the components of a substance through different methods of analysis, to skillfully manipulate the material and lab equipment used in analytical chemistry.

**LEX0132 FOREIGN LANGUAGE III \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**LNA2022 PHYSICAL PROPERTIES OF FOOD**

Examine the different properties of food, including thermodynamic ones, through theoretical concepts such as experimental foundations, to generate information that allows the design of processes related to the handling and transformation of food.

**QUI2092 ANALYTICAL CHEMISTRY**

Identify a substance's components using different analysis, separation, identification and determination of the ions and molecules methods.

**LNA2032 FOOD BIOCHEMISTRY**

Identify the main metabolic pathways in living organisms and the changes they cause in foods of plant or animal origin by identifying carbohydrates, proteins, lipids and fats, natural pigments, antioxidant compounds to explain the proper management of fresh products and obtain processed products.

**MAT2052 ORDINARY DIFFERENTIAL EQUATIONS**

Apply different solutions techniques to differential equations using the existing classic ordinary differential equations methodologies to apply them in practical problems.

**LNA2042 FOOD BIOCHEMISTRY LAB**

Identify the characteristics of the molecular components of food through various experiments and knowledge of the associated theoretical principles, to describe the behavior of food components, in their natural state and when they are subjected to transformations.

### **LBC2022 MICROBIOLOGY LAB**

Develop microbiological techniques by practicing the methods used in the lab for the isolation, identification, culture and control of microorganisms.

### **LBC2012 MICROBIOLOGY**

Identify the fundamentals of the morphology and functioning of microorganisms, by reviewing their structure and metabolism to analyze the phenomena related to the world of microorganisms. Describe the interrelationships between microorganisms and their environment by reviewing their physiological activities to establish beneficial and harmful effects.

### **MAT2082 PROBABILITY AND STATISTICS**

Apply various probability and statistical techniques through different probability models and descriptive and inferential statistical methodologies to estimate parameters that contribute to decision-making.

### **LNA3062 INNOVATION IN THE FOOD INDUSTRY**

Describe the elements that have conditioned the development of food preservation technology, through the relationship of the theoretical and practical concepts that underpin the new processing and conservation trends, for the development of representative products.

### **LNA3032 FOOD MICROBIOLOGY LAB**

Interpret the results obtained from microbiological analyses and apply food safety standards by working in the lab under sterile conditions to develop handling, culture and conservation of microorganisms skills and avoid the potential for corruption or pathogenicity.

### **LNA3052 RHEOLOGY AND FLUID FLOW IN FOOD LAB**

Identify the rheological characteristics of food fluids and measure their rheological parameters, as well as the equipment and instruments used, through experiments and knowledge of the associated theoretical foundations, to solve problems related to the transport of fluids in the handling and processing of food.

### **LNA3022 FOOD MICROBIOLOGY**

Examine the importance of microorganisms in relation to food spoilage and disease prevention by identifying their effects on various intrinsic and food extrinsic factors to establish a good sanitary quality of a product.

### **LNA3012 PROFESSIONAL PRACTICE 1**

Analyze food industry problems related to food science, technology or engineering, by applying classical technical knowledge to solve problems in various topics and developing skills of the licenciatura in food industry engineering.

### **LNA3042 RHEOLOGY AND FLUID FLOW IN FOOD**

Analyze unitary operations by applying the concepts of transport, pipeline flow and rheological properties of fluids in food, to design the equipment that transports and handles food fluids in the food industry.

**LNA3092 FOOD PHYSICAL CHEMISTRY**

Analyze the physicochemical principles that govern the activity of water, and the states of dispersion, through their application to food systems, to use them in the development of food products whose quality, stability and safety are guaranteed.

**LNA3122 FOOD HEAT TREATMENT PROCESSES LAB**

Analyze different unitary operations through the development of experiments, equipment and processes based on heat transfer to solve problems related to the heating and cooling of food during its processing and storage.

**LNA3142 FOOD DEHYDRATION AND SEPARATION PROCESS LAB**

Analyze different unitary operations used for food handling through the development of experiments using equipment and processes based on mass transfer, as well as knowledge of the associated theoretical foundations, to solve problems related to drying, extraction and distillation in food.

**LNA3082 FOOD CHEMISTRY LAB**

Explain the changes that can occur in food, to prevent deterioration, prevent chemical change or improve a food product through the relationship of its components: water, carbohydrates, lipids, protein, enzymes and pigments.

**LNA3102 FOOD PROCESS ENGINEERING MODELING**

Apply the general concepts of problem solving in food engineering, through a formal methodology of problem-solving, algorithm definition and solving, to solve different problems and generate interactive programs of different processes in food engineering.

**LNA3112 FOOD HEAT TREATMENT PROCESSES**

Analyze the processes of heat treatments in food through the application of the concepts of unitary operations based on heat transport, heat exchange, evaporation, heat treatment, refrigeration and freezing, to understand the equipment and processes that preserve food by thermal methods.

**LNA3132 FOOD DEHYDRATION AND SEPARATION PROCESSES**

Analyze the processes for the dehydration and separation of food, through the application of concepts and calculations related to unitary operations based on the transport of dough, dehydration, extraction and distillation, to design the equipment that preserves food and that separates some food components.

**LNA3072 FOOD CHEMISTRY**

Understand the chemical structures of the main food components, by analyzing the key chemical and biochemical changes in food and the changes that affect its composition, structure, quality and safety to establish the influence on the physical, chemical, nutritional and organoleptic properties of the food and create new solutions, products, systems, components and/or processes.

**LNA4022 FOOD ANALYSIS**

Analyze the main methods used by interpreting their fundamentals to propose modifications without affecting the accuracy of the results.

**LNA4032 FOOD ANALYSIS LAB**

Identify the macro and micro components in food by analyzing the results obtained in experiments to apply the concepts and theories of physical chemistry and food analysis.

**LNA4052 MANAGEMENT SYSTEMS AND FOOD SAFETY LAB**

Apply the tools of quality control and assurance in the food industry, through the identification of national and international regulations and codes of ethics to propose solutions related to quality assurance and food safety.

**LNA4012 PROFESSIONAL PRACTICE 2**

Solve advanced practical problems of the food industry or scientific challenges related to food science, technology or engineering, by applying advanced technical knowledge to solve problems in the various topics.

**LNA4042 FOOD SAFETY AND MANAGEMENT SYSTEMS**

Explain the quality and safety management systems in the food industries, through the procedures and food safety regulations involved to control, ensure and improve the quality of products and processes in the food industry.

**LNA4062 SELECT TOPICS 1**

Analyze cutting-edge topics in engineering in food industries related to food processing and nutritional value by analyzing theoretical foundations to address and solve problems of the profession.

**LNA4092 FOOD QUALITY ATTRIBUTES**

Analyze the quality attributes of food, by selecting the correct evaluation techniques for the manufacture of food in relation to the production process and management after its manufacture.

**LNA4072 DESIGN OF NEW FOOD PRODUCTS**

Apply the methodology for the design of food products and processes through the analysis of results obtained in the LAB to create solutions, products, ingredients and/or new processes of high quality that compete advantageously in the processed food market.

**LNA4102 FOOD QUALITY ATTRIBUTE LAB**

Evaluate different food quality attributes by practicing the analysis techniques related to those attributes to analyze and argue about the appropriate type of quality analysis according to the type of food.

**LNA4082 FOOD PROCESSING TECHNOLOGIES**

Apply the various food preservation processes by explaining the fundamental principles that support them to industrially process safe and good quality food products according to regulatory and market requirements.

**LNA4112 SELECT TOPICS 2**

Analyze cutting-edge issues of engineering in food industries related to the regulations on labeling and use of additives through the identification of the fundamental principles to solve problems of the food industry.

**LNA4122 SELECT TOPICS 3**

Apply cutting-edge engineering topics in food industries related to the design of food processing equipment and plants by reviewing relevant concepts to specify and design food industry facilities.

**GENERAL MATH ELECTIVE\***

- **MAT0012 MATH FOR THINKING**  
Apply various approaches to mathematical thinking by modeling and analyzing hypothetical and real-world phenomena, to design solutions to problems related to your studies and your physical environment.
- **MAT0022 MATH AND CULTURE**  
Develop a project that integrates math with any of the expressions of culture, by modeling phenomena or indicators to make decisions that benefit society.

**GENERAL NATURAL SCIENCE ELECTIVE\***

- **CNE0012 FOOD AND LIFE**  
Identify the relationship between food and health through research that provides data on eating habits to choose an informed diet for your daily life.
- **CNE0022 EVOLUTION AND BIODIVERSITY**  
Describe the origin of diseases through causal factors to assess human health information sources.

**GENERAL HUMANITIES ELECTIVE\***

- **HUM0012 ECOSOPHY**  
Compare world representation systems, analyzing different epistemological proposals to reposition the current Being-Man relationship with their environment and other beings from a fundamentally ecological philosophical dimension.
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Study humanist thought from a socio-historical cultural perspective, based on the analysis of its different historical nuances to understand its relevance in contemporary culture.

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Identify sociocultural development in the Americas through their artistic expressions to establish an active dialogue with this past and its identity context.
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Identify how human beings define reality and express it for themselves and the world from the emergence of Western modernity, by explaining the reciprocal relationship between art, history and culture to critically argue artistic representation and expression topics.

### GENERAL BEHAVIORAL SCIENCE ELECTIVE\*

- **COM0012 ETHICS, SOCIETY AND THE ENVIRONMENT**  
Discuss global problems and their local implications by integrating socio-economic, environmental and ethical aspects to create proposals for a tolerant society.
- **COM0022 BEHAVIOR AND HUMAN DEVELOPMENT**  
Identify human development's bio-psycho-social factors, by analyzing the variables that affect individual and social behavior and use this knowledge in their academic and professional life.

*\*Courses that are part of the UDLAP General Education component*

## LOGISTICS AND SUPPLY CHAIN ENGINEERING

### ADM1012 MANAGEMENT FUNDAMENTALS

Describe the nature of management theory by explaining the administrative process and functional areas to identify an organization's integral administrative work.

### LEX0112 FOREIGN LANGUAGE I \*

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### MAT1012 UNIVERSITY MATH

Learn algebraic language to interpret and use mathematical expressions, including their corresponding graphics, to formulate and solve problems.

### INF0012 INFORMATION TECHNOLOGIES IN THE CONSTRUCTION OF KNOWLEDGE \*

Understand relevant information using Information and Communication Technologies (ICT) to document an economic, political, cultural and/or social problem.

### **MAT1032 LINEAR ALGEBRA**

Solve systems of equations by applying the theoretical processes of linear algebra and using technological resources to model phenomena in applied sciences.

### **ESP0012 ACADEMIC REASONING\***

Express academic arguments orally and in writing within your discipline by developing and presenting persuasive speeches, using the rudiments of communication to interact effectively in a specific academic context.

### **MAT1022 CALCULUS I**

Apply derivative and integral functions of a variable to solve engineering, finance, management and science problems by modeling the speed of change of its indicators.

### **CON1012 ACCOUNTING**

Identify the various financial information elements through operations accounting records financial statements in service and commercial companies to control results.

### **LMK1012 MARKETING FUNDAMENTALS**

Identify marketing strategy principles and key elements through research and use of sources published in the discipline, to create marketing strategies to improve the competitive position of a company. Apply the decisions of each marketing strategy element using market research tools, to design marketing strategies for a real company.

### **LEX0122 FOREIGN LANGUAGE II \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### **LII2012 UNCERTAINTY ANALYSIS I**

Analyze phenomena of an uncertain nature in engineering by studying random variables and developing mathematical models to identify their behavior, estimate and/or predict how often they occur, and evaluate results quickly and accurately.

### **LII2022 INDUSTRY COMPUTER APPLICATIONS**

Analyze industrial and logistics engineering problems that influence decision-making through mathematical modeling, flow diagrams and application of specialized software to develop solutions to complex iterative optimization problems.

### **MAT2012 CALCULUS II**

Apply directional derivatives and multiple integrals of variable functions through the modeling of the rate of change of their indicators to solve engineering, finance and science problems.

### **ESP0022 ACADEMIC WRITING \***

Develop academic articles of your discipline through the administration of specialized information and the application of academic and scientific conventions, for the dissemination of academic and scientific knowledge.

**LEX0132 FOREIGN LANGUAGE III \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**LII2032 UNCERTAINTY ANALYSIS II**

Construct mathematical models that represent the behavior of random phenomena, by applying the concepts and theorems of probability theory, and basic statistics to describe the possible outcomes and assign probabilities to the different events of interest in engineering.

**LCS2012 PROCUREMENT AND SOURCING SUPPLY CHAIN**

Develop a procurement and sourcing strategy aimed at a company, by effectively integrating key factors such as supply times and quality to identify the important factors that make up a successful strategy.

**LCS2032 PACKAGING**

Design a packaging process according to the characteristics of the product, by selecting the material, designing the packaging and the right equipment to establish the integrity of a product as it moves through the supply chain.

**LII2062 ECONOMIC ENGINEERING**

Analyze the economic sensitivity of engineering proposals through alternative economic scenarios, applying appropriate financial valuation criteria to establish their robustness and feasibility.

**LCS2022 HEURISTIC METHODS**

Design feasible solutions using constructive and improvement heuristics to understand their practical application in logistics and manufacturing.

**LII2042 OPTIMIZATION TECHNIQUES AND THEORY**

Analyze practical problems by applying mathematical programming models and methods, to develop optimal solutions to support decision-making.

**LDE3012 FOREIGN TRADE AND INTERNATIONAL TREATIES**

Analyze the regulation of foreign trade operations, investigating the applicable regulations at national and international level, to identify international trade problems.

**LII3042 ANALYTICAL METHODS IN SYSTEMS I**

Interpret the characteristics of the population, through the analysis of information contained in a sample and the application of parametric and non-parametric methods (free of distribution), to explain, estimate, verify assumptions and develop decisions.

**LCS3022 METAHEURISTIC METHODS**

Analyze the criteria of quality, robustness and efficiency through methods of finding feasible solutions to identify the relevance of the use of metaheuristics in the resolution of complex logistics problems.

**LCS3012 PROFESSIONAL PRACTICE 1**

Identify logistics and supply chain engineering problems through the fulfillment of specific jobs in a company of goods and/or services, to understand situations of adaptation in a work environment.

**LI3052 WHOLE AND COMBINATORIAL PROGRAMMING**

Analyze combinatorial optimization problems through mathematical modeling and the application of integer and combinatorial programming techniques to develop optimal solutions to operational areas of a company related to production, logistics and management.

**LI3062 LEAN SYSTEMS**

Develop proposals to improve work systems through the use of lean manufacturing concepts and techniques, to identify solutions that contribute to reducing waste and cycle times in manufacturing, service, and administrative processes and systems.

**LCS3042 STORAGE AND LOGISTICS**

Develop solutions to problems related to the design and operation of warehouses through mathematical programming and implementation of appropriate algorithms to identify competitive advantages in the supply chain.

**LI3112 ANALYTICAL METHODS IN SYSTEMS LAB**

Develop solutions to probability and statistical problems in the engineering area through the application of computational tools and specialized software to originate the mathematical calculations that allow the interpretation of the results.

**LCS3032 MATERIAL HANDLING IN LOGISTICS AND SUPPLY CHAIN**

Analyze the fundamental concepts of material handling through mathematical programming models of flow in networks to plan the efficient storage of goods and services.

**LMK3102 INTERNATIONAL MARKETING**

Identify the concepts and theoretical bases related to international and global marketing, through the application of analysis tools to develop successful strategies of products and services in international markets to improve the position of the company in the market.

**LI3102 ANALYTICAL METHODS IN SYSTEMS II**

Build regression models using statistics and probability, to explain the behavior of a dependent variable from independent variables that serve as prediction and/or forecasting mechanisms. Design probabilistic and non-probabilistic samples, to produce information with statistical representativeness and make valid and reliable inferences about the target population.

### **LCS3052 INVENTORY MODELS AND WAITING LINES**

Design inventory models through using deterministic mathematical models, as well as those in which there is uncertainty in demand and/or delivery time, to develop solutions that contribute to reducing storage costs. Design waiting lines through the application of queue theory to develop solutions that increase efficiency in the provision of services.

### **LCS3062 SELECT TOPICS 1**

Analyze cutting-edge topics in supply chain optimization by building mathematical models to develop solutions to problems in service and manufacturing companies.

### **LAD4042 PROJECT MANAGEMENT**

Apply the techniques and tools of project management through the implementation of its processes and phases to identify the organizational, human and technical aspects

### **LII4032 INTEGRATED SYSTEMS SIMULATION LAB**

Develop discrete event models to predict the results of integrated systems of personnel, materials, energy, machines and information through the application of simulation software, to produce solutions that contribute to make decisions in advance about the installation or modification of these systems and ensure their high performance.

### **LCS4022 FACILITY LOCATION**

Design a distribution network using mathematical programming models and techniques, both exact and approximate, to evaluate how supply chains function.

### **LNI4022 INTERNATIONAL LOGISTICS**

Understand logistics activities in companies at an international level through the analysis of theoretical models of transport systems, logistics operations, inventories and operational logistics costs to identify the most efficient models of transport and global logistics.

### **LII4052 PRODUCTION PLANNING AND CONTROL**

Plan a production system for a good or service through the formulation of an aggregate plan, a production master plan, the planning of the supply of materials and control actions to develop solutions that contribute to increase the efficiency and effectiveness of processes.

### **LCS4012 PROFESSIONAL PRACTICE 2**

Evaluate the problems presented in the professional practices by analyzing the knowledge seen in the topics of logistics and supply chain engineering to develop optimal solutions and use decision-making in the work environment.

### **LII4022 INTEGRATED SYSTEMS SIMULATION**

Build a model that reproduces the characteristics and distinctive elements of a real system by applying simulation languages and probability and statistics topics, with the purpose of developing proposals for improvements and/or alternative scenarios in the original system.

### **LCS4032 LOGISTICS CASES**

Analyze customer or market problems through logical, conceptual, deductive and critical thinking, to develop solutions under the mathematical perspective of complex logistics systems and thus propose a comprehensive solution to the supply chain.

### **LCS4052 LOGISTICS AND SUPPLY CHAIN DESIGN**

Design distribution routes, using mathematical programming models and solution techniques to develop efficient strategies for the distribution of goods and services.

### **LCS4042 LOGISTICS AND SUPPLY CHAIN MANAGEMENT**

Analyze essential logistics and supply chain operations through a comprehensive process approach, to develop alternatives that improve the performance of logistics systems.

### **LCS4062 LOGISTICS AND SUPPLY CHAIN TECHNOLOGIES**

Compare the uses of information technologies (IT) in the different elements of a supply chain, by identifying in detail the competitive advantages that can be obtained with its implementation, to select those that support the logistics system of the organization.

### **LCS4072 SELECT TOPICS 2**

Examine cutting-edge topics in logistics operations through a thorough investigation of the technological offer to identify the one that best meets the demands of companies.

### **LCS4082 SELECT TOPICS 3**

Analyze cutting-edge topics in logistics quality using concepts of time series, information technologies, geographic information systems, as well as mathematical programming models to apply them in the analysis of practical cases.

## **GENERAL ART ELECTIVE\***

- **ART0022 ART AND CULTURE OF THE AMERICAS**  
Identify sociocultural development in the Americas through their artistic expressions to establish an active dialogue with this past and its identity context.
- **ART0012 ART, HISTORY AND CULTURE**  
Identify how human beings define reality and express it for themselves and the world from the emergence of Western modernity, by explaining the reciprocal relationship between art, history and culture to critically argue artistic representation and expression topics.

## **GENERAL MATH ELECTIVE\***

- **MAT0012 MATH FOR THINKING**  
Apply various approaches to mathematical thinking by modeling and analyzing hypothetical and real-world phenomena, to design solutions to problems related to your studies and your physical environment.

- **MAT0022 MATH AND CULTURE**

Develop a project that integrates math with any of the expressions of culture, by modeling phenomena or indicators to make decisions that benefit society.

#### **GENERAL NATURAL SCIENCE ELECTIVE\***

- **CNE0012 FOOD AND LIFE**

Identify the relationship between food and health through research that provides data on eating habits to choose an informed diet for your daily life.

- **CNE0022 EVOLUTION AND BIODIVERSITY**

Describe the origin of diseases through causal factors to assess human health information sources.

#### **GENERAL HUMANITIES ELECTIVE\***

- **HUM0012 ECOSOPHY**

Compare world representation systems, analyzing different epistemological proposals to reposition the current Being-Man relationship with their environment and other beings from a fundamentally ecological philosophical dimension.

- **HUM0022 HUMANISTIC THINKING**

Study humanist thought from a socio-historical cultural perspective, based on the analysis of its different historical nuances to understand its relevance in contemporary culture.

#### **GENERAL BEHAVIORAL SCIENCE ELECTIVE\***

- **COM0012 ETHICS, SOCIETY AND THE ENVIRONMENT**

Discuss global problems and their local implications by integrating socio-economic, environmental and ethical aspects to create proposals for a tolerant society.

- **COM0022 BEHAVIOR AND HUMAN DEVELOPMENT**

Identify human development's bio-psycho-social factors, by analyzing the variables that affect individual and social behavior and use this knowledge in their academic and professional life.

*\*Courses that are part of the UDLAP General Education component*

## **ROBOTICS AND TELECOMMUNICATIONS ENGINEERING**

### **LIS1012 ALGORITHMS AND PROGRAMMING**

Apply algorithmic thinking using control structures in the denotation of sequences, conditions, cycles, and appropriate data structures to develop solutions that can be implemented in a programming language.

### **LEX0112 FOREIGN LANGUAGE I \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### **MAT1012 UNIVERSITY MATH**

Learn algebraic language to interpret and use mathematical expressions, including their corresponding graphics, to formulate and solve problems.

### **INF0012 INFORMATION TECHNOLOGIES IN THE CONSTRUCTION OF KNOWLEDGE \***

Understand relevant information using Information and Communication Technologies (ICT) to document an economic, political, cultural and/or social problem.

### **MAT1032 LINEAR ALGEBRA**

Solve systems of equations by applying the theoretical processes of linear algebra and using technological resources to model phenomena in applied sciences.

### **ESP0012 ACADEMIC REASONING\***

Express academic arguments orally and in writing within your discipline by developing and presenting persuasive speeches, using the rudiments of communication to interact effectively in a specific academic context.

### **MAT1022 CALCULUS I**

Apply derivative and integral functions of a variable to solve engineering, finance, management and science problems by modeling the speed of change of its indicators.

### **FIS1012 GENERAL PHYSICS I**

Apply the laws of Newtonian mechanics using mathematical algebra and calculus techniques to solve mechanics problems.

### **LIM1012 COMPUTER DRAWING LAB**

Create plans of models and/or assemblies using CAD programs, taking into account the standards of technical drawing, to apply them as a means of communication in activities related to manufacturing and mechanical design.

### **FIS1022 GENERAL PHYSICS LAB I**

Apply the fundamentals of Newtonian kinematics and mechanics using lab equipment and supplies to compare experimental results with theoretical models.

### **LEX0122 FOREIGN LANGUAGE II \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### **MAT2012 CALCULUS II**

Apply directional derivatives and multiple integrals of variable functions through the modeling of the rate of change of their indicators to solve engineering, finance and science problems.

### **LRT2012 ELECTRICAL CIRCUITS**

Identify the techniques of decomposition of electrical circuits, through the analysis and design of resistive, inductive and capacitive circuits with the purpose of applying them to more complex electrical circuits.

### **LRT2022 DIGITAL DESIGN**

Identify the basics of digital system design by using hardware description language (HDL) to analyze the operation of modern digital systems.

### **ESP0022 ACADEMIC WRITING \***

Develop academic articles of your discipline through the administration of specialized information and the application of academic and scientific conventions, for the dissemination of academic and scientific knowledge.

### **FIS2012 GENERAL PHYSICS II**

Apply the laws governing electrical and magnetic phenomena using mathematical algebra and calculus techniques to develop solutions to electromagnetic problems.

### **LRT2032 ELECTRICAL CIRCUIT LAB**

Identify circuit analysis with dependent sources, operational amplifier, and inductive and capacitive elements by using simulation tools to analyze and implement their behavior in the time domain.

### **FIS2022 GENERAL PHYSICS LAB II**

Apply the fundamentals of electrostatics, electrical properties of materials, electrical circuits and magnetism using lab equipment and material to compare experimental results with theoretical models.

### **LEX0132 FOREIGN LANGUAGE III \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### **MAT2032 CALCULUS III**

Apply vector calculus methods as a tool to develop two and three-dimensional models of various technological processes through the study of curves and surfaces in space, as well as the concepts of differentiability and integrability in scalar and vector fields.

### **MAT2052 ORDINARY DIFFERENTIAL EQUATIONS**

Apply different solutions techniques to differential equations using the existing classic ordinary differential equations methodologies to apply them in practical problems.

#### **LRT2042 INTEGRATED ELECTRONICS**

Design both analog and digital electronic circuits using the design methodologies that exist and the equations that govern their operation to relate them to the construction of electronic circuits that satisfy the requirements imposed on the embedded systems that are part of the current technological solutions.

#### **LIM2022 RIGID BODY BALANCE**

Analyze the loads and constraints that maintain equilibrium in particles and rigid bodies, applying the static equilibrium equations in two and three dimensions to develop solutions to engineering problems involving structural components of armatures, frames and machines.

#### **LRT2052 INTEGRATED ELECTRONICS LAB**

Analyze the behavior of semiconductor elements such as diodes and transistors, as well as the applications of linear devices and low-scale integrated circuits by examining the theoretical foundations of integrated electronics to use in everyday electronic solutions.

#### **MAT2082 PROBABILITY AND STATISTICS**

Apply various probability and statistical techniques through different probability models and descriptive and inferential statistical methodologies to estimate parameters that contribute to decision-making.

#### **LIS1022 OBJECT-ORIENTED PROGRAMMING**

Describe the object-oriented paradigm using UNIFIED MODELING LANGUAGE (UML) notation and the Java programming language to implement an application's requirements.

#### **LRT3022 COMMUNICATIONS FUNDAMENTALS**

Analyze signals in the time domain and in the frequency domain using software and experiments to design analog and digital communications systems.

#### **LMT3032 SIGNALS AND INSTRUMENTATION LAB**

Build different circuits based on operational amplifiers as functional blocks by using the main types of sensors and transducers to apply and implement them in data acquisition systems and analyze their most complex functions.

#### **LRT3012 PROFESSIONAL PRACTICE 1**

Apply the knowledge acquired in robotics and telecommunications such as vision in robotics, telecommunications systems, network configuration, kinematics and robot dynamics and automation with a learning approach based on experience, to develop solutions to problems specific to your profession by critically analyzing, synthesizing and evaluating the decisions taken aimed at achieving a set of realistic specifications in the productive sector or research projects.

#### **LMT3022 SIGNALS AND INSTRUMENTATION**

Develop detection systems, electronic sensors, signal conditioning, recording and display of the same using electronic circuit tools that meet the design specifications given to analyze electrical signals in the time and frequency domain.

#### **LRT3032 EMBEDDED SYSTEMS**

Apply hardware description languages in the design process of a processor by integrating the fundamentals of logical design to develop embedded systems in reconfigurable devices.

#### **LRT3042 KINEMATICS AND ROBOT DYNAMICS**

Design a robot using open access simulation tools to identify its behavior, usefulness and operation, as well as the rotations and translation of the links that compose it.

#### **LRT3072 DIGITAL COMMUNICATIONS**

Analyze signals in the time domain and in the frequency domain by using software tools and communications equipment to identify and model their application in next-generation digital communications systems.

#### **LIS3072 TECHNOLOGICAL INNOVATION**

Illustrate technological innovation and patent registration processes using defined strategies and diagnostic and new knowledge creation processes to develop proposals that foster creativity, intellectual property in innovation and learning in an organization.

#### **LRT3052 MACHINES AND MECHANISMS**

Identify the basic principles of mechanisms, operation and control of direct current machines, transformers and alternating current machines by analyzing kinematics and describing their electromagnetic properties and their different industrial applications, to describe the preponderant role of mechanisms and electrical machines in a full-power electrical system.

#### **LRT3082 CONTROL SYSTEMS**

Design control systems using time and frequency techniques, mathematical models and physical laws of equilibrium to examine the constraints and specifications of the system under analysis.

#### **LRT3062 SELECT TOPICS 1**

Analyze cutting-edge issues in telecommunications and optical communications through the use of specialized tools and software to identify and develop innovative solutions.

#### **LRT4062 POWER ELECTRONICS**

Identify the different power converters used in the conversion of electrical energy, by describing the properties of direct current and alternating current, as well as electronic devices in energy conversion, to understand the applications of electrical energy conversion in your area of expertise.

#### **LRT4052 COMPUTER NETWORKING LAB**

Apply computer network concepts such as network design and monitoring, using software tools and networking equipment, to analyze the protocols involved in the TCP/IP model and apply traffic analysis in a communications network.

#### **LRT4022 PROFESSIONAL PRACTICE 2**

Develop robotics and/or telecommunications projects that involve vision in robotics, telecommunications systems, network configuration, kinematics and robot dynamics, and automation using the experience-based learning approach where solutions are given to problems specific to their profession within the productive sector or in research centers to originate innovative products or that improve systems or procedures in the area of engineering.

#### **LRT4042 COMPUTER NETWORKS**

Analyze the fundamental concepts of a communications network using the TCP/IP and ISO/OSI model, access techniques and data communications to understand the process from the overall design and operation of a communications network and the Internet.

#### **LRT4032 SELECT TOPICS 2**

Examine cutting-edge topics in the areas of Industry 4.0 by describing the technological underpinnings of cyber-physical systems, the Internet of Things and cloud computing to develop innovative and high-impact solutions to real-life problems.

#### **LRT4012 VISION IN ROBOTICS**

Develop systems based on artificial vision of various types of autonomous robots through the application of segmentation, enhancement, restoration, recovery, interpretation and recognition tools of patterns and images to explain the operation of robot arm control, mobile robot, aerial robot or industrial robot.

#### **LRT4122 FIBER OPTIC COMMUNICATIONS**

Design next-generation optical communications systems and analyze electromagnetic waves in fiber optic channels, develop the modeling of optical communications systems by using specialized software to compare theory with practice in the development of new Internet services.

#### **LRT4102 ROBOTIC SYSTEM DESIGN**

Design an industrial or service robot that integrates mechanical design and electronics through the programming of a control in embedded systems, to develop the economic and temporal planning of the execution of specific objectives and obtain a final functional prototype.

#### **LRT4082 APPLIED ROBOTICS LAB**

Design robotic systems using global design methodologies and selecting the components of a robotic system to develop solutions that meet the specifications of an application.

#### **LRT4112 WIRELESS AND MOBILE NETWORKS**

Apply tools for analysis, modeling and simulation of interconnectivity protocols of networks, wireless, cellular, mobile local networks, ad hoc and sensors using mathematical foundations and practical techniques of the design and construction of wireless communication systems to develop proposals for solutions to real problems in the area of mobile networks and face future trends in wireless communication systems.

#### **LRT4072 ROBOTICS AND AUTOMATION**

Develop industrial automation projects using modern design strategies and safety measures that incorporate robots as a tool to originate proposals that contribute to improving industrial production and ensuring the safety of resources, human and material, of the industry.

#### **LRT4092 SELECT TOPICS 3**

Examine cutting-edge topics in automatic control to design fault detection algorithms in robotic arms, drones and mobile robots, by using signal analysis strategies of the different components of the system.

### **GENERAL ART ELECTIVE\***

- **ART0022 ART AND CULTURE OF THE AMERICAS**  
Identify sociocultural development in the Americas through their artistic expressions to establish an active dialogue with this past and its identity context.
- **ART0012 ART, HISTORY AND CULTURE**  
Identify how human beings define reality and express it for themselves and the world from the emergence of Western modernity, by explaining the reciprocal relationship between art, history and culture to critically argue artistic representation and expression topics.

### **GENERAL MATH ELECTIVE\***

- **MAT0012 MATH FOR THINKING**  
Apply various approaches to mathematical thinking by modeling and analyzing hypothetical and real-world phenomena, to design solutions to problems related to your studies and your physical environment.
- **MAT0022 MATH AND CULTURE**  
Develop a project that integrates math with any of the expressions of culture, by modeling phenomena or indicators to make decisions that benefit society.

### **GENERAL BEHAVIORAL SCIENCE ELECTIVE\***

- **COM0012 ETHICS, SOCIETY AND THE ENVIRONMENT**  
Discuss global problems and their local implications by integrating socio-economic, environmental and ethical aspects to create proposals for a tolerant society.

- **COM0022 BEHAVIOR AND HUMAN DEVELOPMENT**

Identify human development's bio-psycho-social factors, by analyzing the variables that affect individual and social behavior and use this knowledge in their academic and professional life.

### **GENERAL NATURAL SCIENCE ELECTIVE\***

- **CNE0012 FOOD AND LIFE**

Identify the relationship between food and health through research that provides data on eating habits to choose an informed diet for your daily life.

- **CNE0022 EVOLUTION AND BIODIVERSITY**

Describe the origin of diseases through causal factors to assess human health information sources.

### **GENERAL HUMANITIES ELECTIVE\***

- **HUM0012 ECOSOPHY**

Compare world representation systems, analyzing different epistemological proposals to reposition the current Being-Man relationship with their environment and other beings from a fundamentally ecological philosophical dimension.

- **HUM0022 HUMANISTIC THINKING**

Study humanist thought from a socio-historical cultural perspective, based on the analysis of its different historical nuances to understand its relevance in contemporary culture.

*\*Courses that are part of the UDLAP General Education component*

## **COMPUTER SYSTEMS ENGINEERING**

### **LIS1012 ALGORITHMS AND PROGRAMMING**

Apply algorithmic thinking using control structures in the denotation of sequences, conditions, cycles, and appropriate data structures to develop solutions that can be implemented in a programming language.

### **LEX0112 FOREIGN LANGUAGE I \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### **MAT1012 UNIVERSITY MATH**

Learn algebraic language to interpret and use mathematical expressions, including their corresponding graphics, to formulate and solve problems.

**INF0012 INFORMATION TECHNOLOGIES IN THE CONSTRUCTION OF KNOWLEDGE \***

Understand relevant information using Information and Communication Technologies (ICT) to document an economic, political, cultural and/or social problem.

**MAT1032 LINEAR ALGEBRA**

Solve systems of equations by applying the theoretical processes of linear algebra and using technological resources to model phenomena in applied sciences.

**ESP0012 ACADEMIC REASONING\***

Express academic arguments orally and in writing within your discipline by developing and presenting persuasive speeches, using the rudiments of communication to interact effectively in a specific academic context.

**MAT1022 CALCULUS I**

Apply derivative and integral functions of a variable to solve engineering, finance, management and science problems by modeling the speed of change of its indicators.

**FIS1012 GENERAL PHYSICS I**

Apply the laws of Newtonian mechanics using mathematical algebra and calculus techniques to solve mechanics problems.

**LEX0122 FOREIGN LANGUAGE II \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**LIS1022 OBJECT-ORIENTED PROGRAMMING**

Describe the object-oriented paradigm using UNIFIED MODELING LANGUAGE (UML) notation and the Java programming language to implement an application's requirements.

**MAT2012 CALCULUS II**

Apply directional derivatives and multiple integrals of variable functions through the modeling of the rate of change of their indicators to solve engineering, finance and science problems.

**LRT2022 DIGITAL DESIGN**

Identify the basics of digital system design by using hardware description language (HDL) to analyze the operation of modern digital systems.

**ESP0022 ACADEMIC WRITING \***

Develop academic articles of your discipline through the administration of specialized information and the application of academic and scientific conventions, for the dissemination of academic and scientific knowledge.

### **LIS2032 DATA STRUCTURES**

Identify the characteristics, advantages and disadvantages of existing algorithms in the management of the main data structures through their implementation and analysis to develop solutions that contribute to the construction of complex computer systems.

### **FIS2012 GENERAL PHYSICS II**

Apply the laws governing electrical and magnetic phenomena using mathematical algebra and calculus techniques to develop solutions to electromagnetic problems.

### **FIS2022 GENERAL PHYSICS LAB II**

Apply the fundamentals of electrostatics, electrical properties of materials, electrical circuits and magnetism using lab equipment and material to compare experimental results with theoretical models.

### **EX0132 FOREIGN LANGUAGE III \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### **LIS2022 COMPUTERL ARCHITECTURES**

Design the main components of a processor by using recent analysis techniques and the development of modern computational architectures, and the application of data flow simulation methods in multiprocessors to develop solutions to real problems in computer systems.

### **LIS2082 DATABASES**

Develop database applications, representing your information without inconsistencies or anomalies with the relational data model to organize storage and later access in a fast and structured way.

### **LRT2012 ELECTRICAL CIRCUITS**

Identify the techniques of decomposition of electrical circuits, through the analysis and design of resistive, inductive and capacitive circuits with the purpose of applying them to more complex electrical circuits.

### **MAT2052 ORDINARY DIFFERENTIAL EQUATIONS**

Apply different solutions techniques to differential equations using the existing classic ordinary differential equations methodologies to apply them in practical problems.

### **LRT2032 ELECTRICAL CIRCUIT LAB**

Identify circuit analysis with dependent sources, operational amplifier, and inductive and capacitive elements by using simulation tools to analyze and implement their behavior in the time domain.

**LIS2012 DISCRETE MATHEMATICS**

Identify the appropriate design technique in problem solving through the asymptotic analysis of an algorithm to develop efficient solutions.

**MAT2082 PROBABILITY AND STATISTICS**

Apply various probability and statistical techniques through different probability models and descriptive and inferential statistical methodologies to estimate parameters that contribute to decision-making.

**LIS2062 OPERATING SYSTEMS**

Identify the structure and organization of operating systems by analyzing the concepts of design and implementation to effectively apply the different operating systems.

**LFA3082 NUMERICAL ANALYSIS**

Develop programming language codes using the principles of algebra and calculus to analyze nonlinear, algebraic and differential equations systems.

**LIS3032 HUMAN-COMPUTER INTERACTION**

Apply the fundamental concepts of the multidisciplinary field of Human-Computer Interaction (IHC), through the analysis of users and their context, as well as the construction of prototypes, to design interactive systems that users accept and incorporate into their activities.

**LIS3052 PROFESSIONAL PRACTICE 1**

Develop, using the learning approach based on experience, the knowledge acquired in computer systems such as databases, operating systems, artificial intelligence among others to apply them in solving problems specific to their profession by critically analyzing, summarizing and evaluating in a critical way the decisions taken aimed at achieving a set of realistic specifications within the productive sector or research projects.

**LRT3032 EMBEDDED SYSTEMS**

Apply hardware description languages in the design process of a processor by integrating the fundamentals of logical design to develop embedded systems in reconfigurable devices.

**LIS3042 COMPUTER THEORY**

Design programs based on the analysis of the level of complexity of the problem through the modeling of deterministic and non-deterministic automata, as well as computational grammar to develop solutions to computational problems based on automata.

**LIS3012 ADVANCED DATABASES**

Compare information handler technologies using relational-extended, object-oriented and semi-structured models to develop a critical view of existing technology in terms of building modern databases.

**LIS3022 GRAPHING AND VIDEO GAMES**

Analyze the theory and practice of how to generate three-dimensional images by using a computer in generating movement of those images in a convenient way to apply computerized animations and video games.

#### **LIS3062 SOFTWARE ENGINEERING**

Apply the most advanced software development methodologies to meet the requirements posed by the needs of users, through the analysis and design of software components, as well as implementing and testing the prototype of a system to establish that it meets quality standards in real situations.

#### **LIS3082 ARTIFICIAL INTELLIGENCE**

Design applications using artificial intelligence search techniques, deductive databases and genetic algorithms to build intelligent software based on automatic reasoning and oriented to optimization.

#### **LIS3132 NETWORK AND TELECOMMUNICATIONS LAB**

Concepts of computer networks such as the design and monitoring of networks, using software tools and network equipment, to analyze the protocols involved in the TCP / IP model and make use of traffic analysis in a communications network.

#### **LIS3092 VIDEO GAME LAB**

Identify the different parts of a generic video game by implementing the different components for the purpose of developing proposals for animation systems or video games.

#### **LIS3122 NETWORKS AND TELECOMMUNICATIONS**

Analyze modern telecommunications networks and systems through the application of mathematical foundations and practical techniques of the design and construction of interconnectivity technologies, and the use of protocol analysis and simulation tools to develop solutions to real problems in the area of computer networks and communication protocols including mobile environments , optical communication, satellite networks, cellular telephony, administration and network management of open systems interconnection models and transmission control protocol with internet protocol.

#### **LIS4022 PROFESSIONAL PRACTICE 2**

Develop a computer systems project that involves issues of databases, artificial intelligence, mobile applications, communications networks, computer security, among others using the learning approach based on experience by identifying problems specific to your profession within the productive sector or in research centers to originate innovative products or that improve systems or procedures in engineering.

#### **LIS4062 COMPUTER SECURITY**

Apply the principles and concepts of cryptography and computer security by analyzing encryption and intrusion detection algorithms to develop solutions that help protect information in a communications network.

#### **LIS4052 DISTRIBUTED SYSTEMS**

Identify the problems posed by distributed environments by analyzing existing formal and technical solutions for designing and building distributed systems and applying existing technologies to the development of distributed application prototypes.

#### **LIS4032 SELECT TOPICS 1**

Examine cutting-edge topics in machine learning, by systematically describing existing algorithms, models and tools to identify their potential applications in the field of intelligent systems, natural language processing, semantic analysis of social networks and pattern recognition.

#### **LIS4042 COMPUTER VISION**

Apply multimedia, audio, image and video signal processing techniques by analyzing mathematical methods, hardware, software and various algorithms to develop them in applications related to computer vision.

#### **LIS4102 CLOUD COMPUTING AND BIG DATA**

Identify the design and implementation concepts of "big data" systems by analyzing existing successful systems to develop solutions to specific recent problems.

#### **LIS4012 MOBILE APPLICATION DEVELOPMENT**

Develop innovative mobile applications using the criteria of software engineering, database techniques and multimedia management to create quality software and build interactive applications.

#### **LIS4072 SYSTEM DESIGN AND MANAGEMENT**

Apply the appropriate methods in the administration of a project of design, creation, implementation or purchase of software in an effective and efficient way to create solutions in information technologies in time by developing the budgets planned in a multidisciplinary context in the realization of a software integrator project.

#### **LIS4112 CLOUD COMPUTING AND BIG DATA LAB**

Create a cloud computing system for large amounts of data by analyzing existing systems to develop the ability to propose a system that solves a given problem.

#### **LIS4082 SELECT TOPICS 2**

Analyze cutting-edge topics in the areas of usability, accessibility and user experience (UX) with interactive systems, through examining emerging techniques and methodologies, as well as building prototypes and designing quantitative and qualitative studies with real users to generate innovative computer systems.

#### **LIS4092 SELECT TOPICS 3**

Examine cutting-edge topics in the areas of Industry 4.0 by describing the technological underpinnings of the Internet of Things (IoT) and big data analysis to develop solutions to problems that arise in the practice of the profession or in research.

### GENERAL ART ELECTIVE\*

- **ART0022 ART AND CULTURE OF THE AMERICAS**  
Identify sociocultural development in the Americas through their artistic expressions to establish an active dialogue with this past and its identity context.
- **ART0012 ART, HISTORY AND CULTURE**  
Identify how human beings define reality and express it for themselves and the world from the emergence of Western modernity, by explaining the reciprocal relationship between art, history and culture to critically argue artistic representation and expression topics.

### GENERAL MATH ELECTIVE\*

- **MAT0012 MATH FOR THINKING**  
Apply various approaches to mathematical thinking by modeling and analyzing hypothetical and real-world phenomena, to design solutions to problems related to your studies and your physical environment.
- **MAT0022 MATH AND CULTURE**  
Develop a project that integrates math with any of the expressions of culture, by modeling phenomena or indicators to make decisions that benefit society.

### GENERAL BEHAVIORAL SCIENCE ELECTIVE\*

- **COM0012 ETHICS, SOCIETY AND THE ENVIRONMENT**  
Discuss global problems and their local implications by integrating socio-economic, environmental and ethical aspects to create proposals for a tolerant society.
- **COM0022 BEHAVIOR AND HUMAN DEVELOPMENT**  
Identify human development's bio-psycho-social factors, by analyzing the variables that affect individual and social behavior and use this knowledge in their academic and professional life.

### GENERAL NATURAL SCIENCE ELECTIVE\*

- **CNE0012 FOOD AND LIFE**  
Identify the relationship between food and health through research that provides data on eating habits to choose an informed diet for your daily life.
- **CNE0022 EVOLUTION AND BIODIVERSITY**  
Describe the origin of diseases through causal factors to assess human health information sources.

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- **HUM0022 HUMANISTIC THINKING**  
Study humanist thought from a socio-historical cultural perspective, based on the analysis of its different historical nuances to understand its relevance in contemporary culture.

*\*Courses that are part of the UDLAP General Education component*

## **INDUSTRIAL ENGINEERING**

### **CON1012 ACCOUNTING**

Identify the various financial information elements through operations accounting records financial statements in service and commercial companies to control results.

### **QUI1022 GENERAL CHEMISTRY LAB**

Develop analytical and practical skills through the observation and development of experiments measuring properties and transformations of matter and its velocity, to identify elementary techniques and thus become familiar with how to handle chemistry glass material, instruments and equipment.

### **LEX0112 FOREIGN LANGUAGE I \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### **MAT1012 UNIVERSITY MATH**

Learn algebraic language to interpret and use mathematical expressions, including their corresponding graphics, to formulate and solve problems.

### **QUI1012 GENERAL CHEMISTRY**

Identify the properties and transformations of matter and the change rates, by describing the atomic structure and reactivity of substances, to describe the reasons why chemistry is useful in your area and in daily life. Systematically describe inorganic substances by correctly applying the rules of nomenclature to identify chemical formulas.

### **INF0012 INFORMATION TECHNOLOGIES IN THE CONSTRUCTION OF KNOWLEDGE \***

Understand relevant information using Information and Communication Technologies (ICT) to document an economic, political, cultural and/or social problem.

### **MAT1032 LINEAR ALGEBRA**

Solve systems of equations by applying the theoretical processes of linear algebra and using technological resources to model phenomena in applied sciences.

### **ESP0012 ACADEMIC REASONING\***

Express academic arguments orally and in writing within your discipline by developing and presenting persuasive speeches, using the rudiments of communication to interact effectively in a specific academic context.

**MAT1022 CALCULUS I**

Apply derivative and integral functions of a variable to solve engineering, finance, management and science problems by modeling the speed of change of its indicators.

**FIS1012 GENERAL PHYSICS I**

Apply the laws of Newtonian mechanics using mathematical algebra and calculus techniques to solve mechanics problems.

**LIM1012 COMPUTER DRAWING LAB**

Create plans of models and/or assemblies using CAD programs, taking into account the standards of technical drawing, to apply them as a means of communication in activities related to manufacturing and mechanical design.

**FIS1022 GENERAL PHYSICS LAB I**

Apply the fundamentals of Newtonian kinematics and mechanics using lab equipment and supplies to compare experimental results with theoretical models.

**LEX0122 FOREIGN LANGUAGE II \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**LII2012 UNCERTAINTY ANALYSIS I**

Analyze phenomena of an uncertain nature in engineering by studying random variables and developing mathematical models to identify their behavior, estimate and/or predict how often they occur, and evaluate results quickly and accurately.

**LII2022 INDUSTRY COMPUTER APPLICATIONS IN**

Analyze industrial and logistics engineering problems that influence decision-making through mathematical modeling, flowcharts and use of specialized software to develop solutions to complex iterative optimization problems.

**MAT2012 CALCULUS II**

Apply directional derivatives and multiple integrals of variable functions through the modeling of the rate of change of their indicators to solve engineering, finance and science problems.

**CON2012 COST ACCOUNTING I**

Identify the cost elements of a manufactured product or a service provided by placing them within a statement of profit or a statement of cost of production or a cost of production of what is sold using the main systems of accumulated cost for the correct cost determination.

**ESP0022 ACADEMIC WRITING \***

Develop academic articles of your discipline through the administration of specialized information and the application of academic and scientific conventions, for the dissemination of academic and scientific knowledge.

**LEX0132 FOREIGN LANGUAGE III \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**LI2032 UNCERTAINTY ANALYSIS II**

Construct mathematical models that represent the behavior of random phenomena, by applying the concepts and theorems of probability theory, and basic statistics to describe the possible outcomes and assign probabilities to the different events of interest in engineering.

**MAT2052 ORDINARY DIFFERENTIAL EQUATIONS**

Apply different solutions techniques to differential equations using the existing classic ordinary differential equations methodologies to apply them in practical problems.

**LI2052 ERGONOMICS**

Develop the requirements and specifications for tasks, tools and work environments, by relating the aspects of work with performance and occupational safety, to produce solutions that contribute to improving the efficiency, capacity, and well-being of workers.

**LI2062 ECONOMIC ENGINEERING**

Analyze the economic sensitivity of engineering proposals through alternative economic scenarios, applying appropriate financial valuation criteria to establish their robustness and feasibility.

**LI2042 OPTIMIZATION TECHNIQUES AND THEORY**

Analyze practical problems by applying mathematical programming models and methods, to develop optimal solutions to support decision-making.

**LI3032 MANUFACTURING PROCESS LAB**

Develop modifications of the shape of the raw material through the application of manufacturing processes with and without chip detachment and joining processes, as well as various materials and LAB equipment, to relate all the parameters to be controlled in the different processes.

**LI3042 ANALYTICAL METHODS IN SYSTEMS I**

Interpret the characteristics of the population, through the analysis of information contained in a sample and the application of parametric and non-parametric methods (free of distribution), to explain, estimate, verify assumptions and develop decisions.

**LI3012 PROFESSIONAL PRACTICE 1**

Develop skills related to working in multidisciplinary teams through the fulfillment of specific activities of industrial engineering in a company of goods and/or services, to recommend solutions to real problems identified.

#### **LI3022 MANUFACTURING PROCESSES**

Understand the processes of machining, casting, plastic deformation, polymer molding and welding by analyzing the scientific bases, as well as the stages, advantages and disadvantages of their application, to select them and implement them in manufacturing systems.

#### **LI3052 WHOLE AND COMBINATORIAL PROGRAMMING**

Analyze combinatorial optimization problems through mathematical modeling and the application of integer and combinatorial programming techniques to develop optimal solutions to operational areas of a company related to production, logistics and management.

#### **LI3062 LEAN SYSTEMS**

Develop proposals to improve work systems through the use of lean manufacturing concepts and techniques, to identify solutions that contribute to reducing waste and cycle times in manufacturing, service, and administrative processes and systems.

#### **LI3122 STATISTICAL QUALITY CONTROL**

Design control tools, aimed at both production processes and those that offer services, through the application of inferential statistics and probability, to identify the production and delivery process of goods and/or services that meet the quality requirements of customers

#### **LI3072 PLANT DISTRIBUTION**

Design plant distribution alternatives applying current standards and algorithms to develop solutions that contribute to increasing the efficiency of installations of goods and/or services companies.

#### **LI3092 METHOD ENGINEERING**

Analyze mechanisms that contribute to improving production processes by examining the times and movements of their operations, to develop proposals for solutions that allow to reduce working times and increase the use of resources in areas of manufacturing work and services.

#### **LI3112 LAB OF ANALYTICAL METHODS IN SYSTEMS**

Develop solutions to probability and statistical problems in the engineering area through the application of computational tools and specialized software to originate the mathematical calculations that allow the interpretation of the results.

#### **LI3102 ANALYTICAL METHODS IN SYSTEMS II**

Build regression models using statistics and probability, to explain the behavior of a dependent variable from independent variables that serve as prediction and/or forecasting mechanisms. Design probabilistic

and non-probabilistic samples, to produce information with statistical representativeness and make valid and reliable inferences about the target population.

#### **LCS3052 INVENTORY MODELS AND WAITING LINES**

Design inventory models through using deterministic mathematical models, as well as those in which there is uncertainty in demand and/or delivery time, to develop solutions that contribute to reducing storage costs. Design waiting lines through the application of queue theory to develop solutions that increase efficiency in the provision of services.

#### **LII3082 SYSTEMS SECURITY AND RESILIENCE ENGINEERING**

Develop proposals to improve the security of systems and resilience in organizations and other socio-technical systems, through risk analysis, to produce solutions that contribute to improve the capacity of functional systems and avoid unacceptable loss in dynamic and unpredictable conditions.

#### **LII4042 DESIGN OF EXPERIMENTS**

Design experiments by mathematically modeling the resulting effect by combining one or more process variables, under different operating conditions, to select the best one and develop the ability to make a results-based decision.

#### **LII4032 INTEGRATED SYSTEMS SIMULATION LAB**

Develop discrete event models to predict the results of integrated systems of personnel, materials, energy, machines and information through the application of simulation software, to produce solutions that contribute to make decisions in advance about the installation or modification of these systems and ensure their high performance.

#### **LII4052 PRODUCTION PLANNING AND CONTROL**

Plan a production system for a good or service through the formulation of an aggregate plan, a production master plan, the planning of the supply of materials and control actions to develop solutions that contribute to increase the efficiency and effectiveness of processes.

#### **LII4012 PROFESSIONAL PRACTICE 2**

Develop a practical project applying knowledge on specific industrial engineering topics to originate the analysis and decision-making in a work environment.

#### **LII4022 INTEGRATED SYSTEMS SIMULATION**

Build a model that reproduces the characteristics and distinctive elements of a real system by applying simulation languages and probability and statistics topics, with the purpose of developing proposals for improvements and/or alternative scenarios in the original system.

#### **LII4062 SELECT TOPICS 1**

Analyze cutting-edge topics in human systems integration, through the application of advanced methods to develop solutions that contribute to increasing the performance of systems and control by humans.

**LI4082 INDUSTRIAL ENGINEERING DESIGN**

Design alternatives to real manufacturing or service processes and systems through the use of industrial engineering techniques and tools and project evaluation to develop proposals for improvement that raise the indicators of efficiency and effectiveness of the processes.

**LI4072 LOGISTICS IN PRODUCTION SYSTEMS**

Build logistics systems using mathematical modeling and the application of flow algorithms in networks, to develop optimal solutions to distribution problems and in the general management of the supply chain.

**LI4112 COMPUTER INTEGRATED MANUFACTURING**

Apply advanced techniques in the process of developing a product, through the implementation of computer-aided design, engineering and manufacturing packages (Computer-aided design (CAD)/ Computer-aided engineering (CAE)/ Computer-aided manufacturing (CAM)), to develop solutions to increase the competitiveness of the industry.

**LI4092 SELECT TOPICS 2**

Examine cutting-edge operations research topics by analyzing the most current developments to develop proposals that contribute to the competitive advantage of the company.

**LI4102 SELECT TOPICS 3**

Analyze cutting-edge continuous quality improvement topics through examining statistical principles and innovative strategies to design alternative solutions to quality problems.

**GENERAL MATH ELECTIVE\***

- **MAT0012 MATH FOR THINKING**  
Apply various approaches to mathematical thinking by modeling and analyzing hypothetical and real-world phenomena, to design solutions to problems related to your studies and your physical environment.
- **MAT0022 MATH AND CULTURE**  
Develop a project that integrates math with any of the expressions of culture, by modeling phenomena or indicators to make decisions that benefit society.

**GENERAL BEHAVIORAL SCIENCE ELECTIVE\***

- **COM0012 ETHICS, SOCIETY AND ENVIRONMENT**  
Discuss global problems and their local implications by integrating socio-economic, environmental and ethical aspects to create proposals for a tolerant society.
- **COM0022 BEHAVIOR AND HUMAN DEVELOPMENT**

Identify human development's bio-psycho-social factors, by analyzing the variables that affect individual and social behavior and use this knowledge in their academic and professional life.

### GENERAL NATURAL SCIENCE ELECTIVE\*

- **CNE0012 FOOD AND LIFE**  
Identify the relationship between food and health through research that provides data on eating habits to choose an informed diet for your daily life.
- **CNE0022 EVOLUTION AND BIODIVERSITY**  
Describe the origin of diseases through causal factors to assess human health information sources.

### GENERAL HUMANITIES ELECTIVE\*

- **HUM0012 ECOSOPHY**  
Compare world representation systems, analyzing different epistemological proposals to reposition the current Being-Man relationship with their environment and other beings from a fundamentally ecological philosophical dimension.
- **HUM0022 HUMANISTIC THINKING**  
Study humanist thought from a socio-historical cultural perspective, based on the analysis of its different historical nuances to understand its relevance in contemporary culture.

*\*Courses that are part of the UDLAP General Education component*

## MECHANICAL ENGINEERING

### QUI1022 GENERAL CHEMISTRY LAB

Develop analytical and practical skills through the observation and development of experiments measuring properties and transformations of matter and its velocity, to identify elementary techniques and thus become familiar with how to handle chemistry glass material, instruments and equipment.

### LEX0112 FOREIGN LANGUAGE I \*

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### MAT1012 UNIVERSITY MATH

Learn algebraic language to interpret and use mathematical expressions, including their corresponding graphics, to formulate and solve problems.

**QUI1012 GENERAL CHEMISTRY**

Identify the properties and transformations of matter and the change rates, by describing the atomic structure and reactivity of substances, to describe the reasons why chemistry is useful in your area and in daily life. Systematically describe inorganic substances by correctly applying the rules of nomenclature to identify chemical formulas.

**INF0012 INFORMATION TECHNOLOGIES IN THE CONSTRUCTION OF KNOWLEDGE \***

Understand relevant information using Information and Communication Technologies (ICT) to document an economic, political, cultural and/or social problem.

**MAT1032 LINEAR ALGEBRA**

Solve systems of equations by applying the theoretical processes of linear algebra and using technological resources to model phenomena in applied sciences.

**ESP0012 ACADEMIC REASONING\***

Express academic arguments orally and in writing within your discipline by developing and presenting persuasive speeches, using the rudiments of communication to interact effectively in a specific academic context.

**MAT1022 CALCULUS I**

Apply derivative and integral functions of a variable to solve engineering, finance, management and science problems by modeling the speed of change of its indicators.

**FIS1012 GENERAL PHYSICS I**

Apply the laws of Newtonian mechanics using mathematical algebra and calculus techniques to solve mechanics problems.

**LIM1012 COMPUTER DRAWING LAB**

Create plans of models and/or assemblies using CAD programs, taking into account the standards of technical drawing, to apply them as a means of communication in activities related to manufacturing and mechanical design.

**FIS1022 GENERAL PHYSICS LAB I**

Apply the fundamentals of Newtonian kinematics and mechanics using lab equipment and supplies to compare experimental results with theoretical models.

**LEX0122 FOREIGN LANGUAGE II \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**MAT2012 CALCULUS II**

Apply directional derivatives and multiple integrals of variable functions through the modeling of the rate of change of their indicators to solve engineering, finance and science problems.

**LIM2012 MATERIALS SCIENCE AND ENGINEERING I**

Explain the effect of microscopic properties of engineering materials, with their macroscopic physical properties, through the analysis of the different phenomena that support them, to relate the use of a specific material in a certain application.

**LIM2022 RIGID BODY BALANCE**

Analyze the loads and constraints that maintain equilibrium in particles and rigid bodies, applying the static equilibrium equations in two and three dimensions to develop solutions to engineering problems involving structural components of armatures, frames and machines.

**ESP0022 ACADEMIC WRITING \***

Develop academic articles of your discipline through the administration of specialized information and the application of academic and scientific conventions, for the dissemination of academic and scientific knowledge.

**LIM2032 METROLOGY LAB**

Report measurements obtained experimentally using instruments and techniques to measure dimensions, shapes and surfaces of parts manufactured with different techniques; to interpret a plane, estimate measurement uncertainties, calculate adjustments in assemblies and establish the amount of data to be used.

**LEX0132 FOREIGN LANGUAGE III \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**LIM2052 MATERIALS SCIENCE AND ENGINEERING II**

Identify the material and/or the necessary treatment in the modification of its physical and mechanical properties, through the study of metallic materials and the properties that are obtained from the different heat and/or thermochemical treatments, to understand materials used in the design of engineering equipment.

**LIM2062 KINEMATICS AND KINETICS OF RIGID BODIES**

Analyze the motion caused by the imbalance of forces and moments, applying Newton's laws and alternative methods such as work and energy to develop solutions to engineering problems involving moving physical systems.

**MAT2052 ORDINARY DIFFERENTIAL EQUATIONS**

Apply different solutions techniques to differential equations using the existing classic ordinary differential equations methodologies to apply them in practical problems.

**LIM2072 KINEMATICS AND KINETICS OF RIGID BODIES LAB**

Develop alternative solutions to problems related to velocities, accelerations and reactions of bodies, through the application of the theory and principles of kinematics and kinetics of rigid bodies, to relate them to the design of mechanical elements and systems.

**LIM2042 MATERIALS ENGINEERING LAB**

Examine the physical properties of materials using lab-specific equipment, standards and techniques to identify the relationship between the structure, processing and properties of materials used in engineering.

**LIM3022 MANUFACTURING LAB 1**

Modify the dimensions and/or properties of the materials, using processes without chip start; identify with lab practices, the variables involved, as well as the safety required in the operation of the equipment.

**LIM3062 MECHANISMS LAB**

Analyze the movement of a mechanism, through the correct selection of kinematic pairs, construction of prototypes and simulation of the mechanism with specialized software, to examine its stability and reliability.

**LIM3012 MANUFACTURING 1**

Identify the requirements for the casting, plastic deformation and welding processes in the manufacturing processes by analyzing the scientific bases of each, as well as their stages, advantages and disadvantages that are had when being used; to select and implement them according to product specifications.

**LIM3042 SOLIDS MECHANICS**

Analyze the elastic stresses and deformations in homogeneous, continuous solid isotropic bodies of regular geometry subject to static loads, by studying the stresses generated by the presence of axial, shear, bending and torsional loads, to identify their behavior within a system.

**LIM3052 MECHANISMS**

Analyze the movement of a mechanism through the correct selection of kinematic pairs and construction of prototypes, as well as the simulation of the mechanism with specialized software, to examine its stability and reliability.

**LIM3082 ANALYTICAL METHODS IN MECHANICAL ENGINEERING I**

Analyze vector fields and partial differential equations by applying natural laws and using mathematical methods to develop solutions to problems in mechanical engineering.

**LIM3032 PROFESSIONAL PRACTICE 1**

Develop skill in working in multidisciplinary teams through the fulfillment of specific jobs of Mechanical Engineering in a company in the automotive sector, or manufacturing, to identify situations of adaptation in a work environment.

**LIM3072 THERMODYNAMICS**

Analyze thermodynamic properties and processes applying the principles of energy conservation and entropy to examine energy conversion processes in mechanical engineering.

**LIM3102 MANUFACTURING LAB 2**

Modify the geometry of machinable metal materials, using processes with chip start (machining), to identify the variables involved when using these processes, as well as the safety aspects during their operation.

**LIM3162 FLUID MECHANICS LAB**

Identify the principles and properties that govern fluid mechanics, through its application in lab experiments to analyze its involvement in those systems that involve fluid transport.

**LIM3122 SOLIDS MECHANICS LAB**

Identify the behavior of deformable solids subjected to different load and support conditions, through the practical application of theoretical concepts to develop solutions to problems of design of elements and design of mechanical systems.

**LIM3092 MANUFACTURING 2**

Analyze the most used machining processes in the industry, through the application of simplified mechanical models that relate geometry and kinematics with cutting forces and thermal effects in the tool - part - chip system, to identify the process of its optimization in terms of productivity, cost, quality and availability of machines and tools.

**LIM3152 FLUID MECHANICS**

Analyze fluid systems by applying static fluid principles, momentum conservation, and differential equations to evaluate pressure and velocity distributions, as well as the resulting force.

**LIM3112 SOLIDS MECHANICS II**

Interpret the stresses and deformations in structures by applying the Maxwell-Mohr method to define the acceptable loads, as well as the resulting stress on a general load with the Von Mises method.

**LIM3172 ANALYTICAL METHODS IN MECHANICAL ENGINEERING II**

Apply computational tools to develop solutions to sophisticated problems that arise in the exercise of professional life by generating codes that solve partial differential equations applied to mechanical engineering.

**LIM3142 APPLIED THERMODYNAMICS**

Analyze various applications of thermodynamics in mechanical engineering problems by examining the principles of energy conservation and entropy to evaluate their operations and efficiencies.

### **LIM3132 MECHANICAL VIBRATIONS**

Analyze the movement of the mechanical-electrical system in relation to the forces by applying different theoretical and practical techniques, to evaluate the amplitudes of vibrations and the natural frequencies.

### **LIM4032 MACHINE ELEMENT DESIGN**

Analyze typical elements that make up light machinery through traditional procedures based on the theory of solids, strength of materials and use of the finite element; to establish at what time, commercially available elements cover the needs of some system or need to be designed.

### **LIM4062 THERMAL SCIENCES LAB**

Understand the phenomena of heat transfer, power cycles and cooling; using lab equipment, to analyze and interpret data that support the selection of materials, the mechanical design or manufacture of a part, mechanism or machine.

### **LIM4022 ADVANCED MANUFACTURING LAB**

Design the manufacturing process according to the specifications of a plane (roughness, tolerances) using numerical control machines of Computer Aided Design/Computer Aided Manufacturing (CAD/CAM) technology and micro injection of plastics, to apply it in the manufacture of precision parts.

### **LIM4012 ADVANCED MANUFACTURING**

Apply innovative manufacturing support technologies through computer-aided design, engineering and manufacturing package handling (CAD/CAE/CAM) to develop solutions to increase the quality and reduce the cost of manufactured goods.

### **LIM4042 FINITE ELEMENT METHODS**

Apply the finite element method to structural problems, by appropriately selecting the size and type of element, boundary conditions, loads, constitutive equations and solution methods, to examine the behavior of mechanical components with too complicated geometry and loads and obtain an analytical solution.

### **LIM4072 PROFESSIONAL PRACTICE 2**

Develop a practical project in a real work environment by analyzing Mechanical Engineering theories and concepts to apply engineering analysis and decision-making in a work environment.

### **LIM4052 HEAT TRANSFER**

Analyze heat transfer modes using energy conservation principles and differential equations to evaluate heat fluxes and temperature distribution.

### **LIM4102 MECHANICAL SYSTEM DESIGN**

Design a mechanical system by integrating theoretical and practical innovations from materials science and engineering, advanced manufacturing and energy processes, to develop proposals for real and feasible solutions in terms of manufacturability and cost.

#### **LIM4132 ELECTRO-OLEO-NUMATIC SYSTEMS LAB**

Apply logic of command and regulation through lab experiments with the principles of transmissibility, compressibility and stability, to develop the control of the execution movements of a system.

#### **LIM4122 ELECTRO-OLEONUMATIC SYSTEMS**

Analyze the movements of the system through the logical application of control and regulation of oil or air flow, to establish the transmissibility, compressibility and stability of the same.

#### **LIM4082 SELECT TOPICS 1**

Analyze cutting-edge topics in mechanical design through the application of design methodologies and/or analysis, as well as the fundamentals of materials, manufacturing processes and mechanical systems to design automotive components.

#### **LIM4092 SELECT TOPICS 2**

Analyze cutting-edge topics in energy applying the principles of thermodynamics, fluid mechanics and heat transfer to develop solutions to contemporary problems on energy conversion and use.

#### **LIM4112 SELECT TOPICS 3**

Examine cutting-edge topics in manufacturing and materials through the study of theories, advanced materials, avant-garde treatments and manufacturing processes applied today to develop proposals in the various applications of the different sectors of mechanical engineering.

#### **GENERAL ART ELECTIVE\***

- **ART0022 ART AND CULTURE OF THE AMERICAS**  
Identify sociocultural development in the Americas through their artistic expressions to establish an active dialogue with this past and its identity context.
- **ART0012 ART, HISTORY AND CULTURE**  
Identify how human beings define reality and express it for themselves and the world from the emergence of Western modernity, by explaining the reciprocal relationship between art, history and culture to critically argue artistic representation and expression topics.

#### **GENERAL MATH ELECTIVE\***

- **MAT0012 MATH FOR THINKING**  
Apply various approaches to mathematical thinking by modeling and analyzing hypothetical and real-world phenomena, to design solutions to problems related to your studies and your physical environment.
- **MAT0022 MATH AND CULTURE**

Develop a project that integrates math with any of the expressions of culture, by modeling phenomena or indicators to make decisions that benefit society.

### GENERAL BEHAVIORAL SCIENCE ELECTIVE\*

- **COM0012 ETHICS, SOCIETY AND THE ENVIRONMENT**  
Discuss global problems and their local implications by integrating socio-economic, environmental and ethical aspects to create proposals for a tolerant society.
- **COM0022 BEHAVIOR AND HUMAN DEVELOPMENT**  
Identify human development's bio-psycho-social factors, by analyzing the variables that affect individual and social behavior and use this knowledge in their academic and professional life.

### GENERAL NATURAL SCIENCE ELECTIVE\*

- **CNE0012 FOOD AND LIFE**  
Identify the relationship between food and health through research that provides data on eating habits to choose an informed diet for your daily life.
- **CNE0022 EVOLUTION AND BIODIVERSITY**  
Describe the origin of diseases through causal factors to assess human health information sources.

### GENERAL HUMANITIES ELECTIVE\*

- **HUM0012 ECOSOPHY**  
Compare world representation systems, analyzing different epistemological proposals to reposition the current Being-Man relationship with their environment and other beings from a fundamentally ecological philosophical dimension.
- **HUM0022 HUMANISTIC THINKING**  
Study humanist thought from a socio-historical cultural perspective, based on the analysis of its different historical nuances to understand its relevance in contemporary culture.

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## MECHATRONICS ENGINEERING

### LIS1012 ALGORITHMS AND PROGRAMMING

Apply algorithmic thinking using control structures in the denotation of sequences, conditions, cycles, and appropriate data structures to develop solutions that can be implemented in a programming language.

### QUI1022 GENERAL CHEMISTRY LAB

Develop analytical and practical skills through the observation and development of experiments measuring properties and transformations of matter and its velocity, to identify elementary techniques and thus become familiar with how to handle chemistry glass material, instruments and equipment.

**LEX0112 FOREIGN LANGUAGE I \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**MAT1012 UNIVERSITY MATH**

Learn algebraic language to interpret and use mathematical expressions, including their corresponding graphics, to formulate and solve problems.

**QUI1012 GENERAL CHEMISTRY**

Identify the properties and transformations of matter and the change rates, by describing the atomic structure and reactivity of substances, to describe the reasons why chemistry is useful in your area and in daily life. Systematically describe inorganic substances by correctly applying the rules of nomenclature to identify chemical formulas.

**INF0012 INFORMATION TECHNOLOGIES IN THE CONSTRUCTION OF KNOWLEDGE \***

Understand relevant information using Information and Communication Technologies (ICT) to document an economic, political, cultural and/or social problem.

**MAT1032 LINEAR ALGEBRA**

Solve systems of equations by applying the theoretical processes of linear algebra and using technological resources to model phenomena in applied sciences.

**ESP0012 ACADEMIC REASONING\***

Express academic arguments orally and in writing within your discipline by developing and presenting persuasive speeches, using the rudiments of communication to interact effectively in a specific academic context.

**MAT1022 CALCULUS I**

Apply derivative and integral functions of a variable to solve engineering, finance, management and science problems by modeling the speed of change of its indicators.

**FIS1012 GENERAL PHYSICS I**

Apply the laws of Newtonian mechanics using mathematical algebra and calculus techniques to solve mechanics problems.

**LIM1012 COMPUTER DRAWING LAB**

Create plans of models and/or assemblies using CAD programs, taking into account the standards of technical drawing, to apply them as a means of communication in activities related to manufacturing and mechanical design.

**FIS1022 GENERAL PHYSICS LAB I**

Apply the fundamentals of Newtonian kinematics and mechanics using lab equipment and supplies to compare experimental results with theoretical models.

**LEX0122 FOREIGN LANGUAGE II \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**MAT2012 CALCULUS II**

Apply directional derivatives and multiple integrals of variable functions through the modeling of the rate of change of their indicators to solve engineering, finance and science problems.

**LRT2012 ELECTRICAL CIRCUITS**

Identify the techniques of decomposition of electrical circuits, through the analysis and design of resistive, inductive and capacitive circuits with the purpose of applying them to more complex electrical circuits.

**LRT2022 DIGITAL DESIGN**

Identify the basics of digital system design by using hardware description language (HDL) to analyze the operation of modern digital systems.

**ESP0022 ACADEMIC WRITING \***

Develop academic articles of your discipline through the administration of specialized information and the application of academic and scientific conventions, for the dissemination of academic and scientific knowledge.

**FIS2012 GENERAL PHYSICS II**

Apply the laws governing electrical and magnetic phenomena using mathematical algebra and calculus techniques to develop solutions to electromagnetic problems.

**LRT2032 ELECTRICAL CIRCUIT LAB**

Identify circuit analysis with dependent sources, operational amplifier, and inductive and capacitive elements by using simulation tools to analyze and implement their behavior in the time domain.

**FIS2022 GENERAL PHYSICS LAB II**

Apply the fundamentals of electrostatics, electrical properties of materials, electrical circuits and magnetism using lab equipment and material to compare experimental results with theoretical models.

**LEX0132 FOREIGN LANGUAGE III \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**MAT2032 CALCULUS III**

Apply vector calculus methods as a tool to develop two and three-dimensional models of various technological processes through the study of curves and surfaces in space, as well as the concepts of differentiability and integrability in scalar and vector fields.

**MAT2052 ORDINARY DIFFERENTIAL EQUATIONS**

Apply different solutions techniques to differential equations using the existing classic ordinary differential equations methodologies to apply them in practical problems.

**LRT2042 INTEGRATED ELECTRONICS**

Design both analog and digital electronic circuits using the design methodologies that exist and the equations that govern their operation to relate them to the construction of electronic circuits that satisfy the requirements imposed on the embedded systems that are part of the current technological solutions.

#### **LIM2022 RIGID BODY BALANCE**

Analyze the loads and constraints that maintain equilibrium in particles and rigid bodies, applying the static equilibrium equations in two and three dimensions to develop solutions to engineering problems involving structural components of armatures, frames and machines.

#### **LRT2052 INTEGRATED ELECTRONICS LAB**

Analyze the behavior of semiconductor elements such as diodes and transistors, as well as the applications of linear devices and low-scale integrated circuits by examining the theoretical foundations of integrated electronics to use in everyday electronic solutions.

#### **MAT2082 PROBABILITY AND STATISTICS**

Apply various probability and statistical techniques through different probability models and descriptive and inferential statistical methodologies to estimate parameters that contribute to decision-making.

#### **LIS1022 OBJECT-ORIENTED PROGRAMMING**

Describe the object-oriented paradigm using UNIFIED MODELING LANGUAGE (UML) notation and the Java programming language to implement an application's requirements.

#### **LMT2012 PROPERTIES OF MATERIALS**

Classify solid materials by analyzing their most relevant properties to select the right one based on various engineering applications.

#### **LIM2062 KINEMATICS AND KINETICS OF RIGID BODIES**

Analyze the motion caused by the imbalance of forces and moments, applying Newton's laws and alternative methods such as work and energy to develop solutions to engineering problems involving moving physical systems.

#### **LIM2072 KINEMATICS AND KINETICS OF RIGID BODIES LAB**

Develop alternative solutions to problems related to velocities, accelerations and reactions of bodies, through the application of the theory and principles of kinematics and kinetics of rigid bodies, to relate them to the design of mechanical elements and systems.

#### **LMT3032 SIGNALS AND INSTRUMENTATION LAB**

Build different circuits based on operational amplifiers as functional blocks by using the main types of sensors and transducers to apply and implement them in data acquisition systems and analyze their most complex functions.

#### **LMT3012 PROFESSIONAL PRACTICE 1**

Apply the knowledge acquired in electronics, mechanics, programming, automotive networks, renewable energies and automation, to develop solutions to problems specific to your profession through the analysis, synthesis and evaluation of the decisions taken aimed at achieving a set of realistic specifications within the productive sector or research projects.

#### **LMT3022 SIGNALS AND INSTRUMENTATION**

Develop detection systems, electronic sensors, signal conditioning, recording and display of the same using electronic circuit tools that meet the design specifications given to analyze electrical signals in the time and frequency domain.

#### **LIS3072 TECHNOLOGICAL INNOVATION**

Illustrate technological innovation and patent registration processes using defined strategies and diagnostic and new knowledge creation processes to develop proposals that foster creativity, intellectual property in innovation and learning in an organization.

#### **LMT3042 MACHINE AND MECHANISM LAB**

Identify the elements that form a mechanism and verify the function of each of them by analyzing the main types of kinematic pairs, functions of existing cams, types of gears and the degree of mobility of these to apply them in mechatronics and robotics.

#### **LMT3052 ELECTRICAL MACHINES**

Understand the basic principles of operation and control of direct current machines, transformers and alternating current machines, by analyzing their electromagnetic properties and their different industrial applications, to describe the preponderant role of electrical machines in a full-power electrical system.

#### **LIM3042 SOLIDS MECHANICS I**

Analyze the elastic stresses and deformations in homogeneous, continuous solid isotropic bodies of regular geometry subject to static loads, by studying the stresses generated by the presence of axial, shear, bending and torsional loads, to identify their behavior within a system.

#### **LRT3082 CONTROL SYSTEMS**

Design control systems using time and frequency techniques, mathematical models and physical laws of equilibrium to examine the constraints and specifications of the system under analysis.

#### **LMT3062 THERMOFLUIDS**

Identify the fundamental principles and laws of thermodynamics and fluid mechanics through the fundamentals of fluid statics and the fundamental equations of fluid mechanics to analyze thermal and fluid systems.

#### **LMT4032 INDUSTRIAL AUTOMATION**

Develop industrial automation systems using programmable logic controllers, pneumatic and electro-pneumatic systems as basic elements of the task of automating industrial processes, as well as monitoring the system to apply them in today's industry.

#### **LRT4062 POWER ELECTRONICS**

Identify the different power converters used in the conversion of electrical energy, by describing the properties of direct current and alternating current, as well as electronic devices in energy conversion, to understand the applications of electrical energy conversion in your area of expertise.

#### **LMT4012 PROFESSIONAL PRACTICE 2**

Develop a mechatronics project that involves mechatronic design, automation, renewable energies, automotive networks, mechanics and programming topics using the learning approach based on experience where problems specific to your profession are solved within the productive sector or in

research centers to create innovative products or that improve systems or procedures in the area of engineering.

#### **LMT4022 MANUFACTURING SYSTEMS**

Analyze the manufacturing processes commonly used in the metal-mechanical and automotive industry using design and computer-aided manufacturing to apply them in the integration of a production line.

#### **LMT4042 SELECT TOPICS 1**

Analyze cutting-edge topics in unmanned aircraft systems (UAS), by studying the latest trends in the areas of aircraft control and guidance, to develop solutions to problems of society that involve autonomous navigation.

#### **LMT4062 MECHATRONIC SYSTEM DESIGN**

Develop a mechatronic control system in automatic systems aimed at ground or air mechanisms, integrating mechanical design and electronics through the programming of a control in embedded systems, to apply an economic and temporal planning of the execution of the specific objectives.

#### **LMT4052 AUTOMOTIVE NETWORKS**

Analyze the operation of a data network, the ISO / OSI model, access techniques, network topologies and IP addressing through the use of automotive network protocols and communication algorithms to develop automotive distributed systems.

#### **LMT4092 INDUSTRIAL ROBOTICS**

Analyze the technology of current industrial robots, using mathematical and simulation tools, to identify their operation and programming principles.

#### **LMT4072 SELECT TOPICS 2**

Analyze cutting-edge topics in multi-physical systems through object-oriented programming to develop the emulation of components or cyber-physical systems that comply with the laws of nature.

#### **LMT4082 SELECT TOPICS 3**

Examine cutting-edge topics in the areas of renewable energy, non-renewable energy and smart grids related to mechatronics, by describing the state of the art in electricity generation by renewable and non-renewable means, to develop solutions to current problems.

#### **GENERAL ART ELECTIVE\***

- **ART0022 ART AND CULTURE OF THE AMERICAS**  
Identify sociocultural development in the Americas through their artistic expressions to establish an active dialogue with this past and its identity context.
- **ART0012 ART, HISTORY AND CULTURE**  
Identify how human beings define reality and express it for themselves and the world from the emergence of Western modernity, by explaining the reciprocal relationship between art, history and culture to critically argue artistic representation and expression topics.

#### **GENERAL MATH ELECTIVE\***

- **MAT0012 MATH FOR THINKING**

Apply various approaches to mathematical thinking by modeling and analyzing hypothetical and real-world phenomena, to design solutions to problems related to your studies and your physical environment.

- **MAT0022 MATH AND CULTURE**

Develop a project that integrates math with any of the expressions of culture, by modeling phenomena or indicators to make decisions that benefit society.

### **GENERAL BEHAVIORAL SCIENCE ELECTIVE\***

- **COM0012 ETHICS, SOCIETY AND THE ENVIRONMENT**

Discuss global problems and their local implications by integrating socio-economic, environmental and ethical aspects to create proposals for a tolerant society.

- **COM0022 BEHAVIOR AND HUMAN DEVELOPMENT**

Identify human development's bio-psycho-social factors, by analyzing the variables that affect individual and social behavior and use this knowledge in their academic and professional life.

### **GENERAL NATURAL SCIENCE ELECTIVE\***

- **CNE0012 FOOD AND LIFE**

Identify the relationship between food and health through research that provides data on eating habits to choose an informed diet for your daily life.

- **CNE0022 EVOLUTION AND BIODIVERSITY**

Describe the origin of diseases through causal factors to assess human health information sources.

### **GENERAL HUMANITIES ELECTIVE\***

- **HUM0012 ECOSOPHY**

Compare world representation systems, analyzing different epistemological proposals to reposition the current Being-Man relationship with their environment and other beings from a fundamentally ecological philosophical dimension.

- **HUM0022 HUMANISTIC THINKING**

Study humanist thought from a socio-historical cultural perspective, based on the analysis of its different historical nuances to understand its relevance in contemporary culture.

***\*Courses that are part of the UDLAP General Education component***

## CHEMICAL ENGINEERING

### LQI1012 MATTER BALANCE

Develop a clear and systematic methodology using the engineering approach to solving matter balance problems with and without chemical reaction.

### QUI1022 GENERAL CHEMISTRY LAB

Develop analytical and practical skills through the observation and development of experiments measuring properties and transformations of matter and its velocity, to identify elementary techniques and thus become familiar with how to handle chemistry glass material, instruments and equipment.

### LEX0112 FOREIGN LANGUAGE I \*

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### MAT1012 UNIVERSITY MATH

Learn algebraic language to interpret and use mathematical expressions, including their corresponding graphics, to formulate and solve problems.

### QUI1012 GENERAL CHEMISTRY

Identify the properties and transformations of matter and the change rates, by describing the atomic structure and reactivity of substances, to describe the reasons why chemistry is useful in your area and in daily life. Systematically describe inorganic substances by correctly applying the rules of nomenclature to identify chemical formulas.

### INF0012 INFORMATION TECHNOLOGIES IN THE CONSTRUCTION OF KNOWLEDGE \*

Understand relevant information using Information and Communication Technologies (ICT) to document an economic, political, cultural and/or social problem.

### MAT1032 LINEAR ALGEBRA

Solve systems of equations by applying the theoretical processes of linear algebra and using technological resources to model phenomena in applied sciences.

### ESP0012 ACADEMIC REASONING\*

Express academic arguments orally and in writing within your discipline by developing and presenting persuasive speeches, using the rudiments of communication to interact effectively in a specific academic context.

### MAT1022 CALCULUS I

Apply derivative and integral functions of a variable to solve engineering, finance, management and science problems by modeling the speed of change of its indicators.

### FIS1012 GENERAL PHYSICS I

Apply the laws of Newtonian mechanics using mathematical algebra and calculus techniques to solve mechanics problems.

**FIS1022 GENERAL PHYSICS LAB I**

Apply the fundamentals of Newtonian kinematics and mechanics using lab equipment and supplies to compare experimental results with theoretical models.

**QUI1042 ORGANIC CHEMISTRY LAB I**

Understand the equipment used in organic chemistry and perform synthesis, separation, purification and identification of substances operations, using personal safety regulations, good lab practices and handling of hazardous waste to be able to measure properties of matter and make basic organic chemistry reactions.

**LEX0122 FOREIGN LANGUAGE II \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**QUI1032 ORGANIC CHEMISTRY I**

Describe the functional groups, properties and simple transformations of organic compounds using different organic structures and chemical equations to identify the relationship between the structures of organic compounds and their properties. Correctly identify organic compounds by applying IUPAC nomenclature rules to systematically understand different organic compounds.

**MAT2012 CALCULUS II**

Apply directional derivatives and multiple integrals of variable functions through the modeling of the rate of change of their indicators to solve engineering, finance and science problems.

**ESP0022 ACADEMIC WRITING \***

Develop academic articles of your discipline through the administration of specialized information and the application of academic and scientific conventions, for the dissemination of academic and scientific knowledge.

**QUI2102 ANALYTICAL CHEMISTRY LAB**

Develop analytical and practical skills through the observation and development of experiments to identify and quantify the components of a substance through different methods of analysis, to skillfully manipulate the material and lab equipment used in analytical chemistry.

**QUI2052 CHEMICAL THERMODYNAMICS LAB**

Analyze data from heat transfer processes by correctly generating and interpreting the graphs to obtain information on thermodynamic parameters.

**LEX0132 FOREIGN LANGUAGE III \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**QUI2092 ANALYTICAL CHEMISTRY**

Identify a substance's components using different analysis, separation, identification and determination of the ions and molecules methods.

**QUI2042 CHEMICAL THERMODYNAMICS**

Describe the various energy exchange processes in physical and chemical changes, through the appropriate use of the principles of thermodynamics, to interpret physicochemical phenomena and their implications in the associated processes.

#### **MAT2052 ORDINARY DIFFERENTIAL EQUATIONS**

Apply different solutions techniques to differential equations using the existing classic ordinary differential equations methodologies to apply them in practical problems.

#### **LQI2012 THERMAL MACHINES**

Explain the different types of machines and turbines, using thermodynamics as a basic technique, to apply energy analysis, calculate the efficiency of thermal machines and analyze basic and complex thermodynamic cycles.

#### **MAT2082 PROBABILITY AND STATISTICS**

Apply various probability and statistical techniques through different probability models and descriptive and inferential statistical methodologies to estimate parameters that contribute to decision-making.

#### **LQI3042 FREE ENERGY BALANCES**

Identify the thermodynamic bases of multicomponent mixtures and the conditions in the transfer of mass to thermodynamic equilibrium, through the analysis of equilibrium models in multicomponent and multiphase systems to relate the properties and equilibrium constants of the components in the heterogeneous and two-phase system.

#### **LQI3062 PHASE BALANCING LAB**

Relate equilibrium in pure compounds and multicomponent systems by applying materials and LAB equipment to compare solubility diagrams of experimental and simulated data.

#### **LQI3052 TRANSPORT PROCESS LAB I**

Identify the mechanisms of heat transfer by developing experimental practices to establish the physical properties of fluids.

#### **LQI3022 PROFESSIONAL PRACTICE 1**

Analyze chemical industry problems or scientific challenges related to science, technology or chemical engineering, by applying the classic technical knowledge to solve problems in the various topics and developing skills of the licenciatura in chemical engineering.

#### **LQI3032 PREDICTION OF PROPERTIES**

Analyze the ideal and real pressure-volume-temperature (PVT) and thermodynamic properties equations in one and two fluid phases of pure compounds, by examining experimental methods and data to create predictions of these physical and chemical properties of substances.

#### **LQI3012 TRANSPORT PROCESSES I**

Compare the fundamental concepts of fluid flow and heat transfer, using the theoretical and mathematical analysis of the principles of time and heat transfer to apply them to the calculation of flow in pipes and heat transfer equipment.

#### **LIN3022 SAFETY IN CHEMICAL PROCESSES**

Explain the conceptual foundations and application of occupational safety, process safety and occupational health applicable to industries by using theories, models and regulations to understand safety systems.

#### **LQI3112 KINETICS AND CHEMICAL REACTORS**

Evaluate the effect of the different reactor design and operation variables by applying the laws and general principles to identify the type of reactor required for a specific process.

#### **LQI3122 PROCESS ENGINEERING I**

Identify the input and output interfaces of a process simulator, by simultaneously solving the balance of matter, energy and entropy of the system, as well as the thermodynamic properties of the components involved and the design parameters of each of the existing equipment to evaluate the flowsheet of a chemical process.

#### **LQI3142 KINETICS AND CHEMICAL REACTORS LAB**

Identify the operation of different types of chemical reactors by developing LAB practices to explain the kinetic parameters of a chemical reaction.

#### **LQI3132 LAB OF FLUID FLOW AND HEAT UNIT OPERATIONS**

Analyze the operation of the different equipment related to fluid flow and heat transfer through the development of lab practices to identify fluid flow and heat measurement instruments.

#### **LQI3102 UNIT HEAT FLOW OPERATIONS**

Analyze the behavior of heat flow in equipment, by using the laws and theories associated with heat transfer to design heat transfer equipment in various industrial applications of the chemical and environmental industry.

#### **LQI3082 UNIT FLUID FLOW OPERATIONS**

Analyze the behavior of fluids using the properties of fluids and laws associated with equipment design, in order to apply this knowledge to solving fluid displacement problems in engineering and selecting the most appropriate equipment.

#### **LQI3072 TRANSPORT PROCESSES II**

Define the fundamental concepts of mass transfer, through the theoretical and mathematical analysis of the principles of mass transfer to apply them to the processes of transformation of industry and natural processes.

#### **LQI3092 SELECT TOPICS 1**

Analyze cutting-edge topics in quality management of international systems by analyzing theories and methods to identify processes related to the determination, measurement and analysis of quality of products and processes in the chemical industry.

#### **LQI4042 CATALYSIS AND HETEROGENEOUS REACTORS**

Design heterogeneous reactors with recirculation and multiple stages in industrial processes by combining ideal models in one phase, with the presence of catalysts in the reactions to describe the operation.

#### **LQI4052 PROCESS ENGINEERING II**

Evaluate the design of various process flowchart alternatives, by applying different approaches to identify the principles and techniques of simulation of chemical processes.

#### **LQI4062 MASS TRANSFER UNIT OPERATIONS LAB**

Evaluate the processes related to mass transfer, distillation and extraction through lab practices to develop experimental skills in the operation of the different types of distillation and extraction towers that exist in the chemical industry.

#### **LQI4012 MASS TRANSFER UNIT OPERATIONS**

Evaluate the different unitary operations involving models of equilibrium stages, such as distillation, absorption, desorption and extraction, by applying the principles of phase balance and the fundamental laws of mass and energy conservation, to design the appropriate process to separate and purify products.

#### **LQI4022 PROFESSIONAL PRACTICE 2**

Analyze practical problems related to science, technology or chemical engineering, by applying technical knowledge to develop skills of the licenciatura in chemical engineering.

#### **LQI4032 SELECT TOPICS 2**

Examine current topics in product and industrial processes innovation and redesign to identify problems in design, innovation and optimization of the chemical industry by analyzing the theoretical foundations on the principles of innovation and redesign products and processes in the chemical industry.

#### **LQI4112 PROCESS DYNAMICS AND CONTROL**

Establish the laws and general principles related to the dynamic behavior and control of a chemical plant; considering the laws that describe the dynamics, control strategies and dynamic stability of chemical processes, to develop appropriate control strategies to meet safety requirements, production specifications, environmental protection regulations, operating limits and process economy.

#### **LQI4082 CHEMICAL PLANT DESIGN**

Design process for a chemical industrial facility by performing equipment calculations to identify aspects of environmental, safety and logistical constraints.

#### **LQI4072 PROCESS INSTRUMENTATION**

Understand the main functions performed by measuring instruments; using the basic knowledge of the measurement of physical signals, to categorize the instrumentation used in industrial processes.

#### **LQI4122 INSTRUMENTATION LAB**

Identify measuring instruments by applying chemical processes to create drawings and diagrams.

#### **LQI4132 ADVANCED MASS TRANSFER UNIT OPERATIONS LAB**

Evaluate humidification, drying, absorption and other unconventional mass transfer processes by selecting with materials and LAB equipment to analyze the parameters of conventional and unconventional processes.

#### **LQI4102 ADVANCED MASS TRANSFER UNIT OPERATIONS**

Evaluate the different unitary operations involving mass transfer processes between phases, by applying the fundamental principles and laws of transport mechanisms to consider the separation and purification of products.

### **LQI4092 SELECT TOPICS 3**

Understand cutting-edge topics related to theoretical foundation, regulations and environmental protection systems through the analysis of the theoretical-practical concepts of the course to develop proposals to minimize the environmental impact of the chemical industry.

### **GENERAL ART ELECTIVE\***

- **ART0022 ART AND CULTURE OF THE AMERICAS**  
Identify sociocultural development in the Americas through their artistic expressions to establish an active dialogue with this past and its identity context.
- **ART0012 ART, HISTORY AND CULTURE**  
Identify how human beings define reality and express it for themselves and the world from the emergence of Western modernity, by explaining the reciprocal relationship between art, history and culture to critically argue artistic representation and expression topics.

### **GENERAL MATH ELECTIVE\***

- **MAT0012 MATH FOR THINKING**  
Apply various approaches to mathematical thinking by modeling and analyzing hypothetical and real-world phenomena, to design solutions to problems related to your studies and your physical environment.
- **MAT0022 MATH AND CULTURE**  
Develop a project that integrates math with any of the expressions of culture, by modeling phenomena or indicators to make decisions that benefit society.

### **GENERAL BEHAVIORAL SCIENCE ELECTIVE\***

- **COM0012 ETHICS, SOCIETY AND THE ENVIRONMENT**  
Discuss global problems and their local implications by integrating socio-economic, environmental and ethical aspects to create proposals for a tolerant society.
- **COM0022 BEHAVIOR AND HUMAN DEVELOPMENT**  
Identify human development's bio-psycho-social factors, by analyzing the variables that affect individual and social behavior and use this knowledge in their academic and professional life.

### **GENERAL NATURAL SCIENCE ELECTIVE\***

- **CNE0012 FOOD AND LIFE**  
Identify the relationship between food and health through research that provides data on eating habits to choose an informed diet for your daily life.
- **CNE0022 EVOLUTION AND BIODIVERSITY**

Describe the origin of diseases through causal factors to assess human health information sources.

### GENERAL HUMANITIES ELECTIVE\*

- **HUM0012 ECOSOPHY**

Compare world representation systems, analyzing different epistemological proposals to reposition the current Being-Man relationship with their environment and other beings from a fundamentally ecological philosophical dimension.

- **HUM0022 HUMANISTIC THINKING**

Study humanist thought from a socio-historical cultural perspective, based on the analysis of its different historical nuances to understand its relevance in contemporary culture.

*\*Courses that are part of the UDLAP General Education component*

# MIXED MASTER'S DEGREES

### **MGE5013 CONSTRUCTION RESOURCES EFFICIENCY**

Base the use, reuse and efficient recycling of material, water and energy resources in a construction project with the purpose of designing sustainable construction works through the selection of environmentally friendly processes and methods.

### **MGE5023 CONSTRUCTION LEGISLATION**

To base the legal provisions that affect the development of construction projects to conceive the implications of these during the construction and operation of the same through the argumentation of the current regulations applicable to examples of real cases.

### **REP5013 CORPORATE AND PROFESSIONAL RESPONSIBILITY**

Analyze the deontological obligations and duties that correspond to each subject in the development of their activities, from a human, social and legal perspective, so that individually and collectively they develop a responsible professional practice.

### **MNE5013 BUSINESS STATISTICS**

Apply statistical tools to processes related to decision-making based on quantitative information, through the construction and evaluation of statistical models, to develop and analyze solutions to organizational problems.

### **MGE5033 TOTAL QUALITY IN CONSTRUCTION PROJECTS**

Analyze total quality models in the construction industry through the application of methodological techniques relating to quality control systems to distinguish their application in the different stages of planning, control and management of infrastructure projects.

### **MMK5013 STRATEGIC MARKETING**

Develop marketing strategies, through the analysis of the concepts of product, service and brand, as well as the mechanisms of promotion, prices, distribution and communications, to recommend actions that guarantee a company its positioning, as well as its participation in new potential markets.

### **MFD5013 FINANCIAL MANAGEMENT**

Analyze the financial statements of a company through the application of administrative and cost accounting tools, to facilitate planning and decision-making processes in service and manufacturing companies.

### **MGE5043 INTEGRATED CONSTRUCTION MODELING**

Develop a three-dimensional model referring to an integral construction project to apply it in architecture, structural engineering or construction through the use of specialized computing tools.

### **MNE5053 PROJECT MANAGEMENT AND CONTROL**

Combine tools for planning, management and control of projects, through the analysis and application of specialized methodologies within the context of their area of specialty and / or work, to select actions that ensure the achievement of objectives according to specific requirements of the projects.

### **MGE5053 OF CONSTRUCTION PROJECT EVALUATION**

Evaluate a construction project from the technical, economic, social and environmental aspects, to determine both its viability and its profitability through the application of financial and economic tools considering its environmental and social impact.

**MNE5023 TALENT AND COMPANY CULTURE**

Design the processes of attraction, development and retention of talent from a strategic perspective, through the analysis of different leadership styles and the application of current theories in the management of human capital, to plan its optimal management in alignment with the corporate culture of the company.

**MGE5063 FIELD PRACTICE IN CONSTRUCTION PROJECT MANAGEMENT I**

Apply the knowledge related to the Management of Construction Projects to real problems identified, through the development of an integrative project, with the aim of analyzing integral solutions and impact in the professional field.

**MGE5073 FIELD PRACTICE IN CONSTRUCTION PROJECT MANAGEMENT II**

Design a comprehensive project through the application of knowledge related to the Management of Construction Projects, with the aim of establishing impact solutions to specific situations in the professional field.



EDUCATIONAL OFFER  
**BUSINESS AND ECONOMICS**

## BUSINESS ADMINISTRATION

### **ADM1012 MANAGEMENT FUNDAMENTALS**

Describe the nature of management theory by explaining the administrative process and functional areas to identify an organization's integral administrative work.

### **LEX0112 FOREIGN LANGUAGE I \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### **MAT1012 UNIVERSITY MATH**

Learn algebraic language to interpret and use mathematical expressions, including their corresponding graphics, to formulate and solve problems.

### **INF0012 INFORMATION TECHNOLOGIES IN THE CONSTRUCTION OF KNOWLEDGE \***

Understand relevant information using Information and Communication Technologies (ICT) to document an economic, political, cultural and/or social problem.

### **ESP0012 ACADEMIC REASONING\***

Express academic arguments orally and in writing within your discipline by developing and presenting persuasive speeches, using the rudiments of communication to interact effectively in a specific academic context.

### **MAT1022 CALCULUS I**

Apply derivative and integral functions of a variable to solve engineering, finance, management and science problems by modeling the speed of change of its indicators.

### **LAD1012 EFFECTIVE COMMUNICATION**

Identify the importance of effective communication in organizations through the analysis of theoretical and methodological proposals to understand possibilities that create action proposals.

### **CON1012 ACCOUNTING**

Identify the various financial information elements through operations accounting records financial statements in service and commercial companies to control results.

### **ECO1012 BUSINESS AND ECONOMICS**

Identify the essential aspects of economic problems by examining the basic microeconomic analysis concepts and methods to interpret the decisions of individuals, companies, and their interaction in markets.

### **LMK1012 MARKETING FUNDAMENTALS**

Identify marketing strategy principles and key elements through research and use of sources published in the discipline, to create marketing strategies to improve the competitive position of a company. Apply the decisions of each marketing strategy element using market research tools, to design marketing strategies for a real company.

### **LEX0122 FOREIGN LANGUAGE II \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### **CON2012 COST ACCOUNTING I**

Identify the cost elements of a manufactured product or a service provided by placing them within a statement of profit or a statement of cost of production or a cost of production of what is sold using the main systems of accumulated cost for the correct cost determination.

### **LAD2012 ENTREPRENEURIAL CULTURE**

Identify business opportunities by analyzing the creative process and the characteristics of the competitive environment to develop conditions that favor entrepreneurship.

### **LDE2012 CORPORATE LAW**

Examine the different regimes that involve commercial companies through Mexican regulatory analysis, to identify the mechanisms and different legal institutions that influence their operation.

### **ECO2012 MACROECONOMIC ENVIRONMENT**

Identify the basic macroeconomics indicators and models by analyzing long and short-term macroeconomic theories to infer the implications of different economic events and government policies in a country.

### **ESP0022 ACADEMIC WRITING \***

Develop academic articles of your discipline through the administration of specialized information and the application of academic and scientific conventions, for the dissemination of academic and scientific knowledge.

### **MAT2022 BUSINESS STATISTICS I**

Apply various statistical techniques through different descriptive and inferential statistics methodologies to estimate parameters for decision-making in real problems in business and economics.

### **LEX0132 FOREIGN LANGUAGE III \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### **CON2022 FINANCIAL MANAGEMENT**

Interpret corporate financial performance by doing an accounting-financial analysis to optimize the planning and control of operations.

### **LAD2032 ORGANIZATIONAL LEARNING AND CHANGE**

Identify, from a systemic perspective, the learning processes of organizations by applying organizational learning models to design and implement effective changes.

### **ADM2022 ORGANIZATIONAL BEHAVIOR**

Distinguish the concepts and elements of the dynamics of people's behavior and their relationship with organizations, identifying the main individual aspects and group interactions to value attitudes and understand people as a fundamental part of the organizational culture.

### **LAD2022 BUSINESS CREATION**

Identify problems related to business creation in the current context through market analysis to identify the needs and feasibility of solutions.

### **MAT2072 BUSINESS STATISTICS II**

Apply various statistical techniques through the analysis of different statistical methodologies, regression analysis and statistics of categorical data to evaluate parameters that provide information in decision-making of real business problems.

### **ADM2012 INFORMATION TECHNOLOGIES IN BUSINESS**

Describe the strategic importance of information technologies in organizations, evaluating their advantages and limitations in the solution of business problems, applying them to support operations, decision-making and to develop competitive advantage.

### **LAD3012 ALGORITHMS AND DATA ANALYSIS**

Analyze computer algorithms using data analysis models to apply them in business information systems.

### **LAD3032 HUMAN TALENT MANAGEMENT**

Apply the most important concepts and functions of human talent management within organizations through an improvement proposal to create a competitive advantage of the organization in a global business environment.

### **LMK3122 MARKET RESEARCH**

Examine the findings of market research using technological tools, research techniques and data analysis, to develop proposals that meet the information needs in market decision-making.

### **LAD3022 PROFESSIONAL PRACTICE 1**

Analyze problems in real scenarios from an academic perspective, through professional practices in the work environment to apply the knowledge, skills and attitudes acquired during the subjects studied of your degree.

### **LAD3092 ORGANIZATIONAL DESIGN**

Create design proposals and organizational structures through the analysis of the coherence between the needs of the environment and the internal capacities required to develop a good performance of the organization.

### **LAD3062 INNOVATION MANAGEMENT**

Apply innovation processes through the study of the adoption cycle and the use of information systems to identify the opportunities that can be obtained from a correct management of innovation within the company.

### **LAD3072 LEADERSHIP IN ORGANIZATIONS**

Develop managerial skills using new theoretical approaches and leadership application to identify the factors that contribute to the development of human talent in organizations.

### **LAD3042 DECISION MODELS**

Identify the type of model that can be used to solve problems in the industry and in the company by analyzing the characteristics of management-type problems to select the best alternative because of a rational process with the application of quantitative and qualitative techniques.

### **LAD3052 E-BUSINESS**

Interpret the elements of e-commerce and its uses in companies, by analyzing successful cases and the components of e-commerce, to design an e-business strategy for a company.

### **LAD3082 SELECT TOPICS 1**

Analyze cutting-edge entrepreneurship and innovation topics through the review of new trends and approaches to evaluate companies that respond proactively and competitively to current economic scenarios.

### **LAD4032 OPERATIONS MANAGEMENT**

Identify operations in terms of inputs, processes, products, information flows, suppliers and customers using quantitative and qualitative tools to develop strategies aligned to the company's mission that are competitive.

### **LAD4042 PROJECT MANAGEMENT**

Apply the techniques and tools of project management through the implementation of its processes and phases to identify the organizational, human and technical aspects.

### **LAD4022 STRATEGIC MANAGEMENT**

Develop strategic action plans by applying the main conceptual, methodological and technological instruments to identify the elements in strategic management.

### **ADM4012 ETHICS AND CORPORATE SOCIAL RESPONSIBILITY**

Analyze the impact of the economic activity of the company on the social fabric by identifying the effects of the company in the social, environmental and economic dimensions to develop social contribution proposals.

### **LAD4012 PROFESSIONAL PRACTICE 2**

Evaluate business performance from an academic perspective, through professional practices in the labor market to establish specific, objective, creative and critical solution proposals to real problems that reflect the knowledge, skills and attitudes acquired during the studies of the degree.

### **LAD4052 SELECT TOPICS 2**

Examine cutting-edge business management topics through the review of new trends and approaches to managerial skills to develop competencies that respond proactively and competitively to current economic scenarios.

### **LAD4062 SUPPLY CHAIN MANAGEMENT**

Identify the variables and context involved in the application of models and tools by analyzing theoretical concepts in the management of the demand for resources and products in a company to establish planning policies according to organizational needs and strategy.

### **LAD4082 CORPORATE GOVERNANCE**

Design corporate governance systems by evaluating and applying conceptual frameworks of the different control bodies and mechanisms to identify the factors that contribute to achieving better financial and non-financial results.

### **LAD4092 BUSINESS INTELLIGENCE**

Analyze business intelligence strategies by evaluating big data analysis models to apply in the design of enterprise technology solutions.

### **LAD4072 DYNAMIC BUSINESS SIMULATION**

Develop simulation models by applying the language and grammar of system dynamics (causal relationships, feedback loops, flows and levels) to develop solutions to organizational problems, mainly of a strategic nature.

### **LAD4102 SELECT TOPICS 3**

Analyze cutting-edge strategic thinking topics by examining new trends and approaches to develop proposals that respond proactively and competitively to current economic scenarios.

## **GENERAL ART ELECTIVE\***

- **ART0022 ART AND CULTURE OF THE AMERICAS**  
Identify sociocultural development in the Americas through their artistic expressions to establish an active dialogue with this past and its identity context.
- **ART0012 ART, HISTORY AND CULTURE**  
Identify how human beings define reality and express it for themselves and the world from the emergence of Western modernity, by explaining the reciprocal relationship between art, history and culture to critically argue artistic representation and expression topics.

## **GENERAL MATH ELECTIVE\***

- **MAT0012 MATH FOR THINKING**  
Apply various approaches to mathematical thinking by modeling and analyzing hypothetical and real-world phenomena, to design solutions to problems related to your studies and your physical environment.
- **MAT0022 MATH AND CULTURE**  
Develop a project that integrates math with any of the expressions of culture, by modeling phenomena or indicators to make decisions that benefit society.

## **GENERAL BEHAVIORAL SCIENCE ELECTIVE\***

- **COM0012 ETHICS, SOCIETY AND THE ENVIRONMENT**  
Discuss global problems and their local implications by integrating socio-economic, environmental and ethical aspects to create proposals for a tolerant society.

- **COM0022 BEHAVIOR AND HUMAN DEVELOPMENT**

Identify human development's bio-psycho-social factors, by analyzing the variables that affect individual and social behavior and use this knowledge in their academic and professional life.

### **GENERAL NATURAL SCIENCE ELECTIVE\***

- **CNE0012 FOOD AND LIFE**

Identify the relationship between food and health through research that provides data on eating habits to choose an informed diet for your daily life.

- **CNE0022 EVOLUTION AND BIODIVERSITY**

Describe the origin of diseases through causal factors to assess human health information sources.

### **GENERAL HUMANITIES ELECTIVE\***

- **HUM0012 ECOSOPHY**

Compare world representation systems, analyzing different epistemological proposals to reposition the current Being-Man relationship with their environment and other beings from a fundamentally ecological philosophical dimension.

- **HUM0022 HUMANISTIC THINKING**

Study humanist thought from a socio-historical cultural perspective, based on the analysis of its different historical nuances to understand its relevance in contemporary culture.

*\*Courses that are part of the UDLAP General Education component*

## **HOTEL AND RESTAURANT MANAGEMENT**

### **ADM1012 MANAGEMENT FUNDAMENTALS**

Describe the nature of management theory by explaining the administrative process and functional areas to identify an organization's integral administrative work.

### **LEX0112 FOREIGN LANGUAGE I \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### **MAT1012 UNIVERSITY MATH**

Learn algebraic language to interpret and use mathematical expressions, including their corresponding graphics, to formulate and solve problems.

### **INF0012 INFORMATION TECHNOLOGIES IN THE CONSTRUCTION OF KNOWLEDGE \***

Understand relevant information using Information and Communication Technologies (ICT) to document an economic, political, cultural and/or social problem.

### **ESP0012 ACADEMIC REASONING\***

Express academic arguments orally and in writing within your discipline by developing and presenting persuasive speeches, using the rudiments of communication to interact effectively in a specific academic context.

### **CON1012 ACCOUNTING**

Identify the various financial information elements through operations accounting records financial statements in service and commercial companies to control results.

### **ECO1012 BUSINESS AND ECONOMICS**

Identify the essential aspects of economic problems by examining the basic microeconomic analysis concepts and methods to interpret the decisions of individuals, companies, and their interaction in markets.

### **LMK1012 MARKETING FUNDAMENTALS**

Identify marketing strategy principles and key elements through research and use of sources published in the discipline, to create marketing strategies to improve the competitive position of a company. Apply the decisions of each marketing strategy element using market research tools, to design marketing strategies for a real company.

### **LHR1012 HOTEL AND RESTAURANT MANAGEMENT**

Explain the most relevant areas of the operation and administration of accommodation and food services by analyzing the quality of services to understand the concepts and characteristics offered by hotel and restaurant services.

### **LEX0122 FOREIGN LANGUAGE II \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### **LHR1022 FOOD HANDLING SAFETY**

Identify the principles of hygienic food management to explain the contamination and transmission of diseases, by the management of these, through the analysis of their stages, food process and the appropriate health conditions in their reception and storage.

### **LHR2012 FOOD COMPOSITION**

Identify the physical and chemical changes that the composition of the food undergoes with the different processes to which they are subjected in the elaboration of the dishes by checking and comparing the characteristics developed and their positive and/or unfavorable effects on the products obtained to understand the structure of the food.

**CON2012 COST ACCOUNTING I**

Identify the cost elements of a manufactured product or a service provided by placing them within a statement of profit or a statement of cost of production or a cost of production of what is sold using the main systems of accumulated cost for the correct cost determination.

**ESP0022 ACADEMIC WRITING \***

Develop academic articles of your discipline through the administration of specialized information and the application of academic and scientific conventions, for the dissemination of academic and scientific knowledge.

**MAT2022 BUSINESS STATISTICS I**

Apply various statistical techniques through different descriptive and inferential statistics methodologies to estimate parameters for decision-making in real problems in business and economics.

**LHR2032 TOURISM INDUSTRY AND ITS SURROUNDINGS**

Categorize the components of global tourism, its environment and its interrelationship by analyzing the behavior of tourists to identify the marketing and role of various national and international organizations, the social, economic and environmental impacts generated by tourism in a region.

**LHR2022 FOOD PREPARATION LAB I**

Understand the different types of table service, through the application of basic techniques for the development of dishes and the rules of hygienic handling of food, standardization of recipes and net cost, to analyze the basic needs inherent in the management of the kitchen and service in a restaurant.

**LEX0132 FOREIGN LANGUAGE III \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**CON2022 FINANCIAL MANAGEMENT**

Interpret corporate financial performance by doing an accounting-financial analysis to optimize the planning and control of operations.

**ADM2022 ORGANIZATIONAL BEHAVIOR**

Distinguish the concepts and elements of the dynamics of people's behavior and their relationship with organizations, identifying the main individual aspects and group interactions to value attitudes and understand people as a fundamental part of the organizational culture

**LFP2012 MANAGEMENT ACCOUNTING**

Identify the main management accounting tools to analyze various business situations and make decisions in a company.

**LCU2052 NUTRITION IN FOOD PREPARATION**

Create menus by analyzing the nutrients, functions and recommended requirements to develop food programs appropriate to each case.

#### **LHR2042 MANAGEMENT PROCESSES IN ACCOMMODATIONS**

Identify the main processes related to room division of lodging establishments, through the knowledge of the guest cycle, as well as the organization and administrative processes that make it up, to understand the characteristics of an optimal service.

#### **ADM2012 INFORMATION TECHNOLOGIES IN BUSINESS**

Describe the strategic importance of information technologies in organizations, evaluating their advantages and limitations in the solution of business problems, applying them to support operations, decision-making and to develop competitive advantage.

#### **LHR3052 ANALYSIS OF TOURIST MARKETS**

Apply market research processes through the components of the research design to analyze the characteristics and operations of consumers.

#### **LHR3032 FOOD PREPARATION LAB II**

Apply the different cooking techniques and preparation methods in vegetables, meats, poultry, fish and dairy products by applying the rules of hygienic management to describe the expenses and processes that are required in the restaurant industry.

#### **LHR3042 MARKETING FOR HOTELS AND RESTAURANTS**

Apply marketing strategies in the restaurant and hotel industries through strategic planning to identify consumer needs.

#### **LHR3022 PROFESSIONAL PRACTICE 1**

Apply the different procedures in each of the front and back areas of a hotel or restaurant by applying the theoretical and practical concepts of the licenciatura to develop service skills to the diner or guest.

#### **LHR3012 MEETING TOURISM**

Explain the importance of the variables that make up the events, their accessibility, logistics and attractions by identifying the determinants and profiles of those who attend meetings, to create and organize events.

#### **LHR3112 RESTAURANT OPERATIONS MANAGEMENT**

Develop planning controls and menu design according to the needs of the consumer, by identifying the essential concepts in the operation and administration in food and beverage service facilities, to understand the practical applications to the proper functioning of the operation.

#### **LHR3102 RESORT MANAGEMENT**

Understand the conceptual and operational framework related to the Resorts by integrating the concepts of hotel management and tourism planning, as well as identifying the characteristics and their problems, to compare the management of a traditional hotel with one of Resort-type operation.

#### **LHR3062 BEVERAGE SERVICE ADMINISTRATION**

Understand the types, classification and elaboration of beverages, as well as the elements and planning necessary to create a beverage service company, through the theoretical application –practice of the concepts and particular information.

#### **LHR3072 LEGAL FRAMEWORK FOR HOTELS AND RESTAURANTS**

Analyze the regulations of hotels and restaurants by analyzing the legal provisions to identify the operation of hotel and restaurant establishments.

#### **LHR3092 SELECT TOPICS 1**

Identify current hotels and/or accommodation establishments topics through the analysis of service strategies related to the various aspects that make up the hotel environment.

#### **LHR3122 SELECT TOPICS 2**

Analyze cutting-edge restaurants and/or food and beverage establishments topics through the examination and observation of the restaurant, to develop a food and beverage service establishment, regardless of the type or structure.

#### **LHR3082 HOTELS AND RESTAURANTS SALES**

Understand the basic concepts of communication theory and sales techniques by applying the components of the promotional mix of hotels and restaurants, to design a communication strategy within a company in the sector.

#### **ADM4012 ETHICS AND CORPORATE SOCIAL RESPONSIBILITY**

Analyze the impact of the economic activity of the company on the social fabric by identifying the effects of the company in the social, environmental and economic dimensions to develop social contribution proposals.

#### **LHR4012 PROFESSIONAL PRACTICE 2**

Apply the theoretical and practical knowledge acquired in their studies in different areas of the establishment by analyzing the processes and problems related to the hotel and restaurant activity to create solutions or alternatives for action in the sector.

#### **LHR4052 HOTEL AND RESTAURANT REVENUE MANAGEMENT**

Establish the importance of managing hotel revenues, seeing the relevant components and aspects to create the average daily rates or checks.

### **LHR4022 EVENT MANAGEMENT AND OPERATION**

Apply the administrative, operational and logistical aspects for all types of groups and/or mass events in hotels, convention centers or creative adaptation of a given place, by identifying the group market and segmenting it for the development of the operation in the events industry.

### **LHR4042 INNOVATION AND ENTREPRENEURSHIP IN HOSPITALITY**

Analyze the forms of business frequent in the hospitality industry by outlining the conceptual and operational framework, to analyze the related problems and recommend the most appropriate model for different contexts, as a form of development of hospitality companies.

### **LHR4072 GLOBAL TOURISM OUTLOOK**

Categorize the trends that will mark the growth of tourism activity by analyzing the main tourist destinations worldwide and their political, economic and social situations that affect the relationship between countries to identify new trends in the sector.

### **LHR4032 HOTELS AND RESTAURANTS MANAGEMENT SIMULATION**

Apply management of hotel and restaurant theories and models to identify the problems of occupancy, forecasts, income, oversold, among others, raised through the simulation of possible scenarios in hotels and restaurants.

### **LHR4062 SELECT TOPICS 3**

Examine cutting-edge tourism topics by analyzing the regulations and guidelines of hotels and restaurants to understand the aspects that make up the tourist space.

## **GENERAL ART ELECTIVE\***

- **ART0022 ART AND CULTURE OF THE AMERICAS**  
Identify sociocultural development in the Americas through their artistic expressions to establish an active dialogue with this past and its identity context.
- **ART0012 ART, HISTORY AND CULTURE**  
Identify how human beings define reality and express it for themselves and the world from the emergence of Western modernity, by explaining the reciprocal relationship between art, history and culture to critically argue artistic representation and expression topics.

## **GENERAL MATH ELECTIVE\***

- **MAT0012 MATH FOR THINKING**  
Apply various approaches to mathematical thinking by modeling and analyzing hypothetical and real-world phenomena, to design solutions to problems related to your studies and your physical environment.
- **MAT0022 MATH AND CULTURE**  
Develop a project that integrates math with any of the expressions of culture, by modeling phenomena or indicators to make decisions that benefit society.

### GENERAL BEHAVIORAL SCIENCE ELECTIVE\*

- **COM0012 ETHICS, SOCIETY AND THE ENVIRONMENT**  
Discuss global problems and their local implications by integrating socio-economic, environmental and ethical aspects to create proposals for a tolerant society.
- **COM0022 BEHAVIOR AND HUMAN DEVELOPMENT**  
Identify human development's bio-psycho-social factors, by analyzing the variables that affect individual and social behavior and use this knowledge in their academic and professional life.

### GENERAL NATURAL SCIENCE ELECTIVE\*

- **CNE0012 FOOD AND LIFE**  
Identify the relationship between food and health through research that provides data on eating habits to choose an informed diet for your daily life.
- **CNE0022 EVOLUTION AND BIODIVERSITY**  
Describe the origin of diseases through causal factors to assess human health information sources.

### GENERAL HUMANITIES ELECTIVE\*

- **HUM0012 ECOSOPHY**  
Compare world representation systems, analyzing different epistemological proposals to reposition the current Being-Man relationship with their environment and other beings from a fundamentally ecological philosophical dimension.
- **HUM0022 HUMANISTIC THINKING**  
Study humanist thought from a socio-historical cultural perspective, based on the analysis of its different historical nuances to understand its relevance in contemporary culture.

*\*Courses that are part of the UDLAP General Education component*

## INTERNATIONAL BUSINESS ADMINISTRATION

### ADM1012 MANAGEMENT FUNDAMENTALS

Describe the nature of management theory by explaining the administrative process and functional areas to identify an organization's integral administrative work.

**LEX0112 FOREIGN LANGUAGE I \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**MAT1012 UNIVERSITY MATH**

Learn algebraic language to interpret and use mathematical expressions, including their corresponding graphics, to formulate and solve problems.

**INF0012 INFORMATION TECHNOLOGIES IN THE CONSTRUCTION OF KNOWLEDGE \***

Understand relevant information using Information and Communication Technologies (ICT) to document an economic, political, cultural and/or social problem.

**ESP0012 ACADEMIC REASONING\***

Express academic arguments orally and in writing within your discipline by developing and presenting persuasive speeches, using the rudiments of communication to interact effectively in a specific academic context.

**MAT1022 CALCULUS I**

Apply derivative and integral functions of a variable to solve engineering, finance, management and science problems by modeling the speed of change of its indicators.

**CON1012 ACCOUNTING**

Identify the various financial information elements through operations accounting records financial statements in service and commercial companies to control results.

**ECO1012 BUSINESS AND ECONOMICS**

Identify the essential aspects of economic problems by examining the basic microeconomic analysis concepts and methods to interpret the decisions of individuals, companies, and their interaction in markets.

**LNI1012 INTERNATIONAL BUSINESS STUDIES**

Identify the concepts and fundamental elements that influence the management of international business using theoretical models to develop a comprehensive perspective of the challenges and opportunities that economic globalization represents in society, government and business.

**LMK1012 MARKETING FUNDAMENTALS**

Identify marketing strategy principles and key elements through research and use of sources published in the discipline, to create marketing strategies to improve the competitive position of a company. Apply the decisions of each marketing strategy element using market research tools, to design marketing strategies for a real company.

**LEX0122 FOREIGN LANGUAGE II \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**CON2012 COST ACCOUNTING I**

Identify the cost elements of a manufactured product or a service provided by placing them within a statement of profit or a statement of cost of production or a cost of production of what is sold using the main systems of accumulated cost for the correct cost determination.

**ECO2012 MACROECONOMIC ENVIRONMENT**

Identify the basic macroeconomics indicators and models by analyzing long and short-term macroeconomic theories to infer the implications of different economic events and government policies in a country.

**ESP0022 ACADEMIC WRITING \***

Develop academic articles of your discipline through the administration of specialized information and the application of academic and scientific conventions, for the dissemination of academic and scientific knowledge.

**MAT2022 BUSINESS STATISTICS I**

Apply various statistical techniques through different descriptive and inferential statistics methodologies to estimate parameters for decision-making in real problems in business and economics.

**LEX0132 FOREIGN LANGUAGE III \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**LNI2012 BUSINESS REGULATION IN MEXICO**

Interpret the basic principles and guidelines on conducting business in Mexico by analyzing the framework established by Mexican law on business matters, to identify the legal context of business development in the country.

**CON2022 FINANCIAL MANAGEMENT**

Interpret corporate financial performance by doing an accounting-financial analysis to optimize the planning and control of operations.

**ADM2022 ORGANIZATIONAL BEHAVIOR**

Distinguish the concepts and elements of the dynamics of people's behavior and their relationship with organizations, identifying the main individual aspects and group interactions to value attitudes and understand people as a fundamental part of the organizational culture.

**LFP3042 COST ACCOUNTING II**

Analyze new cost systems by examining their effect on the accumulation and determination of that cost to design pricing strategies.

**MAT2072 BUSINESS STATISTICS II**

Apply various statistical techniques through the analysis of different statistical methodologies, regression analysis and statistics of categorical data to evaluate parameters that provide information in decision-making of real business problems.

**LNI2022 BUSINESS IN NORTH AMERICA**

Describe the historical evolution of business in North America by identifying the relationship between Mexico, Canada and the United States to understand the challenges and opportunities in the North American commercial area.

**ADM2012 INFORMATION TECHNOLOGIES IN BUSINESS**

Describe the strategic importance of information technologies in organizations, evaluating their advantages and limitations in the solution of business problems, applying them to support operations, decision-making and to develop competitive advantage.

**LNI3022 INTERCULTURAL ADMINISTRATION**

Compare the main cultural differences between blocks of countries by analyzing managerial philosophies and cultural dimensions of organizations to interpret the cultural heterogeneity of the modern world from a polycentric perspective.

**LNI3012 INTERNATIONAL BUSINESS COMMUNICATION**

Understand the different channels and mechanisms of communication existing in the business world by analyzing the theory of international communication and different styles of verbal and non-verbal communication to develop interaction skills in the global environments of organizations.

**LMK3122 MARKET RESEARCH**

Examine the findings of market research using technological tools, research techniques and data analysis, to develop proposals that meet the information needs in market decision-making.

**LNI3032 PROFESSIONAL PRACTICE 1**

Create possible objective and critical solutions to problems or international business opportunities from an academic perspective, by developing the realization of professional practices to contrast the theory with the organizational reality.

**LNI3042 SELECT TOPICS 1**

Analyze cutting-edge strategic logistics management topics , through the study of theories, models, case solutions and group discussions, to develop applications in multinational companies operating in developed and emerging markets in different parts of the world.

**LNI3092 GLOBAL SUPPLY CHAIN MANAGEMENT**

Understand global and international operations in terms of processes and supply chains by analyzing the quantitative and qualitative tools available to managers to develop strategies aligned with the company's mission that result in sustainable competitive priority proposals.

**LNI3072 TALENT MANAGEMENT IN MULTINATIONAL COMPANIES**

Examine the strategic axes of talent management in multinational companies through the analysis of the different theoretical models of human factor management to design solutions to strategic problems of talent management in multinational companies.

**LNI3052 GLOBAL BUSINESS ENVIRONMENT**

Understand the forces of the global environment that impact the business of countries by identifying the cultural, social and geopolitical entities of each region of the world to analyze the external factors that influence each organization.

**LNI3082 REGIONAL BUSINESS STUDIES I**

Analyze business models of multinational companies in Latin America by evaluating economic, financial and management factors to identify the viability and potential to penetrate Latin American markets from the perspective of an independent investor and/or a multinational corporation.

**LMK3102 INTERNATIONAL MARKETING**

Identify the concepts and theoretical bases related to international and global marketing, through the application of analysis tools to develop successful strategies of products and services in international markets to improve the position of the company in the market.

**LNI3062 SELECT TOPICS 2**

Analyze cutting-edge issues related to the contemporary environment of international business by studying theories and models to strengthen their knowledge of the challenges and opportunities that multinational companies face in this new global environment.

**LFP4052 INTERNATIONAL FINANCIAL ADMINISTRATION**

Apply financial tools to foreign exchange risk, hedging, interest rate or international investment situations by using contemporary corporate cases to identify the factors that contribute to reducing the volatility of cash flows in a company.

**LNI4032 REGIONAL BUSINESS STUDIES 2**

Develop a global vision about the economic, social, and cultural reality of the European Union through the analysis of the European institutions and their negotiation processes to interpret the problems of the region and identify possible alternative solutions.

**ADM4012 ETHICS AND CORPORATE SOCIAL RESPONSIBILITY**

Analyze the impact of the economic activity of the company on the social fabric by identifying the effects of the company in the social, environmental and economic dimensions to develop social contribution proposals.

### **LNI4022 INTERNATIONAL LOGISTICS**

Understand logistics activities in companies at an international level through the analysis of theoretical models of transport systems, logistics operations, inventories and operational logistics costs to identify the most efficient models of transport and global logistics.

### **LNI4042 PROFESSIONAL PRACTICE 2**

Evaluate business performance from an academic perspective through the application of theoretical knowledge of international business in real work environments to identify problems and develop proposals for specific, objective, creative and critical solutions.

### **LNI4012 INTERNATIONAL BUSINESS REGULATION**

Interpret the legal and non-legal elements that regulate business in the world and that impact companies through the study of the different legal norms to develop a theoretical legal basis when conducting international business.

### **LNI4082 FOREIGN TRADE ADMINISTRATION**

Analyze business operations related to export and import by examining trade regulations, foreign trade processes and treaties as an exporting country to identify the importance of foreign trade in the Mexican economy.

### **LNI4062 INTERNATIONAL CORPORATE STRATEGY**

Apply the concepts of international corporate strategy using different methods and tools to develop strategic plans (academic) of multinational companies.

### **LNI4052 INTERNATIONAL NEGOTIATIONS**

Design negotiation strategies between companies in international business contexts through the application of negotiation techniques to evaluate the best global practices in terms of international negotiations.

### **LNI4072 SELECT TOPICS 3**

Examine cutting-edge brand-consumer in the 21<sup>st</sup> century issues by examining the communication strategies of multinational companies (MNCs) and knowledge and promotional tools; develop proposals for advertising campaigns of a global brand whose execution will take place in a specific market or region.

### **LNI4092 TRADE AGREEMENTS**

Relate the concept of a trade agreement from both a theoretical and historical perspective, through the analysis of Mexico's different trade agreements with the world to identify the opportunities and challenges they represent for international business.

### **GENERAL ART ELECTIVE\***

- **ART0022 ART AND CULTURE OF THE AMERICAS**  
Identify sociocultural development in the Americas through their artistic expressions to establish an active dialogue with this past and its identity context.

- **ART0012 ART, HISTORY AND CULTURE**

Identify how human beings define reality and express it for themselves and the world from the emergence of Western modernity, by explaining the reciprocal relationship between art, history and culture to critically argue artistic representation and expression topics.

### **GENERAL MATH ELECTIVE\***

- **MAT0012 MATH FOR THINKING**

Apply various approaches to mathematical thinking by modeling and analyzing hypothetical and real-world phenomena, to design solutions to problems related to your studies and your physical environment.

- **MAT0022 MATH AND CULTURE**

Develop a project that integrates math with any of the expressions of culture, by modeling phenomena or indicators to make decisions that benefit society.

### **GENERAL HUMANITIES ELECTIVE\***

- **HUM0012 ECOSOPHY**

Compare world representation systems, analyzing different epistemological proposals to reposition the current Being-Man relationship with their environment and other beings from a fundamentally ecological philosophical dimension.

- **HUM0022 HUMANISTIC THINKING**

Study humanist thought from a socio-historical cultural perspective, based on the analysis of its different historical nuances to understand its relevance in contemporary culture.

### **GENERAL BEHAVIORAL SCIENCE ELECTIVE\***

- **COM0012 ETHICS, SOCIETY AND THE ENVIRONMENT**

Discuss global problems and their local implications by integrating socio-economic, environmental and ethical aspects to create proposals for a tolerant society.

- **COM0022 BEHAVIOR AND HUMAN DEVELOPMENT**

Identify human development's bio-psycho-social factors, by analyzing the variables that affect individual and social behavior and use this knowledge in their academic and professional life.

### **GENERAL NATURAL SCIENCE ELECTIVE\***

- **CNE0012 FOOD AND LIFE**

Identify the relationship between food and health through research that provides data on eating habits to choose an informed diet for your daily life.

- **CNE0022 EVOLUTION AND BIODIVERSITY**

Describe the origin of diseases through causal factors to assess human health information sources.

*\*Courses that are part of the UDLAP General Education component*

## CULINARY ARTS

### **LCU1012 CULINARY BASES**

Identify culinary techniques for basic foods and preparations through specific processes currently applicable to recipes.

### **ADM1012 MANAGEMENT FUNDAMENTALS**

Describe the nature of management theory by explaining the administrative process and functional areas to identify an organization's integral administrative work.

### **LEX0112 FOREIGN LANGUAGE I \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### **INF0012 INFORMATION TECHNOLOGIES IN THE CONSTRUCTION OF KNOWLEDGE \***

Understand relevant information using Information and Communication Technologies (ICT) to document an economic, political, cultural and/or social problem.

### **ESP0012 ACADEMIC REASONING\***

Express academic arguments orally and in writing within your discipline by developing and presenting persuasive speeches, using the rudiments of communication to interact effectively in a specific academic context.

### **CON1012 ACCOUNTING**

Identify the various financial information elements through operations accounting records financial statements in service and commercial companies to control results.

### **LMK1012 MARKETING FUNDAMENTALS**

Identify marketing strategy principles and key elements through research and use of sources published in the discipline, to create marketing strategies to improve the competitive position of a company. Apply the

decisions of each marketing strategy element using market research tools, to design marketing strategies for a real company.

#### **LHR1012 HOTEL AND RESTAURANT MANAGEMENT**

Explain the most relevant areas of the operation and administration of accommodation and food services by analyzing the quality of services to understand the concepts and characteristics offered by hotel and restaurant services.

#### **LEX0122 FOREIGN LANGUAGE II \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

#### **LHR1022 FOOD HANDLING SAFETY**

Identify the principles of hygienic food management to explain the contamination and transmission of diseases, by the management of these, through the analysis of their stages, food process and the appropriate health conditions in their reception and storage.

#### **LCU1022 CULINARY TECHNIQUES**

Identify the different cooking methods from the study of the physical chemical processes applied to different foods, to develop dishes in kitchens and/or lab.

#### **LHR2012 FOOD COMPOSITION**

Identify the physical and chemical changes that the composition of the food undergoes with the different processes to which they are subjected in the elaboration of the dishes by checking and comparing the characteristics developed and their positive and/or unfavorable effects on the products obtained to understand the structure of the food.

#### **CON2012 COST ACCOUNTING I**

Identify the cost elements of a manufactured product or a service provided by placing them within a statement of profit or a statement of cost of production or a cost of production of what is sold using the main systems of accumulated cost for the correct cost determination.

#### **LCU2032 GASTRONOMIC CULTURE OF MEXICO AND THE WORLD**

Identify the periods and evolution that gastronomy has had historically by analyzing the different influences of other countries to compare the consistency and flavor of the products that are made.

#### **ESP0022 ACADEMIC WRITING \***

Develop academic articles of your discipline through the administration of specialized information and the application of academic and scientific conventions, for the dissemination of academic and scientific knowledge.

#### **EX0132 FOREIGN LANGUAGE III \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

#### **LCU2022 BAKING**

Identify the raw materials and equipment of the bakery area, to make bread of different textures, through the application of basic techniques to produce it with high quality standards.

#### **LCU2012 CULINARY PRACTICE I**

Apply their knowledge and acquire skills by joining multidisciplinary teams through culinary practice in the dining room to develop specific jobs in the different areas of the culinary arts.

#### **ADM2022 ORGANIZATIONAL BEHAVIOR**

Distinguish the concepts and elements of the dynamics of people's behavior and their relationship with organizations, identifying the main individual aspects and group interactions to value attitudes and understand people as a fundamental part of the organizational culture.

#### **LCU2042 MEAT AND POULTRY IDENTIFICATION AND PROCESSING**

Understand the different types of meats, beef, poultry and game animals by developing recipes to categorize and take advantage of the entire animal.

#### **LCU2072 FISH AND SHELLFISH IDENTIFICATION AND PROCESSING**

Identify the different cuts and pieces of fish and seafood, to produce various dishes characteristic of the sea, through cooking methods and preparation techniques.

#### **LCU2052 NUTRITION IN FOOD PREPARATION**

Create menus by analyzing the nutrients, functions and recommended requirements to develop appropriate programs for each case.

#### **LCU2082 CONFECTIONERY I**

Apply confectionery techniques through the implementation of raw materials from different countries to create basic pastry products.

#### **LCU2062 SOMMELIER**

Understand the winemaking process from the field to its sale, storage, service temperatures, tasting and basic options through tastings to apply the right pairing with the selected food.

#### **LCU3012 KITCHEN FOR EVENTS**

Analyze the basic elements of the planning, organization and logistics of a gastronomic event or banquet to develop events through the application of culinary methods and techniques.

#### **LHR3042 MARKETING FOR HOTELS AND RESTAURANTS**

Apply marketing strategies in the restaurant and hotel industries through strategic planning to identify consumer needs.

**LCU3032 PROFESSIONAL PRACTICE 1**

Apply knowledge and acquire skills by joining multidisciplinary teams by implementing culinary arts techniques and methodologies to compare theory with work practice.

**LCU3022 CONFECTIONERY II**

Apply the techniques of advanced pastry using fat bases, chocolates, sugar and creams to develop traditional desserts.

**LHR3112 RESTAURANT OPERATIONS MANAGEMENT**

Develop planning controls and menu design according to the needs of the consumer, by identifying the essential concepts in the operation and administration in food and beverage service facilities, to understand the practical applications to the proper functioning of the operation.

**LHR3062 BEVERAGE SERVICE ADMINISTRATION**

Understand the types, classification and elaboration of beverages, as well as the elements and planning necessary to create a beverage service company, through the theoretical application –practice of the concepts and particular information.

**LCU3072 SPANISH CUISINE**

Apply the different methods and techniques of preparation of Spanish cuisine through the implementation of products and indigenous inputs to develop gastronomic dishes from different regions of Spain.

**LCU3092 MEXICAN CUISINE**

Identify the ingredients fused from Europe with Mexico, to apply the cooking methods and Mexican traditions that make up the national cuisine, through the preparation of the most representative dishes of Mexican cuisine.

**LCU3052 KITCHEN DESIGN AND PLANNING**

Understand the main characteristics of current kitchens to design a professional kitchen through the application of techniques and the use of spaces.

**LCU3082 ROOM SERVICE**

Identify the characteristics of the service of different areas of living-dining room-bar by applying the techniques and rules of service to develop a professional service.

**LCU3062 SELECT TOPICS 1**

Analyze cutting-edge cooking and preparation methods topics by preparing food to develop new flavors, colors and presentations.

**ADM4012 ETHICS AND CORPORATE SOCIAL RESPONSIBILITY**

Analyze the impact of the economic activity of the company on the social fabric by identifying the effects of the company in the social, environmental and economic dimensions to develop social contribution proposals.

#### **LCU4012 PROFESSIONAL PRACTICE 2**

Develop integral solutions to the problems presented in professional practices through the application of theoretical and practical knowledge to relate what has been learned in the classroom with companies or organizations.

#### **LCU4042 CHOCOLATE AND CONFECTIONERY**

Apply techniques with different coverages in varied percentages of butter and cocoa solids by making pieces such as truffles, chocolates, and decorative pieces, and develop their own creations.

#### **LCU4022 ASIAN CUISINE**

Analyze the flavors of Asian cuisine, through the knowledge of the different gastronomic regions, their flavor profiles and the wide range of ingredients to develop recipes applied to the preparation of said cuisine.

#### **LCU4032 FRENCH CUISINE**

Identify the characteristics of French cuisine by analyzing its regions and ingredients to develop dishes de the classic cuisine of France.

#### **LCU4052 ITALIAN CUISINE**

Analyze the characteristics of Italian cuisine by applying the various products, equipment, techniques, cooking and traditions to develop different recipes that make up the gastronomy in Italy.

#### **LNA4082 FOOD PROCESSING TECHNOLOGIES**

Apply the various food preservation processes by explaining the fundamental principles that support them to industrially process safe and good quality food products according to regulatory and market requirements.

#### **LCU4062 SELECT TOPICS 2**

Examine cutting-edge pastry topics by applying classic dessert preparation techniques in international cuisine to develop different preparations of own creation.

#### **LCU4072 SELECT TOPICS 3**

Identify the cutting-edge equipment and gastronomic techniques topics by analyzing the principles of modern cuisine to apply them in the development of a recipe book.

#### **GENERAL ART ELECTIVE\***

- **ART0022 ART AND CULTURE OF THE AMERICAS**  
Identify sociocultural development in the Americas through their artistic expressions to establish an active dialogue with this past and its identity context.
- **ART0012 ART, HISTORY AND CULTURE**  
Identify how human beings define reality and express it for themselves and the world from the emergence of Western modernity, by explaining the reciprocal relationship between art, history and culture to critically argue artistic representation and expression topics.

**GENERAL MATH ELECTIVE\***

- **MAT0012 MATH FOR THINKING**  
Apply various approaches to mathematical thinking by modeling and analyzing hypothetical and real-world phenomena, to design solutions to problems related to your studies and your physical environment.
- **MAT0022 MATH AND CULTURE**  
Develop a project that integrates math with any of the expressions of culture, by modeling phenomena or indicators to make decisions that benefit society.

**GENERAL BEHAVIORAL SCIENCE ELECTIVE\***

- **COM0012 ETHICS, SOCIETY AND THE ENVIRONMENT**  
Discuss global problems and their local implications by integrating socio-economic, environmental and ethical aspects to create proposals for a tolerant society.
- **COM0022 BEHAVIOR AND HUMAN DEVELOPMENT**  
Identify human development’s bio-psycho-social factors, by analyzing the variables that affect individual and social behavior and use this knowledge in their academic and professional life.

**GENERAL NATURAL SCIENCE ELECTIVE\***

- **CNE0012 FOOD AND LIFE**  
Identify the relationship between food and health through research that provides data on eating habits to choose an informed diet for your daily life.
- **CNE0022 EVOLUTION AND BIODIVERSITY**  
Describe the origin of diseases through causal factors to assess human health information sources.

**GENERAL HUMANITIES ELECTIVE\***

- **HUM0012 ECOSOPHY**  
Compare world representation systems, analyzing different epistemological proposals to reposition the current Being-Man relationship with their environment and other beings from a fundamentally ecological philosophical dimension.

- **HUM0022 HUMANISTIC THINKING**

Study humanist thought from a socio-historical cultural perspective, based on the analysis of its different historical nuances to understand its relevance in contemporary culture.

*\*Courses that are part of the UDLAP General Education component*

## **BANKING AND INVESTMENT**

### **ADM1012 MANAGEMENT FUNDAMENTALS**

Describe the nature of management theory by explaining the administrative process and functional areas to identify an organization's integral administrative work.

### **LBN1012 INTRODUCTION TO FINANCIAL ANALYSIS**

Identify the basis of financial analysis using the basic elements of financial investments to understand the practice.

### **LEX0112 FOREIGN LANGUAGE I \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### **MAT1012 UNIVERSITY MATH**

Learn algebraic language to interpret and use mathematical expressions, including their corresponding graphics, to formulate and solve problems.

### **INF0012 INFORMATION TECHNOLOGIES IN THE CONSTRUCTION OF KNOWLEDGE \***

Understand relevant information using Information and Communication Technologies (ICT) to document an economic, political, cultural and/or social problem.

### **ESP0012 ACADEMIC REASONING\***

Express academic arguments orally and in writing within your discipline by developing and presenting persuasive speeches, using the rudiments of communication to interact effectively in a specific academic context.

### **MAT1022 CALCULUS I**

Apply derivative and integral functions of a variable to solve engineering, finance, management and science problems by modeling the speed of change of its indicators.

### **CON1012 ACCOUNTING**

Identify the various financial information elements through operations accounting records financial statements in service and commercial companies to control results.

### **ECO1012 BUSINESS AND ECONOMICS**

Identify the essential aspects of economic problems by examining the basic microeconomic analysis concepts and methods to interpret the decisions of individuals, companies, and their interaction in markets.

### **LMK1012 MARKETING FUNDAMENTALS**

Identify marketing strategy principles and key elements through research and use of sources published in the discipline, to create marketing strategies to improve the competitive position of a company. Apply the decisions of each marketing strategy element using market research tools, to design marketing strategies for a real company.

### **LEX0122 FOREIGN LANGUAGE II \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### **MAT2012 CALCULUS II**

Apply directional derivatives and multiple integrals of variable functions through the modeling of the rate of change of their indicators to solve engineering, finance and science problems.

### **CON2012 COST ACCOUNTING I**

Identify the cost elements of a manufactured product or a service provided by placing them within a statement of profit or a statement of cost of production or a cost of production of what is sold using the main systems of accumulated cost for the correct cost determination.

### **ECO2012 MACROECONOMIC ENVIRONMENT**

Identify the basic macroeconomics indicators and models by analyzing long and short-term macroeconomic theories to infer the implications of different economic events and government policies in a country.

### **ESP0022 ACADEMIC WRITING \***

Develop academic articles of your discipline through the administration of specialized information and the application of academic and scientific conventions, for the dissemination of academic and scientific knowledge.

### **MAT2022 BUSINESS STATISTICS I**

Apply various statistical techniques through different descriptive and inferential statistics methodologies to estimate parameters for decision-making in real problems in business and economics.

### **LEX0132 FOREIGN LANGUAGE III \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**LEC2012 MICROECONOMICS I**

Identify the bases of microeconomic theory using graphical and algebraic modeling techniques to analyze the behavior of consumers, companies and markets.

**CON2022 FINANCIAL MANAGEMENT**

Interpret corporate financial performance by doing an accounting-financial analysis to optimize the planning and control of operations.

**LFP2012 MANAGEMENT ACCOUNTING**

Identify the main management accounting tools to analyze various business situations and make decisions in a company.

**MAT2072 BUSINESS STATISTICS II**

Apply various statistical techniques through the analysis of different statistical methodologies, regression analysis and statistics of categorical data to evaluate parameters that provide information in decision-making of real business problems.

**LEC2032 MACROECONOMICS I**

Understand the determination of output and other macroeconomic variables through the development and management of the IS–LM and OA–DA models, to identify how they influence the levels of economic activity of a country.

**LEC2052 MICROECONOMICS II**

Interpret the production decisions of a company in a market of perfect competition by employing advanced mathematical techniques to relate the efficient use of resources with the maximization of profits.

**ADM2012 INFORMATION TECHNOLOGIES IN BUSINESS**

Describe the strategic importance of information technologies in organizations, evaluating their advantages and limitations in the solution of business problems, applying them to support operations, decision-making and to develop competitive advantage.

**ADM2022 ORGANIZATIONAL BEHAVIOR**

Distinguish the concepts and elements of the dynamics of people's behavior and their relationship with organizations, identifying the main individual aspects and group interactions to value attitudes and understand people as a fundamental part of the organizational culture.

**LBN3022 INVESTMENTS 1**

Build basic strategies by justifying and applying an investment proposal to develop a higher return, subject to minimal risk, in a portfolio made up of fixed income instruments.

**LEC3012 MACROECONOMICS II**

Interpret the mechanisms to determine output and other macroeconomic variables in an open economy in the short and medium term, through the development and management of the IS–LM and OA–DA models, to identify how they influence the levels of economic activity in a country and how monetary and fiscal policy can be managed for stabilization purposes. Analyze the mechanisms for determining the long-term economic growth rate, through the development and management of the Solow neoclassical model, to identify how it influences the growth rate of a country.

#### **LBN3012 PROFESSIONAL PRACTICE 1**

Evaluate objective and critical solutions to problems or opportunities in organizations from an academic perspective, through professional practices to compare the knowledge acquired during the studies of the licenciatura in banking and investments and the organizational reality.

#### **LBN3032 BANKING AND CURRENCY**

Identify the main strategies used by the different financial intermediaries, mainly by commercial banks, through the study of the fundamental regulatory elements of the banking sector, to apply these strategies in the management of the assets and liabilities of commercial banking.

#### **LEC3092 ECONOMETRICS I**

Learn statistical tools using specialized computer packages and databases to quantitatively analyze economic phenomena.

#### **LEC3082 MEXICAN ECONOMY**

Examine the Mexican economy by conducting a long-term retrospective analysis to relate Mexico's current economic problems to various economic theories.

#### **LNI3052 GLOBAL BUSINESS ENVIRONMENT**

Understand the forces of the global environment that impact the business of countries by identifying the cultural, social and geopolitical entities of each region of the world to analyze the external factors that influence each organization.

#### **LBN4012 INVESTMENTS 2**

Build basic strategies through the preparation, justification and application of investment proposals to create a higher return, subject to minimum risk, in a portfolio formed by equity instruments.

#### **LBN3042 SELECT TOPICS 1**

Analyze cutting-edge corporate finance topics through the study of theories and models, to identify the concepts related to the company's finances.

#### **LEC4032 ECONOMETRICS II**

Analyze statistical tools using databases in the form of time series to understand economic and financial phenomena.

**ADM4012 ETHICS AND CORPORATE SOCIAL RESPONSIBILITY**

Analyze the impact of the economic activity of the company on the social fabric by identifying the effects of the company in the social, environmental and economic dimensions to develop social contribution proposals.

**LBN4022 PROFESSIONAL PRACTICE 2**

Evaluate business performance from an academic perspective through professional practices to create specific, objective, creative and critical solutions to real problems that reflect the knowledge acquired during the studies of the licenciatura in banking and investments.

**LAT4012 DERIVATIVE PRODUCTS**

Describe how derivatives markets work and the financial products that are traded, applying the methods used in the valuation of derivative products; use mathematical tools and financial concepts to identify the risks involved.

**LBN4032 SELECT TOPICS 2**

Examine cutting-edge stock market topics through the analysis of fundamental theories and concepts, to relate knowledge to national and international financial markets.

**LBN4062 SELECT TOPICS 3**

Consider cutting-edge banking topics, through the application of theories and concepts, to relate the issues to the banking area.

**LBN4072 INVESTMENT BANKING**

Identify the particularities of an investment bank's regulatory framework, to exemplify its operations by applying intermediate valuation methods such as the analysis of comparable companies and previous transactions, the discount of cash flows and the valuation of leveraged purchases, to analyze the knowledge of specialized banking practice.

**LBN4042 PROFESSIONAL PRECERTIFICATION 1**

Evaluate the regulatory and regulatory framework, as well as the legal elements of the Mexican financial system, using financial, economic, mathematical and accounting concepts to understand the concepts of normative and regulatory frameworks.

**LBN4052 PROFESSIONAL PRECERTIFICATION 2**

Evaluate the capital markets and the different types of debt, using the analysis techniques required to advise clients in the purchase and sale of shares, bonds, certificates and/or shares of investment companies to analyze the capital markets and their relationship with the banking area.

**LBN4082 PROFESSIONAL PRECERTIFICATION 3**

Evaluate the derivatives markets in addition to the different investment companies and types of risks, through economic analysis tools and valuation models of financial equity assets, to relate the concepts to the banking area.

### **LBN4092 FINANCIAL ANALYSIS SEMINAR**

Identify the characteristic of financial analysis through the application of databases and application of the appropriate methodology to develop a scientific research work in banking and financial markets.

### **GENERAL ART ELECTIVE\***

- **ART0022 ART AND CULTURE OF THE AMERICAS**  
 Identify sociocultural development in the Americas through their artistic expressions to establish an active dialogue with this past and its identity context.
- **ART0012 ART, HISTORY AND CULTURE**  
 Identify how human beings define reality and express it for themselves and the world from the emergence of Western modernity, by explaining the reciprocal relationship between art, history and culture to critically argue artistic representation and expression topics.

### **GENERAL MATH ELECTIVE\***

- **MAT0012 MATH FOR THINKING**  
 Apply various approaches to mathematical thinking by modeling and analyzing hypothetical and real-world phenomena, to design solutions to problems related to your studies and your physical environment.
- **MAT0022 MATH AND CULTURE**  
 Develop a project that integrates math with any of the expressions of culture, by modeling phenomena or indicators to make decisions that benefit society.

### **GENERAL BEHAVIORAL SCIENCE ELECTIVE\***

- **COM0012 ETHICS, SOCIETY AND THE ENVIRONMENT**  
 Discuss global problems and their local implications by integrating socio-economic, environmental and ethical aspects to create proposals for a tolerant society.
- **COM0022 BEHAVIOR AND HUMAN DEVELOPMENT**  
 Identify human development's bio-psycho-social factors, by analyzing the variables that affect individual and social behavior and use this knowledge in their academic and professional life.

### **GENERAL NATURAL SCIENCE ELECTIVE\***

- **CNE0012 FOOD AND LIFE**  
 Identify the relationship between food and health through research that provides data on eating habits to choose an informed diet for your daily life.

- **CNE0022 EVOLUTION AND BIODIVERSITY**

Describe the origin of diseases through causal factors to assess human health information sources.

### **GENERAL HUMANITIES ELECTIVE\***

- **HUM0012 ECOSOPHY**

Compare world representation systems, analyzing different epistemological proposals to reposition the current Being-Man relationship with their environment and other beings from a fundamentally ecological philosophical dimension.

- **HUM0022 HUMANISTIC THINKING**

Study humanist thought from a socio-historical cultural perspective, based on the analysis of its different historical nuances to understand its relevance in contemporary culture.

*\*Courses that are part of the UDLAP General Education component*

## **FINANCIAL STRATEGIES AND PUBLIC ACCOUNTING**

### **ADM1012 MANAGEMENT FUNDAMENTALS**

Describe the nature of management theory by explaining the administrative process and functional areas to identify an organization's integral administrative work.

### **LEX0112 FOREIGN LANGUAGE I \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### **MAT1012 UNIVERSITY MATH**

Learn algebraic language to interpret and use mathematical expressions, including their corresponding graphics, to formulate and solve problems.

### **INF0012 INFORMATION TECHNOLOGIES IN THE CONSTRUCTION OF KNOWLEDGE \***

Understand relevant information using Information and Communication Technologies (ICT) to document an economic, political, cultural and/or social problem.

### **ESP0012 ACADEMIC REASONING\***

Express academic arguments orally and in writing within your discipline by developing and presenting persuasive speeches, using the rudiments of communication to interact effectively in a specific academic context.

### **MAT1022 CALCULUS I**

Apply derivative and integral functions of a variable to solve engineering, finance, management and science problems by modeling the speed of change of its indicators.

**CON1012 ACCOUNTING**

Identify the various financial information elements through operations accounting records financial statements in service and commercial companies to control results.

**ECO1012 BUSINESS AND ECONOMICS**

Identify the essential aspects of economic problems by examining the basic microeconomic analysis concepts and methods to interpret the decisions of individuals, companies, and their interaction in markets.

**LMK1012 MARKETING FUNDAMENTALS**

Identify marketing strategy principles and key elements through research and use of sources published in the discipline, to create marketing strategies to improve the competitive position of a company. Apply the decisions of each marketing strategy element using market research tools, to design marketing strategies for a real company.

**LEX0122 FOREIGN LANGUAGE I \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to generate communication with language speakers in everyday and academic situations.

**CON2012 COST ACCOUNTING I**

Identify the cost elements of a manufactured product or a service provided by placing them within a statement of profit or a statement of cost of production or a cost of production of what is sold using the main systems of accumulated cost for the correct cost determination.

**LDE2012 CORPORATE LAW**

Examine the different regimes that involve commercial companies through Mexican regulatory analysis, to identify the mechanisms and different legal institutions that influence their operation.

**ECO2012 MACROECONOMIC ENVIRONMENT**

Identify the basic macroeconomics indicators and models by analyzing long and short-term macroeconomic theories to infer the implications of different economic events and government policies in a country.

**ESP0022 ACADEMIC WRITING**

Develop academic articles of your discipline through the administration of specialized information and the application of academic and scientific conventions, for the dissemination of academic and scientific knowledge.

**MAT2022 BUSINESS STATISTICS I**

Apply various statistical techniques through different descriptive and inferential statistics methodologies to estimate parameters for decision-making in real problems in business and economics.

### **LEX0132 FOREIGN LANGUAGE III \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### **CON2022 FINANCIAL MANAGEMENT**

Interpret corporate financial performance by doing an accounting-financial analysis to optimize the planning and control of operations.

### **ADM2022 ORGANIZATIONAL BEHAVIOR**

Distinguish the concepts and elements of the dynamics of people's behavior and their relationship with organizations, identifying the main individual aspects and group interactions to value attitudes and understand people as a fundamental part of the organizational culture.

### **LFP2012 MANAGEMENT ACCOUNTING**

Identify the main management accounting tools to analyze various business situations and make decisions in a company.

### **MAT2072 BUSINESS STATISTICS II**

Apply various statistical techniques through the analysis of different statistical methodologies, regression analysis and statistics of categorical data to evaluate parameters that provide information in decision-making of real business problems.

### **ADM2012 INFORMATION TECHNOLOGIES IN BUSINESS**

Describe the strategic importance of information technologies in organizations, evaluating their advantages and limitations in the solution of business problems, applying them to support operations, decision-making and to develop competitive advantage.

### **LFP3042 COST ACCOUNTING II**

Analyze new cost systems by examining their effect on the accumulation and determination of that cost to design pricing strategies.

### **LFP3012 INTERMEDIATE ACCOUNTING I**

Build financial statements through the correct application of national and international financial reporting standards to asset accounts to develop their standardization of presentation at the international level.

### **LFP3022 TAX LEGISLATION 1**

Apply, in a theoretical and practical way, the provisions contained in the Income Tax Law and its regulations through the preparation of the relevant reports and tax returns to identify the adequate compliance with the taxpayer's obligations in tax matters.

### **LFP3032 FINANCIAL MATHEMATICS**

Apply the concepts of financial mathematics by using the concept of value over time to select the right credit and savings alternatives.

### **LFP3052 PROFESSIONAL PRACTICE 1**

Apply disciplinary knowledge in different organizational problems through real business activities to design accounting-financial strategies in the solution of problems.

**LFP3112 INVESTMENT PORTFOLIO MANAGEMENT**

Analyze the various investment instruments existing in the national and international financial markets through their valuation with portfolio theory to select portfolios of maximum return and minimum risk.

**LFP3062 INTERMEDIATE ACCOUNTING II**

Construct financial statements through the correct application of national and international Financial Reporting Standards for liability and equity accounts to standardize their presentation at the international level.

**LFP3092 FINANCIAL PROJECTS EVALUATION**

Analyze investment projects applying the main cash flow valuation models to establish their financial viability and corporate impact.

**LFP3102 CORPORATE FINANCE**

Analyze the financial information of a company by examining problems in the field of corporate finance to define the liquidity policy and the selection of corporate financing sources.

**LFP3072 TAX LEGISLATION 2**

Comprehensively analyze the Income Tax Law (ISR) for natural persons and legal persons for non-profit purposes by examining the applicable provisions to develop corresponding tax returns and reports.

**LFP3082 SELECT TOPICS 1**

Analyze cutting-edge topics in corporate finance, integrating contemporary financial models to develop proposals that contribute to maximizing the profitability of organizations.

**LFP4052 INTERNATIONAL FINANCIAL ADMINISTRATION**

Apply financial tools to foreign exchange risk, hedging, interest rate or international investment situations by using contemporary corporate cases to identify the factors that contribute to reducing the volatility of cash flows in a company.

**LFP4042 SPECIAL ACCOUNTS**

Evaluate the accounting treatment given to special and/or non-profit entities through the comparison of real situations to correctly develop financial reports.

**ADM4012 ETHICS AND CORPORATE SOCIAL RESPONSIBILITY**

Analyze the impact of the economic activity of the company on the social fabric by identifying the effects of the company in the social, environmental and economic dimensions to develop social contribution proposals.

**LFP4012 DERIVATIVE INSTRUMENTS**

Evaluate different derivative financial instruments by applying credit, market and operating risk models to design specific hedges.

**LFP4022 AUDITING STANDARDS AND PROCEDURES**

Evaluate the processes involved in the planning, execution and supervision of an audit through the application of controls and validation of information to establish compliance with standards for the recording and presentation of financial statements.

**FP4062 PROFESSIONAL PRACTICE 2**

Apply disciplinary knowledge in different organizational problems through real business activities to design accounting-financial strategies in the solution of problems.

**LFP4032 SELECT TOPICS 2**

Analyze cutting-edge issues in accounting through the application of current international regulations to develop the correct recording of operations in an organization and the presentation of its financial statements.

**LFP4112 RISK MANAGEMENT**

Relate risk measurement methodologies using discrete and continuous models to design strategies that minimize corporate financial risks.

**LFP4122 FORENSIC, OPERATIONAL AND ADMINISTRATIVE AUDIT**

Recommend the main areas of action of the practice of forensic, operational and administrative auditing through the review of corporate cases to develop proposals that contribute to the prevention and detection of fraud.

**LFP4072 OPINIONS**

Plan different opinions through the design of an audit process to develop the skill of presenting them to authorities at the national and international levels.

**LFP4102 FINANCIAL ECONOMETRICS**

Relate the concepts, principles and basic tools of econometrics, through the modeling of accounting-financial time series to build models that allow financial forecasts.

**LFP4082 TAX SEMINAR**

Evaluate the impact of national and international fiscal miscellany through the measurement of corporate financial performance to create fiscal strategies that maximize the profitability of organizations.

**LFP4092 SELECT TOPICS 3**

Examine cutting-edge issues in contemporary tax legislation through the application of national and international regulations to natural persons and legal entities to apply it in the fulfillment of their tax obligations in a timely manner.

**GENERAL ART ELECTIVE\***

- **ART0022 ART AND CULTURE OF THE AMERICAS**

Identify sociocultural development in the Americas through their artistic expressions to establish an active dialogue with this past and its identity context.

- **ART0012 ART, HISTORY AND CULTURE**

Identify how human beings define reality and express it for themselves and the world from the emergence of Western modernity, by explaining the reciprocal relationship between art, history and culture to critically argue artistic representation and expression topics.

**GENERAL MATH ELECTIVE\***

- **MAT0012 MATH FOR THINKING**

Apply various approaches to mathematical thinking by modeling and analyzing hypothetical and real-world phenomena, to design solutions to problems related to your studies and your physical environment.

- **MAT0022 MATH AND CULTURE**

Develop a project that integrates math with any of the expressions of culture, by modeling phenomena or indicators to make decisions that benefit society.

**GENERAL BEHAVIORAL SCIENCE ELECTIVE\***

- **COM0012 ETHICS, SOCIETY AND THE ENVIRONMENT**

Discuss global problems and their local implications by integrating socio-economic, environmental and ethical aspects to create proposals for a tolerant society.

- **COM0022 BEHAVIOR AND HUMAN DEVELOPMENT**

Identify human development's bio-psycho-social factors, by analyzing the variables that affect individual and social behavior and use this knowledge in their academic and professional life.

**GENERAL NATURAL SCIENCE ELECTIVE\***

- **CNE0012 FOOD AND LIFE**

Identify the relationship between food and health through research that provides data on eating habits to choose an informed diet for your daily life.

- **CNE0022 EVOLUTION AND BIODIVERSITY**

Describe the origin of diseases through causal factors to assess human health information sources.

**GENERAL HUMANITIES ELECTIVE\***

- **HUM0012 ECOSOPHY**

Compare world representation systems, analyzing different epistemological proposals to reposition the current Being-Man relationship with their environment and other beings from a fundamentally ecological philosophical dimension.

- **HUM0022 HUMANISTIC THINKING**

Study humanist thought from a socio-historical cultural perspective, based on the analysis of its different historical nuances to understand its relevance in contemporary culture.

***\*Courses that are part of the UDLAP General Education component***

## MARKETING

### **ADM1012 MANAGEMENT FUNDAMENTALS**

Describe the nature of management theory by explaining the administrative process and functional areas to identify an organization's integral administrative work.

### **LEX0112 FOREIGN LANGUAGE I \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

### **MAT1012 UNIVERSITY MATH**

Learn algebraic language to interpret and use mathematical expressions, including their corresponding graphics, to formulate and solve problems.

### **INF0012 INFORMATION TECHNOLOGIES IN THE CONSTRUCTION OF KNOWLEDGE \***

Understand relevant information using Information and Communication Technologies (ICT) to document an economic, political, cultural and/or social problem.

### **ESP0012 ACADEMIC REASONING\***

Express academic arguments orally and in writing within your discipline by developing and presenting persuasive speeches, using the rudiments of communication to interact effectively in a specific academic context.

### **MAT1022 CALCULUS I**

Apply derivative and integral functions of a variable to solve engineering, finance, management and science problems by modeling the speed of change of its indicators.

### **CON1012 ACCOUNTING**

Identify the various financial information elements through operations accounting records financial statements in service and commercial companies to control results.

### **ECO1012 BUSINESS AND ECONOMICS**

Identify the essential aspects of economic problems by examining the basic microeconomic analysis concepts and methods to interpret the decisions of individuals, companies, and their interaction in markets.

### **LMK1012 MARKETING FUNDAMENTALS**

Identify marketing strategy principles and key elements through research and use of sources published in the discipline, to create marketing strategies to improve the competitive position of a company. Apply the decisions of each marketing strategy element using market research tools, to design marketing strategies for a real company.

**LEX0122 FOREIGN LANGUAGE II \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**CON2012 COST ACCOUNTING I**

Identify the cost elements of a manufactured product or a service provided by placing them within a statement of profit or a statement of cost of production or a cost of production of what is sold using the main systems of accumulated cost for the correct cost determination.

**LDE2012 CORPORATE LAW**

Examine the different regimes that involve commercial companies through Mexican regulatory analysis, to identify the mechanisms and different legal institutions that influence their operation.

**ECO2012 MACROECONOMIC ENVIRONMENT**

Identify the basic macroeconomics indicators and models by analyzing long and short-term macroeconomic theories to infer the implications of different economic events and government policies in a country.

**ESP0022 ACADEMIC WRITING \***

Develop academic articles of your discipline through the administration of specialized information and the application of academic and scientific conventions, for the dissemination of academic and scientific knowledge.

**MAT2022 BUSINESS STATISTICS I**

Apply various statistical techniques through different descriptive and inferential statistics methodologies to estimate parameters for decision-making in real problems in business and economics.

**LMK2012 QUALITATIVE MARKET RESEARCH**

Understand the importance of qualitative market research as a fundamental tool of the marketing information system in organizations, applying knowledge and tools to qualitative market research to examine the motivations and attitudes of consumers during the process of consumption of goods and/or services.

**LEX0132 FOREIGN LANGUAGE III \***

Express known and/or new information orally and in writing using vocabulary and appropriate structures to communicate with language speakers in everyday and academic situations.

**CON2022 FINANCIAL MANAGEMENT**

Interpret corporate financial performance by doing an accounting-financial analysis to optimize the planning and control of operations.

#### **LMK2022 CONSUMER BEHAVIOR**

Explain consumer behavior in marketing practice by making use of the analysis of theories, cases and research tools to achieve effective market segmentation. Apply the knowledge of consumer behavior to marketing to meet the needs of the market, making use of market research tools in the detection of factors of influence on the behavior that consumers exhibit in the search, purchase, use and disposal of products or services.

#### **ADM2022 ORGANIZATIONAL BEHAVIOR**

Distinguish the concepts and elements of the dynamics of people's behavior and their relationship with organizations, identifying the main individual aspects and group interactions to value attitudes and understand people as a fundamental part of the organizational culture.

#### **MAT2072 BUSINESS STATISTICS II**

Apply various statistical techniques through the analysis of different statistical methodologies, regression analysis and statistics of categorical data to evaluate parameters that provide information in decision-making of real business problems.

#### **ADM2012 INFORMATION TECHNOLOGIES IN BUSINESS**

Describe the strategic importance of information technologies in organizations, evaluating their advantages and limitations in the solution of business problems, applying them to support operations, decision-making and to develop competitive advantage.

#### **LAD3012 ALGORITHMS AND DATA ANALYSIS**

Analyze computer algorithms using data analysis models to apply them in business information systems.

#### **LMK3032 COMPREHENSIVE MARKETING COMMUNICATION**

Design integral communication campaigns through different integral marketing communication tools to convince the client of the products or services offered by the organization and achieve their successful commercialization in the market.

#### **LMK3042 PRODUCT INNOVATION**

Apply the key factors and elements in the innovation of a product through the management of market research tools and the innovation process to develop proposals to strengthen and reposition products in the market.

#### **LMK3022 QUANTITATIVE MARKET RESEARCH**

to quantitative research techniques, statistical analysis and its graphic expression, using instruments for measure and interpret results reports, to build decisions that improve the competitive position of companies in the market.

#### **LMK3012 PROFESSIONAL PRACTICE 1**

Apply basic theoretical knowledge of marketing during professional practices in an organization through the identification of social problems and the need for responsible and ethical practices in marketing and making use of marketing concepts and tools to develop solutions to problems that contribute to the success of the company.

#### **LMK3092 BRAND MANAGEMENT**

Design a brand strategy using a simulator to evaluate different competitive strategies and their financial results to develop proposals that contribute to the maximization of revenue of the company's brand portfolio.

#### **LMK3082 MARKET INTELLIGENCE I**

Apply the techniques of multivariate interdependence and market intelligence assessing their relevance through the analysis of numerical information to produce timely and useful information according to the strategic requirements of the organization.

#### **LMK3112 MARKETING AND RETAIL**

Apply a strategic perspective of retail sales management through the interpretation of the 4 P's (product, price, promotion and publicity), to establish sales practices based on the environment and develop the planning of a product.

#### **LMK3062 INTERNAL MARKETING**

Design efficient strategies for the needs of companies and internal customers, through the application of marketing tools and concepts to develop proposals to improve the image and profitability of the company, emphasizing the strategic importance of the human factor in organizations.

#### **LMK3102 INTERNATIONAL MARKETING**

Identify the concepts and theoretical bases related to international and global marketing, through the application of analysis tools to develop successful strategies of products and services in international markets to improve the position of the company in the market.

#### **LMK3052 NEGOTIATION AND SALES**

Analyze the process, management and performance of a sales force within the organization through the application of marketing tools to interpret the challenges of the organization.

#### **LMK3072 SELECT TOPICS 1**

Analyze cutting-edge topics in the design, implementation and measurement of strategic marketing through the analysis of theoretical concepts to develop strategies appropriate to the needs of public and/or political institutions.

#### **ADM4012 ETHICS AND CORPORATE SOCIAL RESPONSIBILITY**

Analyze the impact of the economic activity of the company on the social fabric by identifying the effects of the company in the social, environmental and economic dimensions to develop social contribution proposals.

**LMK4022 MARKET INTELLIGENCE II**

Apply the processes to create forecasts of the most relevant market variables in organizations through the management of time series forecasting methods to understand sales behavior and market variables.

**LMK4042 SERVICE MARKETING**

Design service delivery strategies and systems for customers, suppliers, distributors and other marketing partners through the application of information technology to develop proposals to improve the competitive position of the organization in the market.

**LMK4012 SOCIAL MARKETING**

Design social marketing strategies using knowledge and tools to plan programs to run non-profit organizations, public institutions or policies.

**LRP4022 PUBLIC RELATIONS PLANNING**

Design a strategic plan of professional and ethical public relations by applying the theories, models, tools and basic techniques of communication, to identify customer expectations.

**LMK4052 PROFESSIONAL PRACTICE 2**

Apply academic knowledge in marketing by identifying areas for improvement in the place of professional practice with a critical and creative attitude, with objectivity, ethics and social responsibility to develop proposals that contribute to the success of the company and professional development.

**LMK4032 SELECT TOPICS 2**

Analyze the cutting-edge topics in the creativity and innovation of marketing necessary through the analysis of cases and review of relevant concepts to develop marketing strategies appropriate to the needs of public and/or political institutions.

**LMK4062 E-MARKETING**

Design E-marketing strategies by identifying internet users and profitable marketing with new technologies to develop proposals that contribute to improving the competitive position of the company in the market.

**LAD4092 BUSINESS INTELLIGENCE**

Analyze business intelligence strategies using big data analysis models to apply in the design of enterprise technology solutions.

**LMK4072 STRATEGIC MARKETING**

Develop a business strategy using a simulator to see the financial and market results in the short, medium and long term to build proposals related to the entry to new segments and new markets in an international context.

**LMK4082 SELECT TOPICS 3**

Analyze cutting-edge topics in market intelligence to develop proposals for positioning products and/or services effectively, through the analysis of theoretical marketing concepts.

### GENERAL ART ELECTIVE\*

- **ART0022 ART AND CULTURE OF THE AMERICAS**  
 Identify sociocultural development in the Americas through their artistic expressions to establish an active dialogue with this past and its identity context.
- **ART0012 ART, HISTORY AND CULTURE**  
 Identify how human beings define reality and express it for themselves and the world from the emergence of Western modernity, by explaining the reciprocal relationship between art, history and culture to critically argue artistic representation and expression topics.

### GENERAL MATH ELECTIVE\*

- **MAT0012 MATH FOR THINKING**  
 Apply various approaches to mathematical thinking by modeling and analyzing hypothetical and real-world phenomena, to design solutions to problems related to your studies and your physical environment.
- **MAT0022 MATH AND CULTURE**  
 Develop a project that integrates math with any of the expressions of culture, by modeling phenomena or indicators to make decisions that benefit society.

### GENERAL BEHAVIORAL SCIENCE ELECTIVE\*

- **COM0012 ETHICS, SOCIETY AND THE ENVIRONMENT**  
 Discuss global problems and their local implications by integrating socio-economic, environmental and ethical aspects to create proposals for a tolerant society.
- **COM0022 BEHAVIOR AND HUMAN DEVELOPMENT**  
 Identify human development's bio-psycho-social factors, by analyzing the variables that affect individual and social behavior and use this knowledge in their academic and professional life.

### GENERAL NATURAL SCIENCE ELECTIVE\*

- **CNE0012 FOOD AND LIFE**  
 Identify the relationship between food and health through research that provides data on eating habits to choose an informed diet for your daily life.
- **CNE0022 EVOLUTION AND BIODIVERSITY**  
 Describe the origin of diseases through causal factors to assess human health information sources.

**GENERAL HUMANITIES ELECTIVE\***

- **HUM0012 ECOSOPHY**  
Compare world representation systems, analyzing different epistemological proposals to reposition the current Being-Man relationship with their environment and other beings from a fundamentally ecological philosophical dimension.
- **HUM0022 HUMANISTIC THINKING**  
Study humanist thought from a socio-historical cultural perspective, based on the analysis of its different historical nuances to understand its relevance in contemporary culture.

*\*Courses that are part of the UDLAP General Education component*



MIXED MASTER'S  
DEGREES

# MASTER OF BUSINESS ADMINISTRATION

## **MNS5013 LEADERSHIP AND TALENT MANAGEMENT**

Apply the different leadership styles from a strategic perspective, through the design of processes of attraction, development and retention of talent, to plan its optimal management in alignment with the corporate culture of the company.

## **MNS5023 MODELS FOR DECISION MAKING**

Apply quantitative approaches in the business decision-making process, developing appropriate techniques, for decision-making under certainty and under uncertainty.

## **MNS5033 BUSINESS ECONOMICS**

Apply the fundamental principles of microeconomics in the management of organizations, through the use of models and tools specific to the economy, to identify how markets operate and make reliable predictions of results.

## **MNS5043 MARKETING MANAGEMENT**

Establish marketing strategies, based on market knowledge, that include development and decisions about product and services, brands and value, as well as promotion, pricing, distribution and communications mechanisms, to meet both the needs of your current target markets and potential markets.

## **MNS5053 CORPORATE FINANCE**

Apply financial math tools, by evaluating financial instruments and cost of capital, to determine the optimal capital structure in a company.

## **MNS5063 SENIOR MANAGEMENT**

Design a business management system, through the selection and implementation of models, techniques and methodologies of senior management, in order to increase the operational and financial value of companies, creating a competitive advantage of their products and / or services.

## **MNS507 OPERATIONS MANAGEMENT**

Develop strategies that include as a fundamental part the basic components of the technology of processes, capabilities, planning and control systems to be able to apply it in the optimization of resources within the organization, in order to strengthen the position of the same within the industry.

## **MNS5083 GLOBAL BUSINESS MANAGEMENT**

Evaluate the main models of cultural and social dimensions that allow to determine the impact of culture on national and organizational behavior, through the analysis of the environment surrounding companies operating in an international context, for successful decision-making in global corporations.

## **MNS5093 CORPORATE STRATEGY**

Develop corporate strategies, through the integration of planning and business management models, in order to find answers to problems of the current business environment and / or opportunities for growth of the company through the application of the main conceptual, methodological and administrative instruments.

### **MNS5103 BUSINESS INTELLIGENCE**

Identify applications and technologies for data collection, storage and analysis, through the use of specialized software, to share and provide access to business intelligence that supports business decision-making.

### **MNS5113 INNOVATION AND BUSINESS DEVELOPMENT**

Establish competitive advantages with respect to the rest of the participants in the sector, through the analysis of technology, the study of the cycle of adoption of innovation and the use of information systems, business opportunities and their potential, in order to contribute to the achievement of the objectives of the strategic plan of the organization.

### **MNS5123 FIELD PRACTICE IN BUSINESS ADMINISTRATION I**

Apply the knowledge related to Business Administration to real problems identified, through the development of an integrative project, with the aim of analyzing integral solutions and impact in the professional field.

### **MNS5133 FIELD PRACTICE IN BUSINESS ADMINISTRATION II**

Design a comprehensive project, through the application of knowledge related to Business Administration, with the aim of establishing impact solutions to specific situations in the professional field.

## **MASTER OF MANUFACTURING ADMINISTRATION**

### **MFD5013 FINANCIAL MANAGEMENT**

Analyze the financial statements of a company through the application of administrative and cost accounting tools, to facilitate planning and decision-making processes in service and manufacturing companies.

### **MNE5013 BUSINESS STATISTICS**

Apply statistical tools to processes related to decision-making based on quantitative information, through the construction and evaluation of statistical models, to develop and analyze solutions to organizational problems.

### **REP5013 CORPORATE AND PROFESSIONAL RESPONSIBILITY**

Analyze the deontological obligations and duties that correspond to each subject in the development of their activities, from a human, social and legal perspective, so that individually and collectively they develop a responsible professional practice.

### **MEC5013 BUSINESS ECONOMICS**

Apply the fundamental principles of microeconomics in the management of organizations, through the use of models and tools specific to the economy, to identify how markets operate and make reliable predictions of results.

### **MMK5013 STRATEGIC MARKETING**

Develop marketing strategies, through the analysis of the concepts of product, service and brand, as well as the mechanisms of promotion, prices, distribution and communications, to recommend actions that guarantee a company its positioning, as well as its participation in new potential markets.

### **MAM5013 PRODUCTION PLANNING AND CONTROL**

Distinguish the elements of the production master plan that includes industrial operations, by managing inventories from forecasts using specialized software, to schedule and manage production.

### **MAM5023 MANUFACTURING 4.0**

Identify the ideal elements that make up a manufacturing system operating under the paradigm of Industry 4.0, with a view to ensuring the implementation of a transformation process of high added value.

### **MAM5033 PRODUCT DESIGN**

Apply the phases of the new product design process, through the analysis of the established requirements and needs, with the aim of developing functional and sustainable goods.

### **MAM5043 PRODUCTION SYSTEMS SIMULATION**

Analyze, model and experiment manufacturing systems through the application of simulation methods and specialized software, in order to generate alternatives that improve the performance of manufacturing systems.

### **MNE5023 TALENT AND COMPANY CULTURE**

Design the processes of attraction, development and retention of talent from a strategic perspective, through the analysis of different leadership styles and the application of current theories in the management of human capital, to plan its optimal management in alignment with the corporate culture of the company.

### **MNE5043 OPERATIONS STRATEGY**

Design strategies that impact on operational decisions and their inherent benefits, through the analysis of process technologies, capabilities, control and planning, with the aim of selecting actions that improve the competitiveness of companies.

### **MAM5053 FIELD PRACTICE IN MANUFACTURING MANAGEMENT I**

Apply the knowledge related to Manufacturing Management to real problems identified, through the development of an integrative project, with the aim of analyzing integral solutions and impact in the professional field.

### **MAM5063 FIELD PRACTICE IN MANUFACTURING MANAGEMENT II**

Design a comprehensive project through the application of knowledge related to Manufacturing Management, with the aim of establishing impact solutions to specific situations in the professional field.

# MASTER IN ENERGY MANAGEMENT

## **MFD5013 FINANCIAL MANAGEMENT**

Analyze the financial statements of a company through the application of administrative and cost accounting tools, to facilitate planning and decision-making processes in service and manufacturing companies.

## **MNE5013 BUSINESS STATISTICS**

Apply statistical tools to processes related to decision-making based on quantitative information, through the construction and evaluation of statistical models, to develop and analyze solutions to organizational problems.

## **REP5013 CORPORATE AND PROFESSIONAL RESPONSIBILITY**

Analyze the deontological obligations and duties that correspond to each subject in the development of their activities, from a human, social and legal perspective, so that individually and collectively they develop a responsible professional practice.

## **MEC5013 BUSINESS ECONOMICS**

Apply the fundamental principles of microeconomics in the management of organizations, through the use of models and tools specific to the economy, to identify how markets operate and make reliable predictions of results.

## **MMK5013 STRATEGIC MARKETING**

Develop marketing strategies, through the analysis of the concepts of product, service and brand, as well as the mechanisms of promotion, prices, distribution and communications, to recommend actions that guarantee a company its positioning, as well as its participation in new potential markets.

## **MDR5013 RENEWABLE ENERGY**

Apply solar energy absorption schemes, through the selection of sustainable components and solar collectors that satisfy the cost-benefit studies, for the installation and maintenance of renewable energy systems.

## **MDR5023 ORGANIC STRUCTURE**

Distinguish the organizational structure of the entities involved in the administration and management of energy, by reviewing the powers of the regulatory entities and their scope, in order to contrast the various activities contemplated in the laws of the energy sector.

## **MDR5033 ENERGY EFFICIENCY**

Evaluate the aspects of thermal performance, through the identification of standards, norms and design recommendations that allow the use of thermal components and use techniques in order to improve the energy efficiency of systems.

## **MDR5043 ENVIRONMENTAL CHANGE FACTORS**

Distinguish the current impact and the scientific principles related to environmental change, by evaluating the effects of pollution according to the vulnerability suffered by different ecosystems, for the planning of strategies that mitigate environmental change.

**MDR5053 FUEL ENERGY**

Examine the principles of construction and design of fuel generation systems through applying the design engineering of biofuel plants and production processes to develop refining projects.

**MNE5023 TALENT AND COMPANY CULTURE**

Design the processes of attraction, development and retention of talent from a strategic perspective, through the analysis of different leadership styles and the application of current theories in the management of human capital, to plan its optimal management in alignment with the corporate culture of the company.

**MDR5063 FIELD PRACTICE IN ENERGY MANAGEMENT I**

Apply the knowledge related to Energy Management to real problems identified, through the development of an integrative project, with the aim of analyzing integral solutions and impact in the professional field.

**MDR5073 FIELD PRACTICE IN ENERGY MANAGEMENT II**

Design a comprehensive project through the application of knowledge related to Energy Management, with the aim of establishing impact solutions to specific situations in the professional field.

## **MASTER IN BUSINESS MANAGEMENT**

**MFD5013 FINANCIAL MANAGEMENT**

Analyze the financial statements of a company through the application of administrative and cost accounting tools, to facilitate planning and decision-making processes in service and manufacturing companies.

**MNE5013 BUSINESS STATISTICS**

Apply statistical tools to processes related to decision-making based on quantitative information, through the construction and evaluation of statistical models, to develop and analyze solutions to organizational problems.

**REP5013 CORPORATE AND PROFESSIONAL RESPONSIBILITY**

Analyze the deontological obligations and duties that correspond to each subject in the development of their activities, from a human, social and legal perspective, so that individually and collectively they develop a responsible professional practice.

### **MEC5013 BUSINESS ECONOMICS**

Apply the fundamental principles of microeconomics in the management of organizations, through the use of models and tools specific to the economy, to identify how markets operate and make reliable predictions of results.

### **MMK5013 STRATEGIC MARKETING**

Develop marketing strategies, through the analysis of the concepts of product, service and brand, as well as the mechanisms of promotion, prices, distribution and communications, to recommend actions that guarantee a company its positioning, as well as its participation in new potential markets.

### **MFD5043 CORPORATE FINANCE**

Apply financial math tools by valuing financial instruments and short- and long-term financing to determine the optimal capital structure in a company.

### **MNE5033 MANAGEMENT MODELS**

Analyze the different principles, models, techniques and tools in the creation and development of senior management models, through the application of business management systems, with the aim of establishing business strategies that impact on the growth of the organization.

### **MNE5043 OPERATIONS STRATEGY**

Design strategies that impact on operational decisions and their inherent benefits, through the analysis of process technologies, capabilities, control and planning, with the aim of selecting actions that improve the competitiveness of companies.

### **MNE5053 PROJECT MANAGEMENT AND CONTROL**

Combine tools for planning, management and control of projects, through the analysis and application of specialized methodologies within the context of their area of specialty and / or work, to select actions that ensure the achievement of objectives according to specific requirements of the projects.

### **MNE5023 TALENT AND COMPANY CULTURE**

Design the processes of attraction, development and retention of talent from a strategic perspective, through the analysis of different leadership styles and the application of current theories in the management of human capital, to plan its optimal management in alignment with the corporate culture of the company.

### **MNE5063 RISK ANALYSIS**

Evaluate projects under certain conditions of risk and uncertainty, through the application of simulation, analysis and measurement techniques to mitigate and recommend contingency and control actions, in order to minimize the negative effects on the organization.

### **MNE5073 FIELD PRACTICE IN BUSINESS MANAGEMENT I**

Apply the knowledge related to Business Management to real problems identified, through the development of an integrative project, with the aim of analyzing integral solutions and impact in the professional field.

### **MNE5083 FIELD PRACTICE IN BUSINESS MANAGEMENT II**

Design a comprehensive project through the application of knowledge related to Business Management, with the aim of establishing impact solutions to specific situations in the professional field.

## MASTER IN CORPORATE FINANCE

### **MFD5013 FINANCIAL MANAGEMENT**

Analyze the financial statements of a company through the application of administrative and cost accounting tools, to facilitate planning and decision-making processes in service and manufacturing companies.

### **MNE5013 BUSINESS STATISTICS**

Apply statistical tools to processes related to decision-making based on quantitative information, through the construction and evaluation of statistical models, to develop and analyze solutions to organizational problems.

### **REP5013 CORPORATE AND PROFESSIONAL RESPONSIBILITY**

Analyze the deontological obligations and duties that correspond to each subject in the development of their activities, from a human, social and legal perspective, so that individually and collectively they develop a responsible professional practice.

### **MEC5013 BUSINESS ECONOMICS**

Apply the fundamental principles of microeconomics in the management of organizations, through the use of models and tools specific to the economy, to identify how markets operate and make reliable predictions of results.

### **MMK5013 STRATEGIC MARKETING**

Develop marketing strategies, through the analysis of the concepts of product, service and brand, as well as the mechanisms of promotion, prices, distribution and communications, to recommend actions that guarantee a company its positioning, as well as its participation in new potential markets.

### **MFD5023 FINANCIAL CONTROL**

Distinguish the characteristics of financial administrative control systems, through the analysis of the environment, strategy, culture, organizational structure, as well as the sources of financing in order to detect deviations and make decisions that allow the achievement of the objectives of the organization.

### **MFD5033 INTERNATIONAL FINANCE**

Apply theories and methodologies of international financial markets, through the analysis of hedging, financing and exchange risk reduction instruments to recommend actions that increase the value of companies.

### **MFD5043 CORPORATE FINANCE**

Apply financial math tools by valuing financial instruments and short- and long-term financing to determine the optimal capital structure in a company.

### **MFD5053 FINANCIAL MARKETS**

Examine the financial markets through the analysis of the financial instruments that operate in the Mexican financial system to understand the solutions it offers to the business sector and public investor.

**MNE5023 TALENT AND COMPANY CULTURE**

Design the processes of attraction, development and retention of talent from a strategic perspective, through the analysis of different leadership styles and the application of current theories in the management of human capital, to plan its optimal management in alignment with the corporate culture of the company.

**MNE5063 RISK ANALYSIS**

Evaluate projects under certain conditions of risk and uncertainty, through the application of simulation, analysis and measurement techniques to mitigate and recommend contingency and control actions, in order to minimize the negative effects on the organization.

**MFD5063 FIELD PRACTICE IN CORPORATE FINANCE I**

Analyze and delimit problems related to corporate finance through the development of a research protocol to analyze integral solutions and impact in the professional field.

**MFD5073 FIELD PRACTICE IN CORPORATE FINANCE II**

Design a comprehensive project through the application of knowledge related to Corporate Finance, with the aim of establishing possible solutions to specific situations in the professional field.

## **MASTER IN MARKETING**

**MFD5013 FINANCIAL MANAGEMENT**

Analyze the financial statements of a company through the application of administrative and cost accounting tools, to facilitate planning and decision-making processes in service and manufacturing companies.

**MNE5013 BUSINESS STATISTICS**

Apply statistical tools to processes related to decision-making based on quantitative information, through the construction and evaluation of statistical models, to develop and analyze solutions to organizational problems.

**REP5013 CORPORATE AND PROFESSIONAL RESPONSIBILITY**

Analyze the deontological obligations and duties that correspond to each subject in the development of their activities, from a human, social and legal perspective, so that individually and collectively they develop a responsible professional practice.

**MEC5013 BUSINESS ECONOMICS**

Apply the fundamental principles of microeconomics in the management of organizations, through the use of models and tools specific to the economy, to identify how markets operate and make reliable predictions of results.

**MMK5083 STRATEGIC MARKETING**

Develop marketing strategies, through the analysis of the concepts of product, service and brand, as well as the mechanisms of promotion, prices, distribution and communications, to recommend actions that guarantee their positioning, as well as their participation in new potential markets.

**MMK5023 MARKET ANALYSIS**

Analyze market information about the motivations and attitudes of consumers during the process of consumption of goods and / or services, for the correct decision-making in organizations.

**MMK5093 INTERNATIONAL MARKETING**

Develop multidomestic and/or global strategies for entering international markets, through the analysis of the environment and the development of plans and projects, to identify the main variables in the formulation of an international marketing mix.

**MMK5043 BRAND MANAGEMENT**

Distinguish the value and importance of creating strong brands adapted to time and place, by applying basic tools to build, measure, manage a brand and create brand portfolios, to develop comprehensive marketing strategies that maximize brand capital value.

**MMK5053 CONSUMER BEHAVIOR**

Apply the knowledge of the study of consumer behavior in business, through the use of marketing techniques for segmentation, targeting and positioning, with the aim of developing strategies that effectively impact the consumer in the political, social, economic and financial environment.

**MIT5043 DATA VISUALIZATION**

Apply data visualization techniques, through the use of specialized software, to identify patterns and trends that support business decision-making.

**MNE5023 TALENT AND COMPANY CULTURE**

Design the processes of attraction, development and retention of talent from a strategic perspective, through the analysis of different leadership styles and the application of current theories in the management of human capital, to plan its optimal management in alignment with the corporate culture of the company.

**MMK5063 MARKETING FIELD PRACTICE I**

Apply the knowledge related to marketing to real problems identified, through the development of an integrative project, with the aim of analyzing integral solutions and impact in the professional field.

**MMK5073 MARKETING FIELD PRACTICE II**

Design a comprehensive project, through the application of knowledge related to Marketing, with the aim of establishing impact solutions to specific situations in the professional field.

## MASTER IN INTERNATIONAL BUSINESS

### **MFD5013 FINANCIAL MANAGEMENT**

Analyze the financial statements of a company through the application of administrative and cost accounting tools, to facilitate planning and decision-making processes in service and manufacturing companies.

### **MNE5013 BUSINESS STATISTICS**

Apply statistical tools to processes related to decision-making based on quantitative information, through the construction and evaluation of statistical models, to develop and analyze solutions to organizational problems.

### **REP5013 CORPORATE AND PROFESSIONAL RESPONSIBILITY**

Analyze the deontological obligations and duties that correspond to each subject in the development of their activities, from a human, social and legal perspective, so that individually and collectively they develop a responsible professional practice.

### **MEC5013 BUSINESS ECONOMICS**

Apply the fundamental principles of microeconomics in the management of organizations, through the use of models and tools specific to the economy, to identify how markets operate and make reliable predictions of results.

### **MIM5043 STRATEGIC MARKETING**

Develop marketing strategies, through the analysis of the concepts of product, service and brand, as well as the mechanisms of promotion, prices, distribution and communications, to recommend actions that guarantee a company its positioning, as well as its participation in new potential markets.

### **MIM5053 ADVANCED INTERNATIONAL BUSINESS**

Examine the international business environment; through the analysis of the market abroad in order to develop expansion strategies of a product / company and industry.

### **MIM5063 INTERNATIONAL MARKETING**

Develop multi-domestic and/or global strategies for entering international markets through the analysis of the environment and the development of plans and projects, to identify the main variables in the formulation of an international marketing mix.

### **MIM5073 TRADE AGREEMENTS IN EMERGING ECONOMIES**

Consider the most important trade agreements in emerging markets by analyzing strategies with the aim of assessing the challenges and areas of opportunity for international corporations under such agreements.

### **MIM5083 INTERNATIONAL STRATEGIC MANAGEMENT**

The general objective of the course is to identify and apply a methodology of analysis of the strategy of multinational companies, and explain the organizational challenges they face, through case analysis, to promote their growth at a global level.

### **MIM5093 INTERNATIONAL FINANCE**

Apply the theories and methodologies of international financial markets, through the analysis of hedging, financing and exchange risk reduction instruments to recommend actions that maximize the value of companies.

**MNE5023 TALENT AND COMPANY CULTURE**

Design the processes of attraction, development and retention of talent from a strategic perspective, through the analysis of different leadership styles and the application of current theories in the management of human capital, to plan its optimal management in alignment with the corporate culture of the company.

**MIM5113 FIELD PRACTICE IN INTERNATIONAL BUSINESS I**

Apply the knowledge related to International Business to real problems identified, through the development of an integrative project, with the aim of analyzing integral solutions and impact in the professional field.

**MIM5123 FIELD PRACTICE IN INTERNATIONAL BUSINESS II**

Design a comprehensive project through the application of knowledge related to International Business, with the aim of establishing impact solutions to specific situations in the professional field.