

**DI1110 / Conceptual and Morphological Studies I**

The student will be able to solve industrial design problems focusing in concepts and forms. This would be done considering all factors involved in design as well as its visual impact.

**GE1110 / Energy and Resources**

The student will understand the concepts related to energy and resources and the importance of the ecological vision at its different scales or levels of integration and its usefulness of energy and resources, their use and effect.

**DI1210 / Constructive Geometry**

The student will be able to use drawing tools through the application of essential object drawing and descriptive geometry methods. Thus the student can apply them in future industrial design projects.

**FM1009 / Quantitative tools for Business**

Upon completion of this course, students will be able to understand the basic elements of graphs, derivation and integration of algebraic, exponential, and logarithmic functions in order to apply them to the solutions of problems in different areas.

**FM1001 / Physics I**

To understand the basic concepts of classical mechanics in order to analyze, explain, and solve problems related to bodies that move in one, two or three dimensions.

**FM1100 / Presentation Techniques for Product Design I**

Desarrollar habilidades instrumentales básicas de representación rápida en dibujos y bocetos de ideación para la comunicación visual de proyectos de diseño industrial.

**DI 1220 / Presentation Techniques for Product Design I**

By completion, the student will have developed quick, basic representation skills, such as drawings and sketches for visual communication in industrial design projects.

**CS3010 / Environmental Sociology**

Know and analyze the link between environment, ecology and sustainability, within a context that integrates technological development, production systems, and social management of available resources.

**DA2066 / Sustainable Architecture - Theory**

Recognize and comprehend the principles and basic concepts of sustainability in architecture, in order to be able to give a critical analysis of renowned projects because of its sustainability, its proposals and paradigms, having the design as a response to the environment, including the passive systems.

**DI1120 / Effective Project Presentation**

The student will learn and apply diverse techniques, methods and strategies for the successful presentation of ideas and design projects in front of a given audience.

**AD2001 / Sustainability, Ethics, and Social Responsibility in Business**

The students will be able to identify the ethical, social, and environmental issues which are relevant to a business, in order to devise strategies to address them.

**FM 1105 / Probability and Statistics**

To apply the fundamental concepts of probability theory and mathematical statistics (random variables, mathematical expectation, discrete and continuous probability distributions, joint distributions, sampling distribution, estimation theory, classical theory of hypothesis testing and non parametric methods) in solving engineering problems.

**DI2190 / Digital Solids Modelling**

The student will understand and apply the tridimensional solid parametric modeling tools and their usage criteria. Thus the student can create detailed product models for its prototype construction or mass production.

**FM1002 / Physics II**

To apply the main laws that govern wave motion, fluid mechanics, thermodynamics, and gas theory in the solution of science and engineering problems.

**DI1310 / Creativity Studies I**

By completion, the student will be able to: 1. Understand and apply different strategies in the creative development process. 2. Exercise the use of drawing tools and previously acquired sketching knowledge. 3. Finally, the student will be able to create user-centered solutions for low and medium complexity products, creating or satisfying a user need. This would be done in alignment with basic principles, methods and requirements, selecting, justifying, relating, demonstrating and solving all design-related factors.

**IN1211 / Modern Energy Systems**

To Discover the importance that has the energy in our daily life to make use reasonable of her and motivate the development of alternate energies.

**DE3425 / Environmental Law**

Analyze the legal framework for environmental law and its impact on the company.

**FM2200 / Electricity and Magnetism**

To understand the laws and principles that act on bodies when they are exposed to the influences of electric and magnetic fields. To understand the relation between electricity and magnetism.

**LI3110 / Environmental Standards and Certifications**

The students will be able to apply the concepts and principles of sustainability to locate the project within applicable standards and certification processes and to analyze passive and active bioclimatic strategies and eco- technologies applied in improve energy efficiency and apply them to architectural, urban and energy facilities projects.

**DI2110 / Sustainable Design Theory**

The student will be able to: 1. Create solutions for sets of products having medium-complexity usage problems. 2. Apply research, analysis and problem identification techniques in the design of different lines, families and product sets configuration. This is applied while paying attention to different parameters, such as: use, context, brand language and market. 3. Consolidate the previously acquired knowledge and skills during courses such as: sketching, drawing, studio model construction, morphology and materials and processing.

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**DI1330 / Process and Manufacturing of Metals**

The student will be able to describe the physical, chemical and conversion attributes of off-the-shelf metallic, vitreous materials and composites. Furthermore, the student will be able to describe the technology and available resources in the processing of those materials and composites for their application in the product and object creation market.

**DI2310 / Business Strategies for Designers**

This course provides entrepreneurship tools for designers. By completion, the student will understand the accounting principles and their application. Furthermore, the student will understand the methodologies for the launch of innovative and profitable business.

**FM1030 / Linear Algebra**

To apply the techniques of matrix algebra, including the fundamental concepts of vector space and linear transformations, in the study and future application of linear models for different fields of work.

**CI 2115 / Communication and Marketing**

The students will know the close relationship and dependency that exists between communication and marketing as well as its development and implementation in the global work field.

**DI2210 / Product Development and Study I**

By completion, the student will be able to: 1. Create solutions for sets of products having medium-complexity usage problems. 2. Apply research, analysis and problem identification techniques in the design of different lines, families and product sets configuration. This is applied while paying attention to different parameters, such as: use, context, brand language and market. 3. Consolidate the previously acquired knowledge and skills during courses such as: sketching, drawing, studio model construction, morphology and materials and processing

**LI3010 / Housing and Building Automation**

Understanding of the different terms in the technical language of smart facilities and meet the elements of an automated management. Analyze and understand the objectives of a demotic system and standards and systems on the market today, to make a correct choice in the implementation of a project of interior design, taking into account the advantages and disadvantages of the systems, as appropriate technical specifications for proper installation

**DI2220 / Product and Distribution**

The students will design products focused on logistics systems, designing the packaging according to the structure of the supply chain, considering the cost of the product, packaging and damage. It will include relevant aspects of transportation management and inventory. The student will be capable to improve the operating performance of the chain designing the distribution system / package considering issues of environmental impact and energy consumption from the product development.

Sustainable Innovation and Energy Engineering.  
Recognition of Official Validity of Studies (RVOE)  
granted by the Secretary of Education of the State  
of Nuevo Leon on January 19, 2015 according to  
Agreement AL-IV 015/2015. Effective December, 2014.

**DI3120 / Introduction to Consumer Goods and their Life Cycle**

At the end of the course the student will be able to use and assimilate the criteria of use and the tools of parametric modeling of three-dimensional solids, to create detailed models of a product to build his prototype or manufacture it in series.

**DI3320 / Materials Strength and Simulation**

The student will understand and be able to interpret the product and environment using specialized software. Furthermore, the student will be able to analyze the internal and external forces within a product with the intention of strength calculation. Finally, the student will be capable of studying and modeling a product based on its operational conditions.

**GE3150 / Design of Energy and Sustainability Systems**

Acquire knowledge for the analysis, design and application of technology, systems and tools for the use of energy.

**GE3170 / Research Methodologies**

The student will understand the methodology of descriptive research with the use of qualitative tools applied to the development of the proposal for the finalevaluation project, in order to focus it on a real client or the development of a product or system within the area of design applied to energy and sustainability.

**GE3160 / Innovation for Clean Energies**

The student will integrate and analyze tools and public regulations in the social, economic and environmental dimensions to business management strategies and solutions for the creation of new technologies and efficient use of energy.

**GE3180 / Technological Research**

At course completion, the student will learn how to obtain competitive advantages of products and services in order to improve them, as well as an introduction to the process of innovation. Apply qualitative and quantitative methods to analyze, synthesize, and evaluate the potential of a technological opportunity or idea of eco-technology (product, process, or service), based on the technological avenues not intellectually protected and not scanned in its technological development to management and sustainable innovation.

**GE4100 / Sustainable Innovation and Energy Engineering Professional Practices**

The student will be able to apply the criteria, knowledge and skills acquired through the study of the career in the real work field.

**GE4200 / Sustainable Innovation and Energy Engineering Final Evaluation Program**

Determine if the student is qualified for the exercise of their profession. In order to achieve this, students are exposed to models of situations that they have to face in their professional life, evaluating their responsibility, their methodological capacity to search, process and use information, pose problems, design solutions and apply the appropriate technique in each case.

	FIRST	SECOND	THIRD	FOURTH	FIFTH	SIXTH	SEVENTH	EIGHTH	NINETH
<b>ENERGY AND EFFICIENCY</b>	<b>GE1110</b> 6 Energy and Resources	<b>AD2001</b> 6 Sust., Ethics, and Social Resp. in Business	<b>IN1211</b> 6 Modern Energy Systems	<b>LI3110</b> 6 Environmental Standards and Certifications	<b>LI3150</b> 6 Interior Energy Analysis	<b>GE3110</b> 6 Energy and Sustainability Studies	<b>GE3120</b> 6 Design Study of Energy Application	<b>GE3160</b> 3 Innovation for Clean Energies	<b>GE4200</b> 12 IISE Final Evaluation Program
<b>SUSTAINABILITY AND ENERGY</b>	<b>DI1210</b> 6 Constructive Geometry	<b>CS3010</b> 6 Environmental Sociology	<b>DE3425</b> 6 Environmental Law	<b>DI2110</b> 6 Sustainable Design Theory	<b>LI3010</b> 6 Housing and Building Automation	<b>DA3080</b> 6 Techn. for the Analysis of Sust. Projects	<b>DI3110</b> 6 Introduction to Means of Transport	<b>DI4110</b> 6 Design of Energy and Sustainability Systems	<b>HU1005</b> 6 Social Thinking of the Church
<b>SUSTAINABILITY</b>	<b>DI1110</b> 12 Conceptual and Morphological Studies I	<b>DA2066</b> 6 Sustainable Architecture - Theory	<b>DI1310</b> 3 Creativity Studies I	<b>DI1330</b> 6 Process and Manufacturing of Metals	<b>DI2220</b> 6 Product and Distribution	<b>DI2120</b> 6 Parametric Modeling	<b>DI3120</b> 6 Design Study of Energy Application	<b>GE3170</b> 6 Research Methodologies	
<b>INNOVATION</b>	<b>DI1220</b> 3 Presentation Techniques for Product Design I	<b>DI2190</b> 6 Digital Solids Modelling	<b>FM2200</b> 6 Electricity and Magnetism	<b>DI2310</b> 6 Business Strategies for Designers	<b>DI2130</b> 6 Process and Manufacturing of Polymers	<b>DI3310</b> 6 Interdisciplinary Design Solutions	<b>DI3320</b> 6 Materials Strength and Simulation	<b>GE3180</b> 6 Technological Research	
<b>MANAGEMENT</b>	<b>FM1009</b> 6 Quantitative tools for Business	<b>DI1120</b> 6 Effective Project Presentation	Complementary Course *	<b>CI2115</b> 6 Communication and Marketing	<b>DI2210</b> 3 Product Development and Study I	<b>IN1400</b> 6 Project Feasibility and Management	<b>HU1015</b> 6 Comparative International Contexts	<b>AD1200</b> 6 Leadership in Organizations	
<b>EXACT SCIENCES</b>	<b>FM1001</b> 6 Physics I	<b>DI1002</b> 6 Physics II	<b>ID1500</b> 6 Academic Writings	<b>FM1030</b> 6 Linear Algebra		Elective Course of Professional Studies	Elective Course of Professional Studies	Elective Course of Professional Studies	
<b>ELECTIVES, GENERAL AND SPECIALTY</b>	<b>FM1100</b> 6 Interpretation of Statistical Information	<b>FM1105</b> 6 Probability and Statistics		Elective Course of General Studies	Elective Course of General Studies	<b>HU1010</b> 6 Global Competitions	Elective Course of General Studies	<b>GE4100</b> 6 Professional Practices	
<b>GENERAL STUDIES MANDATORY</b>	Induction Seminar 1	Co-Curricular	Co-Curricular	Co-Curricular	Co-Curricular	Social Training Workshop	<b>GE3100</b> 6 Energy Tech. Invention	<b>GE3130</b> 6 Tech., Evaluation and Diagnosis	<b>GE3140</b> 6 Transfer of Technology
				<b>THREE CONCENTRATIONS</b>			<b>GE3210</b> 6 Energetic App. Design	<b>GE3220</b> 6 Energy Efficiency	<b>GE3230</b> 6 Energy Forecast
							<b>GE3310</b> 6 Mitigation Strategies	<b>GE3320</b> 6 Syst. Anal. Socio-Environmental	<b>GE3330</b> 6 Management of Sust. Projects
							<b>GE3340</b> 6 Actual Studies of Energy		
	<b>42 CREDITS</b>	<b>42 CREDITS</b>	<b>42 CREDITS</b>	<b>42 CREDITS</b>	<b>42 CREDITS</b>	<b>42 CREDITS</b>	<b>42 CREDITS</b>	<b>39 CREDITS</b>	<b>18 CREDITS</b>

\* Complementary course: CB2020 Fundamentals of organic and inorganic chemistry

**351 CREDITS**