Industrial Engineering MS Program

Program Educational Objectives

To prepare graduates that:

I	*Will successfully apply their skills to the professional practice of Industrial Engineering including project organization, innovation, management and assuming leadership positions.*
II	*Will use the methods, concepts and models of Industrial Engineering in the research, design, development and application of new products and processes to produce advanced solutions in a wide range of business sectors.*
III	*Will efficiently share information to diverse audiences and be able to develop their professional activities in multidisciplinary teams.*
IV	*Will practice their profession as Industrial Engineers with a deeply-held sense of ethics, responsibility, respect for the environment and proper understanding of the impact of their work on the social and global economic development.*
V	*Will pursuit additional educational activities for their proper professional development.*

Program Outcomes

Graduates of our Industrial Engineering MS Program acquire the knowledge and develop the skills shown below:

1	*They can identify, formulate and solve complex Industrial Engineering problems by applying principles of engineering, science, and mathematics.*
2	*They can apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.*
3	*They can communicate effectively with a range of audiences, both orally and in writing.*
4	*They recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of Industrial Engineering solutions in global, economic, environmental, and societal contexts.*
5	*They can function effectively on teams whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.*
6	*They can develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.*
7	*They understand the need for life-long learning, acquire and apply new knowledge as needed, using appropriate learning strategies.*

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Correlation between EAC ABET outcomes and AQU/ANECA competencies profile

ABET	AQU	DESCRIPTION
1	CB6	To have an understanding knowledge in order to have a foundation or opportunity to be originals in the development and/or application of ideas, often in a researching context.
1	CB7	Students must know how to apply the acquired knowledge and their capacity to solve problems in new o little known environments inside wider context (or multidisciplinary) related to their study area.
2	CG1	To have adequate knowledge of the scientific and technological aspects: mathematical methods, analytics and numerical in the different fields of engineering (electrical, mechanical, energetic, chemical, fluids, electronics, automatics, manufacturing, materials, management, computers, urbanism, infrastructure, etc.).
2	CG2	To project, evaluate and design electrical products, processes, installations and plants.
2	CG3	To research, develop and innovate products, processes and methods.
2	E1	Knowledge and capacity to analyze and design electrical installations.
2	E2	Knowledge and ability to project, calculate and design integrated manufacturing systems.
2	E3	Capacity for the testing and design of machines.
2	E4	Ability for the analysis and design of chemical processes.
2	E5	To have the knowledge to design and analyze thermal machines, hydraulic machines and heating and cooling installations.
2	E7	Ability to design electronic systems and industrial instrumentation.
2	E8	Ability to design and project automated production systems and advanced process control.
2	E17	Ability to design, construct and operate industrial plants.
2	E18	Knowledge of construction, building, installations, infrastructure and town planning in the field of industrial engineering.
2	E19	Knowledge and skills in structural design and calculation.
2	E20	The student has knowledge and abilities to project and design electrical and fluid installations, lighting, air conditioning and ventilation, energy saving and energy efficiency, acoustics, communications, home automation and intelligent buildings and security installation.
2	E21	Knowledge on methods and techniques of transport and industrial maintenance.
3	CB9	Students must know how to communicate their conclusions and knowledge as well as the ultimate reasons that lay behind them, to an audience both specialized and not specialized and without ambiguities.
3	T1	Ability to communicate effectively both orally and in writing with specialized and non-specialized public speakers.
3	T2	Ability to use English as a working language.
4	T5	To have the ability to evaluate the biotechnologies impact in a sustainable development of society.
4	T7	Capacity to make a responsible professional practice adding ethic deontological praxis to work in professional environments in a responsible way.
4	E11	Knowledge of commercial and labor law.

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ABET	AQU	DESCRIPTION
4	E12	Knowledge of financial accounting and cost.
4	E13	Knowledge of executive information systems, industrial organization, production and logistics systems and quality management systems.
5	CG4	To know how to make strategic planning and apply it to systems of several types such as manufacturing, quality and environmental management.
5	CG5	Technical and economically manage projects, installations, plants, companies and technological centers.
5	CG6	Able to exercise general direction, technical direction and project management R & D + i in plants, companies and technological centers.
5	T3	Ability to work in a multidisciplinary environment individually or as a member of a team.
5	T4	Ability to lead, plan and oversee multidisciplinary teams.
5	E9	Knowledge and ability to organize and conduct business.
5	E10	Knowledge and capabilities of strategy and planning applied to different organizational structures.
5	E14	Capacities for work organization and human resource management. Knowledge on prevention of occupational hazards.
5	E15	Knowledge and ability for the integrated management of projects.
6	CB8	Students must be able to integrate knowledge and confront the complexity related to make judgments based on information that, being unfinished or limited, include reflections about social and ethical responsibilities linked to their knowledge and opinions.
6	CG7	To have knowledge, understanding and capacity to apply the required law regulations in the practice of the industrial engineering profession.
6	E6	Knowledge and capabilities to understand analyze and manage the different energy sources.
6	E16	Capacity for the management of Research, Development and Technological Innovation.
6	E22	The student has knowledge and abilities to carry out verification and control of installations, processes and products.
6	E23	The student has knowledge and abilities to carry out certifications, audits, verifications, essays and informs.
7	CB10	Students must have the learning skills that allows them to go on studying in an autonomous or self-directed way.
7	T6	Ability to develop learning skills, necessary to undertake subsequent activities, and recognize the need for continuing education for proper professional development.
1-7	E24	The student has the ability to perform, to report and expose – once obtained all the credits of the curriculum – at an original dissertation performed individually before a university jury, consisting of a comprehensive project of Industrial Engineering of professional synthesizing the skills acquired in the studies.

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Correlation between EAC ABET Program Educational Objectives and Outcomes

Program Educational Objectives		Program Outcomes						
		1	2	3	4	5	6	7
I	*Will successfully apply their skills to the professional practice of Industrial Engineering including project organization, innovation, management and assuming leadership positions.*	X						
II	*Will use the methods, concepts and models of Industrial Engineering in the research, design, development and application of new products and processes to produce advanced solutions in a wide range of business sectors.*	X	X				X	
III	*Will efficiently share information to diverse audiences and be able to develop their professional activities in multidisciplinary teams.*			X		X	X	
IV	*Will practice their profession as Industrial Engineers with a deeply-held sense of ethics, responsibility, respect for the environment and proper understanding of the impact of their work on the social and global economic development.*				X			
V	*Will pursuit additional educational activities for their proper professional development.*							X