



Chemical Engineering MS Program

Program Educational Objectives

To prepare graduates that:

I	<i>Will successfully apply their skills to the professional practice of Chemical Engineering including project organization, innovation, management and assuming leadership positions.</i>
II	<i>Will use the methods, concepts and models of Chemical Engineering in the research, design, development and application of new products and processes to produce advanced solutions in a wide range of business sectors.</i>
III	<i>Will efficiently share information to diverse audiences and be able to develop their professional activities in multidisciplinary teams.</i>
IV	<i>Will practice their profession as Chemical 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.</i>
V	<i>Will pursue additional educational activities for their proper professional development.</i>

Program Outcomes

Graduates of our Chemical Engineering MS program acquire the knowledge and develop the skills shown below:

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

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Correlation between EAC ABET outcomes and AQU/ANECA competencies profile

ABET	AQU/ANECA	DESCRIPTION
1	CB6	The student has knowledge and understanding of what constitutes a basis or an opportunity to be original by developing and/or applying ideas, often in a research context.
1	CB7	The student can apply their knowledge and their ability to solve problems in new or unfamiliar environments within broader (or multidisciplinary) contexts related to his/her field of study.
1	CE1	The student is able to apply knowledge of mathematics, physics, chemistry, biology and other natural sciences – obtained through study, experience and practice – with critical reasoning to establish economically viable solutions to technical problems .
1	CE4	The student has the ability to solve problems that are unfamiliar, incompletely defined, and have contradictory specifications, considering the possible methods of solution, including the most innovative, selecting the most appropriate, being able to correct implementation and evaluating the different design solutions.
2	CE2	The student can design products, processes, systems and services for the chemical industry as well as optimize other already developed, on the technological basis the various areas of Chemical Engineering, involving processes and transport phenomena, separation operations and reactor engineering, both chemical and nuclear, electrochemical or biochemical.
2	CE3	The student can conceptualize engineering models, apply innovative methods in problem solving and use suitable software for the design, simulation, optimization and process and system control.
2	CE6	The student can design , build and implement methods, processes and systems for integrated management of supplies and wastes - solid, liquid and gaseous – in industries, being capable of assessing their impact and their risks.
2	CG1	The student can design , manage, execute and expose a project.
3	CB9	The student can communicate their conclusions and their knowledge and technical/scientific basis to specialists and non-specialists in a clear and unambiguous way.
3	CT1	The student is able to communicate effectively both orally and in writing with specialized partners and with non-specialized audiences in the field of Chemical Engineering.
3	CT2	The student is able to communicate in English and use English as a working language in the field of Chemical Engineering.
4	CE10	The student is able to adapt to structural changes in society motivated by factors or phenomena of economic, energetic or natural characters, to solve the problems that produce and provide technological solutions with a high commitment to sustainability .
4	CE8	The student knows how to lead and manage organization of work and human resources, using criteria of industrial safety, quality management, labour health and safety, sustainability, and environmental management .
4	CT5	The student is able to assess the impact of Chemical Engineering in the sustainable development of society.
4	CT7	The student is able to make a responsible practice of the profession of Chemical Engineering, incorporating ethical and deontological subjects to work responsibly in a professional environment.
5	CE5	As a professional, the student is able to manage and supervise all kinds of facilities, processes, systems and services in different industrial areas related to Chemical Engineering.



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ABET	AQU/ANCA	DESCRIPTION
5	CE7	The student is able to manage and organize companies and production systems and services , applying knowledge and skills of industrial organization, business strategy, planning and logistics, commercial and labour laws, financial accounting and costs.
5	CT3	The student is able to work in multidisciplinary environments, individually or as a team member.
5	CT4	The student has ability to lead and manage working teams in the field of Chemical Engineering.
6	CB8	The student is able to integrate knowledge and handle complexity involving judgments based on incomplete or limited information, including issues on social and ethical responsibilities linked to the application of his/her knowledge and judgments.
6	CE11	The student knows how to manage and perform verification and control of facilities, processes and products as well as certifications, audits, validating, testing and reporting.
6	CE9	The student can manage research, development and technological innovation, considering technology transfer and rights of industrial and intellectual property and patents.
7	CB10	The student has learning abilities enabling him/her to continue studying in a way that will be largely self-directed or autonomous.
7	CT6	The student is able to develop learning abilities , which are needed to undertake further activities, and to recognize the need for continuing education to maintain an appropriate professional development.
1-7	CE12	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 Chemical Engineering of professional, research or business nature 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	<i>Will successfully apply their skills to the professional practice of Chemical Engineering including project organization, innovation, management and assuming leadership positions.</i>	X						
II	<i>Will use the methods, concepts and models of Chemical Engineering in the research, design, development and application of new products and processes to produce advanced solutions in a wide range of business sectors.</i>	X	X				X	
III	<i>Will efficiently share information to diverse audiences and be able to develop their professional activities in multidisciplinary teams.</i>			X		X	X	
IV	<i>Will practice their profession as Chemical 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.</i>				X			
V	<i>Will pursuit additional educational activities for their proper professional development.</i>							X