CHEMICAL ENGINEERING - BS

Chemical engineers are concerned with the application of knowledge gained from basic sciences and practical experience to the development, design, operation and management of plants and processes for economical and safe conversion of chemical raw materials to useful products. Because chemical engineering is the most broadly based of all engineering disciplines, the chemical engineer is in great demand in diverse technical and supervisory areas in a wide variety of industries and has consistently commanded one of the highest starting salaries of all college graduates.

In addition to dominating the extensive chemical, petroleum and petrochemical industries, for which Qatar and the rest of the Middle East are one of the world's leading regions, chemical engineers are leaders in such areas as food and pharmaceutical processing, biochemical and biomedical engineering, pollution control and abatement, polymers and plastics, ceramics and other advanced materials, corrosion, automation and instrumentation, aerospace materials, computer technology and data processing, safety, environmental control, and many others.

Visit the Chemical Engineering Program's website at www.qatar.tamu.edu/programs/chemical-engineering (https://www.qatar.tamu.edu/programs/chemical-engineering/).

Program Requirements

The freshman year is identical for degrees in electrical engineering, mechanical engineering, petroleum engineering. The freshman year is slightly different for chemical engineering in that students take CHEM 119 or CHEM 107/CHEM 117 and CHEM 120. It is recognized that many students will change the sequence and number of courses taken in any semester. Deviations from the prescribed course sequence, however, should be made with care to ensure that prerequisites for all courses are met.

First Year

Fall		Semester Credit Hours
CHEM 107	General Chemistry for Engineering Students [1,4]	3
CHEM 117	General Chemistry for Engineering Students Laboratory [1,4]	1
ENGL 104	Composition and Rhetoric [1]	3
ENGR 102	Engineering Lab I - Computation [1]	2
MATH 151	Engineering Mathematics I [1,2]	4
University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) [3]		3
	Semester Credit Hours	**16**
Spring		
CHEM 120	Fundamentals of Chemistry II [1,4]	4
ENGR 216/ PHYS 216	Experimental Physics and Engineering Lab II - Mechanics [1]	2
MATH 152	Engineering Mathematics II [1]	4
PHYS 206	Newtonian Mechanics for Engineering and Science [1]	3
University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) [3]		3
	Semester Credit Hours	**16**
	Total Semester Credit Hours	**32**

1. A grade of C or better is required
2. Entering students will be given a math placement exam. Test results will be used in selecting the appropriate starting course which may be at a higher or lower level.
3. Of the 21 hours shown as University Core Curriculum electives, 3 must be from language, philosophy and culture, 3 must be from creative arts, 3 from social and behavioral sciences, 6 from American history, and 6 from government/political science. The required 3 hours from international and cultural diversity and 3 hours from cultural discourse may be met by courses satisfying the language, philosophy and culture, creative arts, social and behavioral sciences, and American history requirements if they are also on the approved list of international and cultural diversity or cultural discourse courses.
4. CHEN requires 8 hours of freshman chemistry, which may be satisfied by CHEM 119 or CHEM 107/CHEM 117 and CHEM 120; Credit by Examination (CBE) for CHEM 119 or CHEM 107/CHEM 117 plus CHEM 120.

Second Year

Fall		Semester Credit Hours
CHEM 227 & CHEM 237	Organic Chemistry I and Organic Chemistry Laboratory [1]	4
CHEN 201	Elementary Chemical Engineering Lab	1
CHEN 204	Elementary Chemical Engineering	3
ENGR 217/ PHYS 217	Experimental Physics and Engineering Lab III - Electricity and Magnetism [1]	2
MATH 251	Engineering Mathematics III [1]	3
PHYS 207	Electricity and Magnetism for Engineering and Science [1]	3
	Semester Credit Hours	**16**
Spring		
CHEM 228 & CHEM 238	Organic Chemistry II and Organic Chemistry Laboratory [1]	4
CHEN 205	Chemical Engineering Thermodynamics I	3
ENGL 210	Technical and Professional Writing	3
MATH 308	Differential Equations [1]	3
University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) [3]		3
	Semester Credit Hours	**16**

Third Year

Fall		
CHEN 304	Chemical Engineering Fluid Operations	3
CHEN 320	Numerical Analysis for Chemical Engineers	3
CHEN 322	Chemical Engineering Materials	3
CHEN 354	Chemical Engineering Thermodynamics II	3
CHEN 481	Seminar	1

University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) [3]		3
	Semester Credit Hours	**16**
Spring		
CHEM 322	Physical Chemistry for Engineers [1]	3
CHEN 323	Chemical Engineering Heat Transfer Operations	3
CHEN 324	Chemical Engineering Mass Transfer Operations	3
CHEN 364	Kinetics and Reactor Design	3
CHEN 374	Chemical Engineering Process Industries	2
University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) [3]		3
High Impact Experience [6]		0
CHEN 399	Mid-Curriculum Professional Development	
	Semester Credit Hours	**17**
Fourth Year		
Fall		
CHEN 425	Process Integration, Simulation and Economics	3
CHEN 432	Chemical Engineering Laboratory I	2
CHEN 461	Process Dynamics and Control	3
CHEN 482	Bioprocess Engineering	3
University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) [3]		3
CHEN specialty options [5]		3
	Semester Credit Hours	**17**
Spring		
CHEN 426	Chemical Engineering Plant Design	3
CHEN 433	Chemical Engineering Laboratory II	2
CHEN 455/ SENG 455	Process Safety Engineering	3
University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) [3]		3
CHEN specialty options [5]		3
	Semester Credit Hours	**14**
	Total Semester Credit Hours	**96**

[5] See an academic advisor for a list of approved courses.

[6] All students are required to complete a high-impact experience in order to graduate. The list of possible high-impact experiences is available in the advising office.

A grade of C or better is required in all CHEN courses.

Total Program Hours 128