Program Requirements

The freshman year is identical for degrees in aerospace engineering, architectural engineering, civil engineering, computer engineering, computer science, electrical engineering, electronic systems engineering technology, environmental engineering, industrial distribution, industrial engineering, interdisciplinary engineering, manufacturing and mechanical engineering technology, mechanical engineering, multidisciplinary engineering technology, nuclear engineering, ocean engineering, and petroleum engineering (Note: not all programs listed are offered in Qatar). The freshman year is slightly different for chemical engineering, biomedical engineering and materials science and engineering degrees in that students take CHEM 119 or CHEM 107/CHEM 117 and CHEM 120. Students pursuing degrees in biological and agricultural engineering should refer to the specific curriculum for this major. It is recognized that many students will change the course 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**  
CHEM 107  General Chemistry for Engineering Students  3  
CHEM 117  General Chemistry for Engineering Students Laboratory  1  
ENGL 103 or ENGL 104  Introduction to Rhetoric and Composition or Composition and Rhetoric  3  
ENGR 102  Engineering Lab I - Computation  2  
MATH 151  Engineering Mathematics I  4  
University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/)  3  

**Spring**  
ENGR 216/PHYS 216  Experimental Physics and Engineering Lab II - Mechanics  2  
MATH 152  Engineering Mathematics II  4  
PHYS 206  Newtonian Mechanics for Engineering and Science  3  
University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/)  3  

Select one of the following:  
CHEM 120  Fundamentals of Chemistry II  3  
University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/)  3  

**Second Year**

**Fall**  
CHEM 227 & CHEM 237  Organic Chemistry I and Organic Chemistry Laboratory  4  
CHEN 204  Elementary Chemical Engineering  3  
ENGR 217/PHYS 217  Experimental Physics and Engineering Lab III - Electricity and Magnetism  2  
MATH 251  Engineering Mathematics III  3  
PHYS 207  Electricity and Magnetism for Engineering and Science  3  

**Spring**  
CHEM 228 & CHEM 238  Organic Chemistry II and Organic Chemistry Laboratory  4  
CHEN 205  Chemical Engineering Thermodynamics I  3  
ENGL 210  Technical and Professional Writing  3  
MATH 308  Differential Equations  3  
University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/)  3  

**Third Year**

**Fall**  
CHEN 304  Chemical Engineering Fluid Operations  3  
CHEN 320  Numerical Analysis for Chemical Engineers  3  
CHEN 322  Chemical Engineering Materials  3  

1 A grade of C or better is required.
Chemical Engineering Thermodynamics II 3
University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) 3
Science Elective 6

Semester Credit Hours 18

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
University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) 3
High Impact Experience 7
CHEN 399 Mid-Curriculum Professional Development

Semester Credit Hours 15

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 481 Chemical Engineering Ethics, Communication, and Professional Practice 1
CHEN 482 Bioprocess Engineering 3
CHEN specialty options 6

Semester Credit Hours 15

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/) 6
CHEN specialty options 6

Semester Credit Hours 17

Total Semester Credit Hours 96

6 For a list of approved specialty options, please see a chemical engineering advisor.
7 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 CHEN advising office.

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

Total Program Hours 128