

# PETROLEUM ENGINEERING - BS

Petroleum Engineers provide the world with energy while safeguarding the environment. Petroleum Engineering is concerned primarily with the safe and economic extraction of oil, gas, and other natural resources from the earth. Oil and gas is produced through the design, drilling and operation of wells and well systems, and the integrated management of the underground reservoirs in which the resources are found.

The mission of the Petroleum Engineering Department is to create, preserve, integrate, transfer and apply petroleum engineering knowledge and to enhance the human capability of its practitioners. The Petroleum Engineering Program has two educational objectives:

- graduates will have the technical depth and breadth to be successful professionals early in their careers; and
- graduates will have the broad technical knowledge and soft skills needed to rise to positions of professional leadership.

In essence, the goal of the Petroleum Engineering curriculum is to provide a modern engineering education with proper balance between fundamentals and practice, and to graduate engineers capable of being productive contributors immediately who are also prepared for life-long learning. The curriculum includes study of:

- design and analysis of well systems and procedures for drilling and completing wells;
- characterization and evaluation of subsurface geological formations and their resources;
- design and analysis of systems for producing, injecting and handling fluids;
- application of reservoir engineering principles and practices for optimizing resource development and management; and
- use of project economics and resource valuation methods for design and decision making under conditions of risk and uncertainty.

There is a heavy emphasis on mathematics, computer applications, communication skills and interdisciplinary problem solving. As a result, Aggie petroleum engineers are in high demand in the industry, and their starting salaries are consistently among the top in the University and the nation.

The department is well known for its curriculum, facilities and faculty, and its undergraduate program is recognized as one of the top petroleum engineering programs in the United States. The Bachelor of Science program is accredited by the Engineering Accreditation Commission of ABET, [www.abet.org](http://www.abet.org) (<http://www.abet.org/>).

## 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 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 <sup>1,4</sup>	3
CHEM 117	General Chemistry for Engineering Students Laboratory <sup>1,4</sup>	1
ENGL 103 or ENGL 104	Introduction to Rhetoric and Composition <sup>1</sup> or Composition and Rhetoric	3
ENGR 102	Engineering Lab I - Computation <sup>1</sup>	2
MATH 151	Engineering Mathematics I <sup>1,2</sup>	4
University Core Curriculum ( <a href="http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/">http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/</a> ) <sup>3</sup>		3
<b>Semester Credit Hours</b>		<b>16</b>

Spring		Semester Credit Hours
ENGR 216/PHYS 216	Experimental Physics and Engineering Lab II - Mechanics <sup>1</sup>	2
MATH 152	Engineering Mathematics II <sup>1</sup>	4
PHYS 206	Newtonian Mechanics for Engineering and Science <sup>1</sup>	3
University Core Curriculum ( <a href="http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/">http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/</a> ) <sup>3</sup>		3
Select one of the following:		3-4
CHEM 120	Fundamentals of Chemistry II <sup>1,4</sup>	
University Core Curriculum ( <a href="http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/">http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/</a> ) <sup>3,5</sup>		
<b>Semester Credit Hours</b>		<b>15-16</b>
<b>Total Semester Credit Hours</b>		<b>31-32</b>

<sup>1</sup> A grade of C or better is required.

<sup>2</sup> 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.

<sup>3</sup> Of the 21 hours shown as University Core Curriculum electives, 3 must be from creative arts (see AREN curriculum for more information), 3 from social and behavioral sciences (see IDIS curriculum for more information), 3 from language, philosophy and culture (see CVEN, EVEN and PETE curriculum for more information), 6 from American history and 6 from government/political science. The required 3 hours of international and cultural diversity and 3 hours of cultural discourse may be met by courses satisfying the creative arts, social and behavioral sciences, language, philosophy and culture, and American history requirements if they are also on the approved list of international and cultural diversity (<http://catalog.tamu.edu/undergraduate/general-information/degree-information/international-cultural-diversity-requirements/>) courses and cultural discourse

(<http://catalog.tamu.edu/undergraduate/general-information/degree-information/cultural-discourse-requirements/>) courses.

<sup>4</sup> BMEN, CHEN and MSEN require 8 hours of fundamentals of chemistry which are satisfied with CHEM 119 or CHEM 107/CHEM 117 and CHEM 120; Students with an interest in BMEN, CHEN and MSEN can take CHEM 120 second semester freshman year. CHEM 120 will substitute for CHEM 107/CHEM 117.

<sup>5</sup> For BS-PETE, allocate 3 hours to core communications course (ENGL 210, COMM 203, COMM 205, or COMM 243) and/or 3 hours to UCC elective. For BS-MEEN, allocate 3 hours to core communications course (ENGL 203, ENGL 210, or COMM 205) and/or 3 hours to UCC elective.

## Second Year

### Fall

		Semester Credit Hours
ENGR 217/ PHYS 217	Experimental Physics and Engineering Lab III - Electricity and Magnetism	2
GEOL 104	Physical Geology	4
MATH 251	Engineering Mathematics III	3
MEEN 221	Statics and Particle Dynamics	3
PHYS 207	Electricity and Magnetism for Engineering and Science	3
<b>Semester Credit Hours</b>		<b>15</b>

### Spring

CVEN 305	Mechanics of Materials	3
MATH 308	Differential Equations	3
PETE 225	Introduction to Drilling Systems	3
PETE 311	Reservoir Petrophysics	3
PETE 315	Petroleum Engineering Thermodynamics	3
<b>Semester Credit Hours</b>		<b>15</b>

## Third Year

### Fall

GEOL 404	Geology of Petroleum	3
PETE 219	Foundations of Petroleum Data Analytics	2
PETE 301	Petroleum Engineering Numerical Methods	3
PETE 310	Reservoir Fluids	3
PETE 314	Transport Processes in Petroleum Production	3
PETE 335	Technical Presentations I	1
<b>Semester Credit Hours</b>		<b>15</b>

### Spring

PETE 321	Formation Evaluation	4
PETE 323	Fundamentals of Reservoir Engineering	3
PETE 324	Well Testing	3
PETE 325	Petroleum Production Systems	3
PETE 337	Junior Student Paper Contest	0
PETE 353	Petroleum Project Evaluation	3
<b>Semester Credit Hours</b>		<b>16</b>

## Fourth Year

### Fall

PETE 300	Summer Practice	0
PETE 355	Drilling Engineering	3

PETE 401	Reservoir Simulation	2
PETE 404	Integrated Reservoir Modeling	3
PETE 410	Production Engineering	3
PETE 435	Technical Presentations II	1

University Core Curriculum (<http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/>) <sup>3</sup> 6

**Semester Credit Hours 18**

### Spring

PETE 402	Integrated Asset Development	3
PETE 437	Senior Student Paper Contest	0
PHIL 482/ ENGR 482	Ethics and Engineering	3

University Core Curriculum (<http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/>) <sup>3</sup> 6

Technical elective <sup>6</sup> 6

**Semester Credit Hours 18**

**Total Semester Credit Hours 97**

<sup>6</sup> See the Petroleum Engineering Academic Advising Office for lists of approved technical elective courses.

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

## Total Program Hours 128