

# ARCHITECTURAL ENGINEERING - BS, STRUCTURAL SYSTEMS FOR BUILDINGS TRACK

The BS in Architectural Engineering degree prepares graduates for professional engineering careers within the architectural, engineering and construction industry. Specifically, it prepares graduates to become licensed professional engineers, achieve leadership positions in consulting firms, suppliers or government agencies, as well as successfully complete graduate studies in engineering or other areas. The Structural Building Systems Track to fulfill the BS in Architectural Engineering degree prepares students for careers with more emphasis on the structural design and safety of buildings. The focus electives prepare students to design and analyze structural systems for buildings.

## 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

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
AREN 175/ COSC 175	Construction Graphics Communication	3
AREN 200	Architectural Engineering Foundations <sup>6</sup>	2
CVEN 221	Engineering Mechanics: Statics	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
<b>Semester Credit Hours</b>		<b>16</b>

<b>Spring</b>		
COMM 205 or ENGL 210	Communication for Technical Professions or Technical and Professional Writing	3
CVEN 302	Computer Applications in Engineering and Construction	3
CVEN 305	Mechanics of Materials	3
CVEN 306	Materials Engineering for Civil Engineers	3
MATH 308	Differential Equations	3
Select one of the following: <sup>7</sup>		3
ARCH 249	Survey of World Architecture History I	
ARCH 250	Survey of World Architecture History II	
ARCH 350	History and Theory of Modern and Contemporary Architecture	

---

**Semester Credit Hours** **18**

<b>Summer</b>		
High Impact Experience <sup>8</sup>		
AREN 399	High Impact Experience for Architectural Engineers	

---

**Semester Credit Hours** **0**

<b>Third Year</b>		
<b>Fall</b>		
AREN 300	Architectural Engineering Systems	3
COSC 333	Project Management for Facility Managers	3
CVEN 342	Materials of Construction	3
CVEN 345	Theory of Structures	3
MEEN 315	Principles of Thermodynamics	3
Math/Science elective <sup>9</sup>		3

---

**Semester Credit Hours** **18**

<b>Spring</b>		
AREN 330	Mechanical Systems for Buildings	3
CVEN 311/ EVEN 311	Fluid Dynamics	3
CVEN 444	Structural Concrete Design	3
ECEN 215	Principles of Electrical Engineering	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

---

**Semester Credit Hours** **15**

<b>Fourth Year</b>		
<b>Fall</b>		
AREN 320	Lighting Engineering for Buildings	3
AREN 401	Architectural Engineering Design I <sup>6</sup>	3
MEEN 437	Principles of Building Energy Analysis	3
Technical elective I <sup>10</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

---

**Semester Credit Hours** **15**

<b>Spring</b>		
AREN 402	Architectural Engineering Design II	3
CVEN 446	Structural Steel Design	3
Technical elective II <sup>11</sup>		3
Technical elective III <sup>11</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
---	---

---

**Semester Credit Hours** **15**

---

**Total Semester Credit Hours** **97**

<sup>6</sup> All students must take at least two courses in their major that are designated as writing intensive (W) or one writing intensive and one communications intensive (C) course. AREN 200 and AREN 401 taken at Texas A&M University satisfy this requirement. A grade of C or better is required in these courses.

<sup>7</sup> The three available architectural history electives all satisfy the University Core Curriculum requirements for creative arts and international and cultural diversity.

<sup>8</sup> 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 AREN advising office.

<sup>9</sup> Select from ATMO 363; BIOL 111, BIOL 113; CHEM 222; ECCB 205; GEOL 101, GEOL 104; MATH 304, MATH 311, MATH 323, MATH 401; PHYS 222; RWF 375; STAT 211, STAT 414.

<sup>10</sup> Select from ARCH 327, ARCH 328, ARCH 335, ARCH 421, COSC 253, COSC 321, COSC 325, COSC 326, COSC 461.

<sup>11</sup> Select from AREN 440; CVEN 363, CVEN 365, CVEN 435, CVEN 445; MEEN 421, MEEN 439, MEEN 461, MEEN 463, MEEN 469, MEEN 477.

A grade of C or better is required in all science, mathematics, and engineering courses taken to satisfy degree requirements.

This curriculum lists the minimum number of classes required for graduation. Additional courses may be taken.

## Total Program Hours 128