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
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CHEM 107 | General Chemistry for Engineering Students $^{1,4}$ 3
CHEM 117 | General Chemistry for Engineering Students Laboratory $^{1,4}$ 1
ENGL 103 or ENGL 104 | Introduction to Rhetoric and Composition $^1$ 3
ENGR 102 | Engineering Lab I - Computation $^1$ 2
MATH 151 | Engineering Mathematics $^{1,2}$ 4
University Core Curriculum [link] | 3

Spring

ENGR 216/ PHYS 216 | Experimental Physics and Engineering Lab II - Mechanics $^1$ 2
MATH 152 | Engineering Mathematics II $^1$ 4

Second Year

Fall | Semester Credit Hours
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AREN 200 | Architectural Engineering Foundations $^{1,6}$ 2
AREN 210 | Fundamentals of Building Information Modeling for Architectural Engineering $^1$ 3
ENGR 217/ PHYS 217 | Experimental Physics and Engineering Lab III - Electricity and Magnetism $^1$ 2
MATH 251 or MATH 253 | Engineering Mathematics III $^1$ 3
MEEN 221 | Statics and Particle Dynamics $^1$ 3
PHYS 207 | Electricity and Magnetism for Engineering and Science $^1$ 3

Semester Credit Hours | 15-16
Total Semester Credit Hours | 31-32

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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 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 [link]. 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 [link]. 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 [link].
4. 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.
5. 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.
### Spring
- **AREN 300** Architectural Engineering Systems  
- **CVEN 305** Mechanics of Materials  
- **ECEN 215** Principles of Electrical Engineering  
- **MATH 308** Differential Equations  
- **MEEN 315** Principles of Thermodynamics  
  Select one of the following:  
  - **COMM 203** Public Speaking  
  - **COMM 205** Communication for Technical Professions  
  - **COMM 243** Argumentation and Debate  
  - **ENGL 203** Writing about Literature  
  - **ENGL 210** Technical and Professional Writing  
  **Semester Credit Hours**: 18

### Summer
- **High Impact Experience**  
  - **AREN 399** High Impact Experience for Architectural Engineers  
  **Semester Credit Hours**: 0

### Third Year
#### Fall
- **AREN 320** Lighting Engineering for Buildings  
- **AREN 330** Mechanical Systems for Buildings  
- **CVEN 302** Computer Applications in Engineering and Construction  
- **CVEN 306** Materials Engineering for Civil Engineers  
- **CVEN 345** Theory of Structures  
- **University Core Curriculum**  
  **Semester Credit Hours**: 18

### Spring
- **COSC 333** Project Management for Facility Managers  
- **CVEN 311/311** Fluid Dynamics  
- **CVEN 342** Materials of Construction  
  or **CVEN 343** or Portland Cement Concrete Materials for Civil Engineers  
- **CVEN 444** Structural Concrete Design  
  Select one of the following:  
  - **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**: 15

### Fourth Year
#### Fall
- **AREN 401** Architectural Engineering Design I  
- **MEEN 437** Principles of Building Energy Analysis  
  Select from:  
  - **Math/Science elective**  
  - Technical elective I  
  - University Core Curriculum  
  **Semester Credit Hours**: 15

### Total Program Hours 128

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6. 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.

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 AREN advising office.

8. The three available architectural history electives all satisfy the University Core Curriculum requirements for creative arts and international and cultural diversity.

9. Select from ATMO 363; BIOL 111, BIOL 113; CHEM 222; ECCB 205; GEG 205; GEO 101, GEO 104, MATH 304, MATH 321, MATH 323, MATH 401; PHYS 222, RWF 375; STAT 211, STAT 414.

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


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.