

INTERDISCIPLINARY ENGINEERING - 5-YEAR BACHELOR OF SCIENCE AND MASTER OF PUBLIC HEALTH IN OCCUPATIONAL SAFETY AND HEALTH

The College of Engineering and School of Public Health offer a combination degree program leading to the BS in Interdisciplinary Engineering (ITDE) and Master of Public Health (MPH) in Occupational Safety and Health degrees. This program is structured to allow students to complete it in five academic years, reducing the typical time to completion for sequential degrees by one year.

This combined degree program will educate students in biomedical technology and public health aspects of occupational environments. It utilizes an interdisciplinary approach to integrate relevant aspects of human health monitoring, ergonomics and workplace design, and public education and intervention for the purpose of creating healthier and safer working environments. This program has developed from university interdisciplinary research initiatives that are addressing the grand challenge of overcoming the human and economic burden of diabetes, heart disease, and other chronic conditions in underserved communities.

Students who enroll in the combined program complete their first three academic years in the College of Engineering. Upon the conclusion of the spring semester of the third year, students begin concurrent coursework in the School of Public Health and College of Engineering for the fourth and fifth academic years. Students must complete all curriculum requirements and all additional graduation requirements published in the applicable undergraduate and graduate catalogs for the BS-ITDE degree and the MPH degree.

Students interested in this combined program are strongly advised to meet with an academic advisor in the BS in Interdisciplinary Engineering program as early as possible to understand issues related to admission to both the BS and MPH programs, course scheduling, minimum academic performance standards, and others. Admission to the BS degree program does not guarantee admission to the MPH portion, and students must apply to the School of Public Health in the third academic year in order to begin public health studies in the fourth academic year.

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		Semester
Fall		Credit Hours
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 or Composition and Rhetoric	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		
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
Select one of the following:		3-4
CHEM 120	Fundamentals of Chemistry II ^{1,4}	
University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) ^{3,5}		
Semester Credit Hours		15-16
Total Semester Credit Hours		31-32

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 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.

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.

Second Year

		Semester Credit Hours
Fall		
ENGR 217/ PHYS 217	Experimental Physics and Engineering Lab III - Electricity and Magnetism ¹	2
ITDE 201	Foundations of Interdisciplinary Engineering ¹	1
MATH 251 or MATH 253	Engineering Mathematics III ¹ or Engineering Mathematics III	3
PHYS 207	Electricity and Magnetism for Engineering and Science ¹	3
Select one of the following:		3
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	
Technical electives ^{1,6}		3

Semester Credit Hours 15

Spring

MATH 308	Differential Equations ¹	3
University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) ³		6
Technical electives ^{1,6}		9

Semester Credit Hours 18

Summer

ITDE 399	High Impact Experience for Interdisciplinary Engineers	0
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Semester Credit Hours 0

Third Year

		Semester Credit Hours
Fall		
ITDE 301	Interdisciplinary Engineering Experimentation ¹	1
Select one of the following:		3
MATH 304	Linear Algebra ¹	
MATH 311	Topics in Applied Mathematics I ¹	
MATH 323	Linear Algebra ¹	
MATH 401	Advanced Engineering Mathematics ¹	
University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) ³		3

Technical electives ^{1,6}	9
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Semester Credit Hours 16

Spring

Math/Science elective ^{1,7}	3
Technical electives ^{1,6}	15

Semester Credit Hours 18

Fourth Year

Fall

ITDE 401	Interdisciplinary Engineering Capstone Design I ¹	3
SOPH 601	Health Behavior	3
SOPH 602	Health Policy and Management	3
SOPH 603	Epidemiology	3
PHEO 618	Occupational Safety ⁸	3
University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) ³		3

Semester Credit Hours 18

Spring

ITDE 402	Interdisciplinary Engineering Capstone Design II ¹	2
PHEO 640	Industrial Hygiene ⁸	3
Technical electives ^{1,6}		10

Semester Credit Hours 15

Summer

PHEO 684	Practicum	3
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Semester Credit Hours 3

Fifth Year

Fall

PHEO 630	Environmental/Occupational Diseases	3
PHEO 678	Occupational Biomechanics ⁸	3
PHEO 682	Industrial and System Safety	3
PHEO Electives ⁹		6

Semester Credit Hours 15

Spring

ITDE 499	Degree Plan Approval for ITDE	0
PHEO 645	Health and Safety at Hazardous Waste Sites	3
PHEO 655	Human Factors	3
PHEO 679	Ergonomics of the Upper Extremities ⁸	3
SOPH 680	Public Health Capstone	3

Semester Credit Hours 12

Total Semester Credit Hours 130

⁶ A total of 46 semester credit hours of technical electives are required. To be selected in consultation with ITDE advisor.

⁷ Select from ASTR 314; ATMO 363; BIOL 111, BIOL 113; CHEM 222, CHEM 227, CHEM 310, CHEM 311, CHEM 315, CHEM 316, CHEM 318, CHEM 322; ECCB 205; GEOG 205; GEOL 101, GEOL 104; MARS 408, MARS 410; MATH 304, MATH 311, MATH 323, MATH 401; PHYS 222; RWFM 375; STAT 211, STAT 414.

⁸ Courses taken for credit for both the undergraduate and graduate degree for a combined total of 12 semester credit hours: PHEO 618, PHEO 640, PHEO 678, PHEO 679.

⁹ A total of 6 semester credit hours of PHEO electives are required. To be selected in consultation with PHEO advisor.

The combined program includes a total of 161 semester credit hours, which includes 12 semester credit hours applied both to the Bachelor of Science in Interdisciplinary Engineering and Master of Public Health in Occupational Safety and Health.

Total Program Hours 161