

# 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 <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
Semester Credit Hours		16
Spring		Semester
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>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>		
Semester Credit Hours		15-16
Total Semester Credit Hours		31-32

- <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, 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.

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<sup>4</sup> BMEN, CHEN and MSEN require 8 hours of freshman chemistry, which may be satisfied by CHEM 119 or CHEM 107/CHEM 117 and CHEM 120; Credit by Examination (CBE) for CHEM 119 plus CHEM 120; or 8 hours of CBE for CHEM 119 and CHEM 120. BMEN, CHEN and MSEN should 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
COMM 205 or ENGL 210	Communication for Technical Professions or Technical and Business Writing	3
ENGR 217/PHYS 217	Experimental Physics and Engineering Lab III - Electricity and Magnetism	2
ITDE 201	Foundations of Interdisciplinary Engineering <sup>1</sup>	1
MATH 251	Engineering Mathematics III <sup>1</sup>	3
PHYS 207	Electricity and Magnetism for Engineering and Science <sup>1</sup>	3
Technical electives <sup>1,6</sup>		3
Semester Credit Hours		15
Spring		
MATH 308	Differential Equations <sup>1</sup>	3
University Core Curriculum <sup>3</sup>		6
Technical electives <sup>1,6</sup>		9
Semester Credit Hours		18
Summer		
ITDE 399	High Impact Experience for Interdisciplinary Engineers	0
Semester Credit Hours		0

**Third Year**

Fall		Semester Credit Hours
Select one of the following:		3
MATH 304	Linear Algebra <sup>1</sup>	
MATH 311	Topics in Applied Mathematics I <sup>1</sup>	
MATH 323	Linear Algebra <sup>1</sup>	
MATH 401	Advanced Engineering Mathematics <sup>1</sup>	
University Core Curriculum <sup>3</sup>		3
Technical electives <sup>1,6</sup>		12
Semester Credit Hours		18
Spring		
Technical electives <sup>1,6</sup>		12
Math/Science elective <sup>1,7</sup>		3
Semester Credit Hours		15

**Fourth Year**

Fall		Semester Credit Hours
ENGR 401	Interdisciplinary Design <sup>1</sup>	3
SOPH 601	Thinking in Populations: The Public Health Mindset	2

SOPH 602	Investigation and Control: Acute Public Health Events	3
SOPH 603	Assessment and Intervention: Wicked Problems in Public Health	3
PHEO 618	Occupational Safety <sup>9</sup>	3
University Core Curriculum <sup>3</sup>		3
Semester Credit Hours		17
Spring		
ENGR 402	Interdisciplinary Design II <sup>1</sup>	3
SOPH 604	Framing and Persuasion: Public Health in the Public Sphere	1
PHEO 640	Industrial Hygiene <sup>9</sup>	3
Technical electives <sup>1,6</sup>		10
Semester Credit Hours		17
Summer		
PHEO 684	Practicum	3
Semester Credit Hours		3
Fifth Year		
Fall		
PHEO 630	Environmental/Occupational Diseases	3
PHEO 678	Occupational Biomechanics <sup>9</sup>	3
PHEO 682	Industrial and System Safety	3
PHEO Electives <sup>8</sup>		6
Semester Credit Hours		15
Spring		
PHEO 645	Health and Safety at Hazardous Waste Sites	3
PHEO 655	Human Factors	3
PHEO 679	Ergonomics of the Upper Extremities <sup>9</sup>	3
SOPH 680	Public Health Capstone	3
Semester Credit Hours		12
Total Semester Credit Hours		130

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

<sup>7</sup> A total of 3 semester credit hours of math/science electives are required. To be selected in consultation with ITDE advisor.

<sup>8</sup> A total of 6 semester credit hours of PHEO electives are required. To be selected in consultation with PHEO advisor.

<sup>9</sup> 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.

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 Semester Credit Hours for Combination Program 161**