

**BSCE Program: ABET Student Outcomes and Educational Objectives**

<b>Outcome</b>	<b>Current Description</b>	<b>Educational Objectives Based on Bloom's Taxonomy</b>
1	An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.	<b>Analysis</b>
2	An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.	<b>Synthesis</b>
3	An ability to communicate effectively with a range of audiences.	<b>Application</b>
4	An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts	<b>Application</b>
5	An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives	<b>Application</b>
6	An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.	<b>Analysis</b>
7	An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.	<b>Application</b>

**BSCE Program: Civil Specific Outcomes and Educational Objectives**

<b>Outcome</b>	<b>Current Description</b>	<b>Educational Objectives Based on Bloom's Taxonomy</b>
<b>A</b>	The graduates can apply knowledge in mathematics through differential equations; calculus-based physics; and general chemistry, and at least one additional area of science. The graduates are also able to apply probability and statistics to address uncertainty.	<b>Application</b>
<b>B</b>	The graduates can analyze and solve problems in a minimum of four (4) recognized major CE areas	<b>Analysis</b>
<b>C</b>	The graduates have the ability to conduct laboratory experiments and to critically analyze and interpret data in at least two technical areas of CE.	<b>Analysis</b>
<b>D</b>	The graduates have the ability to perform CE design in at least two civil engineering contexts by means of design experiences integrated throughout the professional component of the curriculum. The graduates have the ability to include principles of sustainability in design.	<b>Synthesis</b>
<b>E</b>	The graduates have an understanding of professional practice issues such as: procurement of work; bidding versus quality-based selection processes; how the design professionals and the construction professions interact to construct a project, the importance of professional licensure and continuing education, and/or other professional practice issues.	<b>Analysis</b>
<b>F</b>	The graduates have an understanding of the basic concepts in project management, business, public policy, and leadership through discussion in different courses.	<b>Comprehension</b>

**BSCE Program: Mapping of Courses to the ABET's General Student Outcomes 1-7**

Approved on May 1, 2018 (effective August 20, 2018)

Outcome Objectives	1	2	3	4	5	6	7
MATH 1850 Calculus I	K						
MATH 1860 Calculus II	C						
MATH 2850 Calculus III	A						
MATH 2890 Num Methods & Lin Algebra	A						
MATH 3860 Differential Equations	A						
CHEM 1230 General Chemistry I	A						
PHYS 2130 Physics I	K					K	
PHYS 2140 Physics II	A					A	
ENGL 1110 College Composition I							
ENGL 2900 or 2950 Report Writing			K				
CIVE 1000 Freshman CE Experience	K	K	K	K	K		K
*EECS 1050 Intro to Computing in C/C++	A		A				
CIVE 1100 Measurements for CE's	A	A			A		
CIVE 1110 Computer Aided Drafting	A	K					
CIVE 1150 Engineering Mechanics - Statics	AN						
CIVE 1160 Engineering Mechanics - Strength of Materials	AN						
CIVE 1170 Fluid Mechanics for CE's	A			K			
CIVE 2000 Professional Development			A	C			C
CIVE 2110 Civil Engineering Materials with Lab	A	A	C		A	A	
MIME 2300 Engineering Dynamics	AN		A				
MIME 2600 Engineering Economics	AN			A			
CIVE 3120 CE Systems Analysis	A						
CIVE 3210 Soil Mechanics	A				A	A	
CIVE 3220 Foundation Engineering	A	C	A				
CIVE 3310 Structural Analysis	A						
CIVE 3410 Steel Design I	A	A					
CIVE 3420 Reinforced Concrete Design I	A	A					
CIVE 3510 Transportation Engineering I	A						
CIVE 3520 Transportation Engineering II	A	A					
CIVE 3610 Water Supply & Treatment	AN	C			A	AN	
CIVE 3620 Air Pollution Engineering I	A	A	A				
CIVE 3630 Waste Water Engineering	AN	A		C	A		
MIME 4000 Engineering Statistics I	A		A				
CIVE 4750 Senior Design Project	A	S	A	A	A	A	A
MIME 1650 Materials Eng and Lab <b>OR</b> MIME 3400 Intro to Thermal Science <b>OR</b> EECS 2340 Elec Circuits for Non-majors	A						
University core curriculum in Humanities, Social Sciences and Multicultural Studies				A			
Approved Civil Eng technical electives	A						

Key K = Knowledge, C = Comprehension, A = Application, AN = Analysis, S = Synthesis, E = Evaluation

\* No longer available to students entering from fall 2008

**BSCE Program: Mapping of Courses to Civil Specific Program Outcomes**  
February 24, 2016/January 31, 2017

Civil Specific Program Outcomes	A	B	C	D	E	F
MATH 1850 Calculus I	C					
MATH 1860 Calculus II	C					
MATH 2850 Calculus III	C					
MATH 2890 Num Methods & Lin Algebra	A					
MATH 2860 Differential Equations	C					
CHEM 1230 General Chemistry I	C					
*CHEM 1280 General Chemistry Lab I	A		C			
PHYS 2130 Physics I	A		C			
PHYS 2140 Physics II	A		C			
ENGL 1110 College Composition I						
ENGL 2950 or 2960 Report Writing						
CIVE 1000 Freshman CE Experience		K		K	K	K
*EECS 1050 Intro to Computing in C/C++	A					
CIVE 1100 CE Measurements	A		AN	C		
CIVE 1110 Computer Aided Drafting	A					
CIVE 1150 Engineering Mechanics - Statics	A					
CIVE 1160 Engineering Mechanics - Strength of Materials	A					
CIVE 1170 Fluid Mechanics for CE's	A					
CIVE 2000 Professional Development					C	
CIVE 2110 Civil Engineering Materials with Lab	A		AN	A		
MIME 2300 Engineering Dynamics	A					
MIME 2600 Engineering Economics	A				C	
CIVE 3120 CE Systems Analysis	A					
CIVE 3210 Soil Mechanics	A	AN / 1	AN / 1			
CIVE 3220 Foundation Engineering	A	AN / 1		S		
CIVE 3310 Structural Analysis	A	AN / 3				
CIVE 3410 Steel Design I	A	AN / 3		S		
CIVE 3420 Reinforced Concrete Design I	A	A / 3		S		
CIVE 3510 Transportation Engineering I	A	AN / 2				
CIVE 3520 Transportation Engineering II	A	AN / 2		A		
CIVE 3610 Water Supply & Treatment	A	AN / 4	AN / 4	S		C
CIVE 3620 Air Pollution Engineering I	A	AN / 4		S		C
CIVE 3630 Waste Water Engineering	A	AN / 4		S		C
MIME 4000 Engineering Statistics I	C					
CIVE 4750 Senior Design Project	A	AN / 1 - 4		S	AN	C
MIME 1650 Materials Eng and Lab <b>OR</b> MIME 3400 Intro to Thermal Science <b>OR</b> EECS 2340 Elec Circuits for Non-majors	A					
University core curriculum in Humanities, Social Sciences and Multicultural Studies						
Approved Civil Eng technical electives	A					

Key K = Knowledge, C = Comprehension, A = Application, AN = Analysis, S = Synthesis, E = Evaluation, X/1 = Geotechnical, X/2 = Transportation, X/3 = Structural, X/4 = Environmental (this shows which courses fall in the required four major areas and which areas the lab components are in)

\* No longer available to students entering from fall 2008

**BSEnvE Program: ABET Student Outcomes and Educational Objectives**

<b>Outcome</b>	<b>Current Description</b>	<b>Educational Objectives Based on Bloom's Taxonomy</b>
<b>1</b>	An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.	<b>Analysis</b>
<b>2</b>	An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.	<b>Synthesis</b>
<b>3</b>	An ability to communicate effectively with a range of audiences.	<b>Application</b>
<b>4</b>	An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts	<b>Application</b>
<b>5</b>	An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.	<b>Application</b>
<b>6</b>	An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions	<b>Analysis</b>
<b>7</b>	An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.	<b>Application</b>

**BSEnvE Program: Environmental Specific Outcomes and Educational Objectives**

<b>Outcome</b>	<b>Current Description</b>	<b>Educational Objectives Based on Bloom's Taxonomy</b>
The curriculum must prepare graduates to:		
<b>A</b>	Apply knowledge of mathematics through differential equations, probability and statistics, calculus-based physics, chemistry (including stoichiometry, equilibrium, and kinetics), an earth science, a biological science, and fluid mechanics.	<b>Application</b>
<b>B</b>	Formulate material and energy balances, and analyze the fate and transport of substances in and between air, water, and soil phases.	<b>Analysis</b>
<b>C</b>	Conduct laboratory experiments, and analyze and interpret the resulting data in more than one major environmental engineering focus area, e.g., air, water, land, environmental health.	<b>Analysis</b>
<b>D</b>	Design environmental engineering systems that include considerations of risk, uncertainty, sustainability, life-cycle principles, and environmental impacts; and apply advanced principles and practice relevant to the program objectives.	<b>Synthesis</b>
<b>E</b>	Understand concepts of professional practice, project management, and the roles and responsibilities of public institutions and private organizations pertaining to environmental policy and regulations.	<b>Comprehension</b>

## BSEnvE Program: Mapping of Courses to the ABET General Student Outcomes

**Effective August 20, 2018**

<b>Student Outcome</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
CHEE 1000 Orientation & Computing				K			K
CIVE 2000 Professional Development			A	C			C
CHEE 2010 Mass and Energy Balances	AN				K	A	
CHEE 2230 Thermodynamics I	AN						
CIVE 1150 Engineering Mechanics - Statics	AN						
CIVE 1160 Strength of Materials	AN						
CIVE 1170 or CHEE 2110 Fluid Mechanics	A						
CIVE 2550 Sustainable Problem Solving		A	A	A	A		A
CIVE 3210 Soil Mechanics	A				A	A	
CIVE 3610 Water Supply & Treatment	AN	C			A	AN	
CIVE 3620 Air Pollution Engineering I	A	A	A				
CIVE 3630 Waste Water Engineering	AN	A		C	A		
MIME 4000 Engineering Statistics I	A						
CIVE 4680 Environmental Law				A			
CIVE 4750 Senior Design Project	A	S	A	A	A		A

<b>Student Outcome</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
EEES 2010 Intro to Environmental Studies				K			
EEES 2150 Biodiversity				C			
EEES 3050 Ecology				C			
ECON 3240 Environmental Economics				C			
EEES 4450 Hazardous Waste Management				A			

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**BSEnvE Program: Mapping of Courses to Environmental Engineering Specific Student Outcomes (effective Aug. 20, 2018)**

<b>EnvE Specific Student Outcomes</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>
CHEE 1000 Orientation & Computing for CHEE		K		K	K
CIVE 1150 Engineering Mechanics - Statics	A				
CIVE 1160 Strength of Materials	A				
CIVE 1170 Fluid Mechanics	A	C			
CIVE 2000 Professional Development					C
CHEE 2010 Mass and Energy Balances		A			
CHEE 2230 Thermodynamics I	X				
CIVE 2550 Sustainable Problem Solving 01				A	
CIVE 2550 Sustainable Problem Solving 02				A	
CIVE 2550 Sustainable Problem Solving 03				A	C
CIVE 2550 Sustainable Problem Solving 04				A	C
CIVE 3210 Soil Mechanics	A	AN	AN		
CIVE 3610 Water Supply & Treatment	A	AN	AN	S	
CIVE 3620 Air Pollution Engineering I	A	AN		S	
CIVE 3630 Waste Water Engineering	A	AN		S	
CIVE 4680 Environmental Law					A
CIVE 4750 Senior Design Project	A	AN		S	AN

<b>EnvE Specific Student Outcomes</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>
EEES 2010 Intro to Environmental Studies	K				
EEES 2150 Biodiversity	C				
EEES 3050 Ecology	A				
EEES 4450 Hazardous Waste Management					A
ECON 3240 Environmental Economics	A				A

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