

# 2014-2015 Catalogue

## CIVIL ENGINEERING B.S.CE.

All students must meet the University Requirements.

The curriculum in civil engineering provides a strong foundation in mathematics, and physical, natural and engineering sciences. Instruction in civil engineering disciplines includes structural engineering, soil mechanics, hydraulics, environmental engineering, and transportation engineering.

A Civil Engineering degree is excellent preparation for immediate employment in consulting firms, government agencies, non-profits, and industry. Additionally, many graduates continue their education at the graduate-level.

A systems approach to engineering problem solving is central to the curriculum and involves integrating the short and long-term social, environmental and economic aspects and impacts into engineering solutions. As part of this approach, service-learning projects with local communities and non-profit groups are incorporated into some courses. Real-world engineering design culminates in a required major design experience in the senior year, which draws upon prior course work and focuses on technical and non-technical issues and expectations of professional practice. Other aspects of the program include opportunities for laboratory and research experience, integrated information technology content, development of communication skills, and a sense of community between students and the faculty.

The B.S. in Civil Engineering requires a minimum of 125 credits. Students are encouraged to pursue minors or focus areas in other disciplines that complement their engineering experience. International education and work experiences are also encouraged. Students should consult their advisors early in their program in order to plan accordingly.

## CIVIL ENGINEERING PROGRAM EDUCATIONAL OBJECTIVES

Graduates of the program are expected to:

1. Practice civil engineering, use their program knowledge in other avenues, or enter graduate school;
2. Apply engineering principles to analysis, design, construction, management, and preservation of engineered and natural systems;
3. Participate in comprehensive design activities carried out in interdisciplinary settings that involve applying current and emerging practices in civil engineering;
4. Actively participate in professional and/or community-based service (local, national or global) that benefits the profession and the public;
5. Be capable of effective leadership and communication;
6. Be capable of professional licensure, and eager and able to engage in further study and professional development;

7. Consider the social, economic, and environmental aspects as part of the engineering solution and problem definition.

## PLAN OF STUDY

### THE CURRICULUM FOR THE B.S. IN CIVIL ENGINEERING

First Year	Credits	
	Fall	Spring
CE 003 Intro to Civil & Envir Engr	2	
CHEM 031 General Chemistry 1	4	
ENGS 001 Written Expression	3	
MATH 021 Calculus I	4	
HSS Electives <sup>1</sup>	3	3
CS 020 Programming for Engineers		3
ENGR 002 Graphical Communication		2
MATH 022 Calculus II		4
PHYS 031 Physics for Engineers I		4
PHYS 030 Physics Problem Solving I (Optional)		0-1
Year Total:	16	16-17

Sophomore	Credits	
	Fall	Spring
CE 001 Statics <sup>2</sup>	3	
CE 010 Geomatics <sup>2</sup>	4	
MATH 121 Calculus III	4	
STAT 143 Statistics for Engineering	3	
HSS Elective <sup>1</sup>	3	
CE 132 Environmental Systems <sup>2</sup>		3
EE 100 Electrical Engr Concepts		4
MATH 124 Linear Algebra		3
MATH 271 Adv Engineering Mathematics		3
ME 012 Dynamics <sup>2</sup>		3
Year Total:	17	16

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Junior	Credits	
	Fall	Spring
CE 100 Mechanics of Materials	3	
CE 133 Transportation Systems	3	
CE 134 Sustainable Eng. Economics	3	
CE 160 Hydraulics	4	
GEOL 001 Earth System Science or BIOL 001 Principles of Biology or BIOL 002 Principles of Biology	4	
CE 101 Materials and Structures Lab		3
CE 151 Water & Wastewater Engineering		3
CE 170 Structural Analysis		3
CE 180 Geotechnical Principles		4
ME 040 Thermodynamics		3
Year Total:	17	16
Senior	Credits	
	Fall	Spring
CE 172 Structural Steel Design or CE 173 Reinforced Concrete	3	
Science/Tech Elective <sup>3</sup>	3	
Design Electives <sup>4</sup>	3	3
Professional Electives <sup>5</sup>	3	3
HSS Electives <sup>1</sup>	3	3
CE 175 Senior Design Project		3
Year Total:	15	12
<b>Total Credits in Sequence:</b>	<b>125-126</b>	

<sup>4</sup> Typical Design electives include CE 241, CE 256, CE 261, CE 265, CE 273, CE 281, CE 284, CE 285 and some CE 295 courses (consult advisor). CE 173 is a design elective if CE 172 has also been taken.

<sup>5</sup> Professional electives include all Design electives, CE 191, CE 192 and any 200-level CE course.

<sup>1</sup> Required Humanities and Social Science (HSS): fifteen credits of approved HSS electives, including three credits of D1 and three credits of D1 or D2. Six HSS credits must be from the same offering department (e.g. ANTH or GEOG).

<sup>2</sup> Pre-Engineering Technical (PET) requirements: MATH 021 and MATH 022, CHEM 031, PHYS 031 and CS 020. All PET courses must be completed with C- or better before any sophomore engineering courses may be taken.

<sup>3</sup> Science/Tech elective: ME 042, PSS 161, PSS 264, PSS 266, PSS 268, PSS 269 or any 100-level or above course in engineering or BIOL, CHEM, GEOL, PHYS.