

2021-2022

**Course Requirements / Program Objectives\***  
**Bachelor of Science in Civil Engineering (130 Credit Hours)**

FRESHMAN YEAR

<u>Fall Semester</u>			<u>Spring Semester</u>		
MATH 157	Calculus & Analytical Geometry I	4 _____	MATH 258	Calculus & Analytical Geometry II	4 _____
CHEM 101	General Chemistry I (& Lab)	4 _____	PHYS 103	Scientific Physics I (& Lab)	5 _____
COMM 100	Speech and Communication	3 _____	ENSC 205	Statics	3 _____
ENSC 191	Engineering Seminar I	3 _____	ENSC 192	Engineering Seminar II	3 _____
PHIL 101	Reasoning	3 _____	PHIL 201	Philosophy of Human Nature	3 _____
17 credits			18 credits		

SOPHOMORE YEAR

<u>Fall Semester</u>			<u>Spring Semester</u>		
CENG 225	Geology	3 _____	ENSC 301	Mechanics of Materials I	3 _____
CENG 261	Introduction to Geomatics (& Lab)	3 _____	ENSC 306	Dynamics	3 _____
CENG 252	Civil Fluid Mechanics	3 _____	MATH 260	Ordinary Differential Equations	3 _____
MATH 259	Calculus & Analytic Geometry III	4 _____	MATH 321	Statistics for Experimentalists	3 _____
RELI XXX	Christian / Catholic Traditions	3 _____	RELI XXX	World / Comparative Religion	3 _____
16 credits			15 credits		

JUNIOR YEAR

<u>Fall Semester</u>			<u>Spring Semester</u>		
CENG 301	Structural Analysis I	3 _____	CENG 303	Environmental Engineering (& Lab)	4 _____
CENG 302L	Construction Materials Lab	2 _____	CENG 352	Hydraulic Engineering (& Lab)	4 _____
CENG 318	Transportation Engineering	3 _____	CENG 391	Civil Engineering Design/Practice	3 _____
CENG 331	Soil Mechanics (& Lab)	4 _____	CENG 412	Concrete Design	3 _____
CENG 351	Hydrology	3 _____	_____	CORE #	3 _____
PHIL 301	Ethics	3 _____			
18 credits			17 credits		

SENIOR YEAR

<u>Fall Semester</u>			<u>Spring Semester</u>		
ENSC 491	Senior Design Project I	2 _____	ENSC 492	Senior Design Project II	3 _____
CENG 404	Sustainable Systems	3 _____	_____	Technical Elective *	3 _____
_____	Technical Elective *	3 _____	_____	Technical Elective *	3 _____
_____	Technical Elective *	3 _____	_____	Technical Elective * or CORE #	3 _____
_____	Technical Elective * or CORE #	3 _____	XXXX 432	Core Integration Seminar	3 _____
			ENSC 400	FE Examination	0 _____
14 credits			15 credits		

\* Technical Electives (5 courses, see list on back)

CORE # - Social Science, History, & Literature (select 2 for 6 total credits)

Also need additional core designators: [1] 3 cr. social justice, [2] 3 cr. writing enriched; and, [3] 3 cr. global studies embedded in other courses

Technical Electives

## **Technical Electives**

Courses from the following list satisfy the requirement for having 5 courses (15 credits minimum) of technical electives. To aid in course selection, the discipline(s) covered in each course are identified as follows: environmental engineering (*E*), geotechnical engineering (*G*), structural engineering (*S*), transportation engineering (*T*), water resources engineering (*W*), and Construction Engineering and Management (*C*). Other courses may be used with approval from the Civil Engineering Chair.

### **Typically Offered in Fall**

CENG 411 Steel Design (S, C)  
CENG 418 Transportation Systems Design (T)  
CENG 420 Structural Dynamics (S)  
CENG 421 Stormwater Management (E,W)  
CENG 424 Water Treatment Processes (E)  
CENG 426 Stream Restoration (E,W)  
CENG 473 Foundation Design (G, S, C)

### **Typically Offered in Spring**

CENG 422 Structural Analysis II (S)  
CENG 414 Waste Management (E)  
CENG 415 Masonry and Timber Design (S, C)  
CENG 417 Traffic Engineering (T)  
CENG 450 Watershed Modeling (E,W)  
CENG 464 Ground Behavior for Structures (G, S, C)  
ENSC 481 Construction Management (C)

### **Only Occasionally Offered**

CENG 413 Groundwater (E, G, W)  
CENG 416 Hydrogeology (E, G, W)  
CENG 427 Infrastructure Design (E, G, T, W)  
CENG 428 Urban Design and Development (E)  
CENG 432 Hazard Mitigation (E, W, T)  
CENG 444 Air Pollution (E)  
CENG 454 Biological Treatment Processes (E)  
CENG 463 Pavement Design (G, S, T)  
MENG 465 Introduction to Finite Elements (G, S)

### **Typically Offered Every Other Summer**

CENG 440 Gonzaga in Delft: Sustainable Cities (E,S,T,W)  
(3 week study abroad course in the Netherlands)

## **Engineering Program Objectives**

Civil Engineers educated at Gonzaga University will:

1. Develop engineered solutions that are well-conceived and carefully implemented to meet public and private sector needs.
2. Contribute effectively to organizations as leaders and/or team members,
3. Foster personal and organizational success in a dynamic, globalized professional environment,
4. Improve society by applying Catholic, Jesuit, humanistic values to their professional and civic responsibilities.

These four Objectives identify the actions which we believe our graduates will be trained to participate in as they contribute to society in their careers and professions.