



## Volgenau School of Engineering

# CIVIL & INFRASTRUCTURE ENGINEERING, B.S. 2016 - 2017

The George Mason University Sid and Reva Dewberry Department of Civil, Environmental, and Infrastructure Engineering (CEIE) offers a Bachelor of Science in Civil and Infrastructure Engineering (CIE) that prepares graduates to practice across the spectrum of civil engineering. Our degree program provides the skills needed to identify solutions that address the most pressing civil infrastructure needs of our built environment. These include: transportation, water resources, environment, structural, geotechnical, construction engineering, and land development. The curriculum focuses on educating students not only in the science and application of engineering tools, but in their integration for engineering practice. Students are trained to conceive, develop, design, construct, maintain and renew these systems in a complex urban environment, whether they are working in the Washington, DC metropolitan area, or the megacities of Asia; whether they are addressing the small towns of America's heartland or the villages of the developing world. The Civil and Infrastructure Engineering program is accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>.

### Who do CIE grads work for and what do they do?

A CIE graduate is expected to be competent in applying both the art and science of engineering, adept at understanding and using the tools available, and capable of examining problems from a variety of perspectives. He or she should also be able to assess objectives and concerns, identify potential solutions, analyze options, and identify and execute a solution. CIE graduates work for organizations including: construction and design-build firms, Departments of Transportation, consulting engineers, water, wastewater, and power utilities, local and federal government, land development firms, and information technology firms.

In many cases, CIE alumni return to Mason to pursue advanced degrees or continue their education at other prestigious graduate schools including Stanford University, Texas A&M University, University of California, University of Florida, University of Virginia, and Virginia Tech.

### Local Industry Participation, Scholarships & Internships

The Civil Engineering Institute (CEI) is a nonprofit corporation supporting Mason's CIE program. CEI was founded by the local engineering industry in 1989. Among many other things, CEI provides financial support to CIE students through scholarships and paid summer internships.

### About the Degree

How we teach our courses is just as important as what we teach. In our classes, we provide students with a variety of computer-based analytical and design tools widely used in the engineering industry. The philosophical thread that runs through the entire Civil & Infrastructure Engineering experience is that engineering is fun, is challenging, demands cooperation and skill, and is of vital importance to society. Furthermore, we have developed a close relationship with the engineering industry to ensure that sound professional practice is used in the classroom. This relationship ensures that our courses offer relevant engineering experiences and exposure to industry leaders.

### Admission Requirements

Admission to George Mason is competitive in that the number of qualified candidates for admission exceeds the number of new students who can be accommodated. Each candidate who presents sufficient admission qualifications is reviewed in context of other qualified applicants. An offer of admission is valid only for the semester for which the student applied. Application for undergraduate admission should be made at <http://admissions.gmu.edu/>.

### Freshman Requirements

The following factors are considered during application review:

- Cumulative high school grade point average for course work completed in grades 9 through 12
- Level of difficulty of course work elected throughout the high school years, particularly in English, mathematics, laboratory sciences, and foreign language
- Scores from the SAT and/or ACT, and TOEFL if appropriate.

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## Transfer Requirements

The University accepts qualified students who wish to transfer from other colleges. A transfer applicant who has completed at least 30 semester hours of transferable credit must submit an official transcript from each collegiate institution attended. Transfer admission to VSE is competitive and requires completion of Calculus I and II with grades of B or better, and completion of 30 transferable credits, including English Composition. Transfer applicants with fewer than 30 semester hours of transferable credit must also submit a copy of their secondary school record, as well as SAT or ACT scores.

## Sample Schedule

*This table presents a sample schedule that an undergraduate CIE major would pursue in order to obtain a Bachelor's degree.*

1 <sup>st</sup> Semester		2 <sup>nd</sup> Semester			
ENGR 107	Introduction to Engineering	2	CDS 130	Computing for Scientists	3
CHEM 251	General Chemistry for Engineers <sup>1</sup>	4	MATH 114	Analytical Geometry & Calculus II	4
ENGH 101	Composition	3	PHYS 160	University Physics I	3
ECON 103	Contemporary Microeconomic Principles	3	PHYS 161	University Physics I Laboratory	1
MATH 113	Analytical Geometry & Calculus I	4	****	Approved Mason Core Course <sup>2</sup>	3
<b>TOTAL</b>		<b>16</b>			<b>TOTAL 14</b>
3 <sup>rd</sup> Semester		4 <sup>th</sup> Semester			
CEIE 203	Geomatics and Engineering Graphics	3	CEIE 210	Statics	3
MATH 213	Analytical Geometry & Calculus III	3	CEIE 240	Hydraulics	3
PHYS 260	University Physics II	3	MATH 214	Elementary Differential Equations	3
PHYS 261	University Physics II Laboratory	1	ENGH 302	Advanced Composition (Natural Sciences)	3
COMM 100	Public Speaking	3	STAT 344	Probability and Statistics for Engineers	3
****	Approved Mason Core Literature Course	3			
<b>TOTAL</b>		<b>16</b>			<b>TOTAL 15</b>
5 <sup>th</sup> Semester		6 <sup>th</sup> Semester			
CEIE 301	Engineering & Econ Models in Civil Engr	3	CEIE 311	Structural Analysis	3
CEIE 304	Junior Engineering Competency Exam	0	CEIE 355	Environmental Engineering and Science	3
ENGR 310	Mechanics of Materials	3	CEIE 360	Introduction to Transportation Engineering	3
CEIE 331	Soil Mechanics	3	CEIE 370	Construction Systems	3
CEIE 340	Water Resources Engineering	3	BIOL 377	Applied Ecology	3
PHYS 266	Introduction to Thermodynamics	1			
****	Approved Mason Core Course <sup>2</sup>	3			
<b>TOTAL</b>		<b>16</b>			<b>TOTAL 15</b>
7 <sup>th</sup> Semester		8 <sup>th</sup> Semester			
CEIE 404	Senior Engineering Competency Examination	0	CEIE 490	Senior Design Project	3
ENGR 409	Professional Practice and Management in Engr	1	CEIE 4xx	Approved Civil Engineering Technical Core Elective <sup>3</sup>	3
CEIE 4xx	Approved Civil Engineering Technical Core Elective <sup>3</sup>	3	CEIE 4xx	Approved Civil Engineering Technical Elective <sup>4</sup>	3
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<b>TOTAL</b>		<b>16</b>			<b>TOTAL 12</b>

<sup>1</sup> CHEM 211 and CHEM 213 will substitute for CHEM 251.

<sup>2</sup> Each student must satisfy Mason Core requirements in two of three areas: Arts, Global Understanding and Western Civilization/World History. The two Mason Core areas to be satisfied must be approved by the CEIE advisor.

<sup>3</sup> A total of eight CEIE Technical Elective courses must be selected. The four Core Electives must be selected from four different Civil Engineering specialty areas: structural engineering (CEIE 412 or 413), water resources engineering (CEIE 440 or 442), environmental engineering (CEIE 450, 453), transportation engineering (CEIE 461 or 462), construction (CEIE 471, CEIE 472) and geotechnical (CEIE 432 and 435).

<sup>4</sup> The fifth, sixth and seventh CEIE Technical Elective course may be selected from any CEIE 4xx course. The eighth CEIE technical Elective course may be selected from any CEIE 4xx course or related advanced science or engineering course approved by the student's advisor.

## We invite requests for additional information. Please contact:

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