

# Civil & Environmental Engineering

THE SONNY ASTANI DEPARTMENT OF CIVIL & ENVIRONMENTAL ENGINEERING

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*Civil and Environmental Engineers address many of the vital needs of our modern society. They improve quality of life, promote economic growth, and protect people from hazards of natural and human origins.*

## MAJORS & AREAS OF EMPHASIS

- ➔ Civil Engineering
- ➔ Civil Engineering (Building Science)
- ➔ Civil Engineering (Construction Engineering And Management)
- ➔ Civil Engineering (Environmental)
- ➔ Civil Engineering (Structural Engr.)
- ➔ Civil Engineering (Water Resources)
- ➔ Environmental Engineering

## DESIGN, BUILD, IMPROVE, REPEAT

Civil and Environmental Engineers create, construct, and manage the infrastructure systems we use in our everyday lives: transportation, water, power distribution, waste disposal, environment, as well as residential, industrial, and commercial structures. Civil and Environmental Engineers support the global economy, secure the health and security of diverse communities, and enhance environmental quality worldwide. They design, build and operate our nation's infrastructure – highways, bridges, wharf and harbor structures, industrial facilities – and address the challenges of ground water and air pollution as well as industrial and hazardous waste management. They monitor the quality of the air, water and land, and enhance the protection of our environment.

## EMPHASES & OPTIONS

The Bachelor's degree in Civil Engineering provides a broad base of core Civil Engineering courses and prepares students for both engineering practice and graduate studies. Students explore structural engineering, geotechnical engineering, construction, transportation, environmental engineering, and water resources.

The Building Science emphasis is a joint architecture/engineering program. Students will learn all aspects of building technology from site selection to building construction, in addition to gaining a holistic perspective of building design from architectural design to structural design, and from the artistic to the functional.

The Construction Engineering and Management emphasis provides students with additional courses in design and construction. Students can further hone their understanding of structural design, sustainable construction, methods and equipment, and other elements of construction.

The Environmental emphasis includes study in both environmental and civil engineering topics. Students will learn engineering approaches required to provide safe drinking water, maintain air quality, and protect the environment.

The Structural Engineering emphasis focuses on the design of safe and efficient structural systems. Students will be prepared to design structures such as bridges, buildings, and offshore structures that can resist a variety of forces such as earthquakes and wind loadings.

The Water Resources Engineering emphasis offers students the opportunity to specialize in the design of systems related to water supply, water treatment, and hydraulics.

The Bachelor's degree in Environmental Engineering covers engineering approaches to issues related to air quality, water pollution, and sites contaminated due to spills or improper disposal of hazardous substances. Our students are broadly educated and technically trained to address the spectrum of issues facing the environment.

## RESEARCH HIGHLIGHTS

**Sustainable Development:** long-term viability of natural resources and engineered civil systems. **Water Quality, Access, And Distribution:** providing an adequate supply of potable water, considering population growth and climate variability. **Disasters And Extreme Events:** both natural (e.G. Earthquakes, tsunamis, floods, climate change) and man-made (e.G. Terrorist attacks, engineering failures, industrial accidents) disasters. Research and education in this area includes all aspects of an event, from a fundamental understanding of the physical processes controlling its evolution to the resulting environmental and social reaction. **Coupling Of Complex Systems:** most natural and engineered systems are known to be complex, defined as systems characterized by their display of patterns of structure or behavior at one level of system organization that are diagnostic of interactions among parts of the system at other levels.

## COMPANIES HIRING YOU

Campbell Concrete, CH2M Hill, Chevron. City/ County of Los Angeles, Kiewit Pacific Company, Leighton Group, PPG Industries, Rudolph & Sletten, The Reynolds Group... And many more!

## CAREER OPTIONS

- ✔ Become a structural engineer and build sustainable buildings
- ✔ Develop land and mitigate risks of natural and manmade disasters
- ✔ Manage civil infrastructure
- ✔ Design and build roads, bridges, dams, tunnels, and airports
- ✔ Develop environmental public policy
- ✔ Create waste removal systems and treatment processes
- ✔ Design transportation systems

## FACULTY HIGHLIGHTS

**Dr. Becerik-Gerber** is a Dean's Professor of Civil and Environmental Engineering at the University of Southern California. Her research focuses on interactions between the built environment and its users and aims to understand and predict how and why humans interact with their built environment to improve human experience and to achieve energy efficiency, safety, security, health and well-being. In her work, Dr. Becerik-Gerber extensively uses machine learning and data science to improve design, construction and system intelligence of user-centered built environments. Students have the opportunity to perform research with Dr. Becerik-Gerber through her program, Innovation in Integrated Informatics LAB (iLAB) and the Center for Intelligent Environments, Technology and Society (CENTIENTS). Dr. Becerik-Gerber, along with Dr. David Gerber, and Prof. Brad Cracchiola, created an innovative course that leads a taskforce of students to seek life-saving or life-improving innovations aimed at the most vulnerable and hardest-to-reach people.



**Dr. Bora Gencturk** earned his Ph.D. from the University of Illinois at Urbana-Champaign and teaches courses in mechanical behavior of materials, structural dynamics and earthquake engineering, and probabilistic methods and structural reliability. His research focuses on the durability and extreme event resilience of reinforced concrete structures with an emphasis on application of high performance materials. Dr. Gencturk is also the director of the Structures and Materials Research Laboratory (SMRL). The laboratory is specially designed to conduct material, and reduced-, large- and full-scale structural testing.



**Dr. Amy Childress** is a Gabilan Distinguished Professor of Science and Engineering and Director of the Environmental Engineering Program. Her research program focuses on the interrelationship of water and energy. Through fundamental understanding of complex interfacial and transport mechanisms, development of laboratory- and pilot-scale systems, and implementation of new modeling approaches, Dr. Childress' research team seeks holistic and realistic solutions to the problem of finite water and energy resources. Her research team focuses on innovative solutions to contaminant and energy challenges including pressure-driven membrane processes as industry standards for desalination and wastewater reclamation, membrane bioreactor technology, and colloidal and interfacial aspects of physicochemical processes. Dr. Childress serves on US EPA's Science Advisory Board Drinking Water Committee, as an editor of Desalination, and on expert advisory panels for regional and international desalination and wastewater reclamation projects; she is also a recent Fulbright US scholar and a past-president of the Association of Environmental Engineering and Science Professors.



**Dr. George Ban-Weiss** earned his Ph.D. from the University of California, Berkeley and holds the Pasquale and Adelina Arpea Early Career Chair. His research investigates how climate, air quality, and land cover interact from urban to global scales. He also researches practical solutions for mitigating climate change and air pollution in urban areas. Dr. Ban-Weiss teaches air pollution, climate change, and climate science fundamentals.



**Dr. Adam Smith** received his Ph.D. in Environmental Engineering from the University of Michigan in 2014. He teaches courses on biological treatment processes and microbiology. His research interests include resource recovery from waste streams, microbial syntrophy in anaerobic systems, implications of low temperatures on microbial communities, biofilm-based treatment systems, and sustainability assessment applied to water infrastructure systems.



## ALUMNI HIGHLIGHTS

**Eli Kotelov | B.S. Environmental Engr., M.S. Mechanical Engr. (Energy Conversion) '20** Eli earned his undergraduate and graduate degrees through Viterbi's Progressive Degree Program. He is now working with Invenergy LLC as part of their Asset Management team. He is working on projects that are seeking to optimize the use of renewable energy from existing power plants.



**Junco Nelson | B.S. Civil Engr. (Construction) '20** Junco joined Hathaway Dinwiddie Construction Company as a project engineer, where she had been interning for the past year. Her current project is the Lucas Museum of Narrative Arts in Exposition Park, where she works with the facade team.



**Emelia Park | B.S. Civil Engr. '19** After graduation, Emelia has been working at KPFF Consulting Engineers in Downtown LA in their civil engineering division. As a project engineer, she works with architects and other engineers on site development, utility design, and stormwater management for projects across southern California. She has worked on projects that include the Korean American National Museum, Palo Alto Inn, MonteCedro Retirement Community, and more.



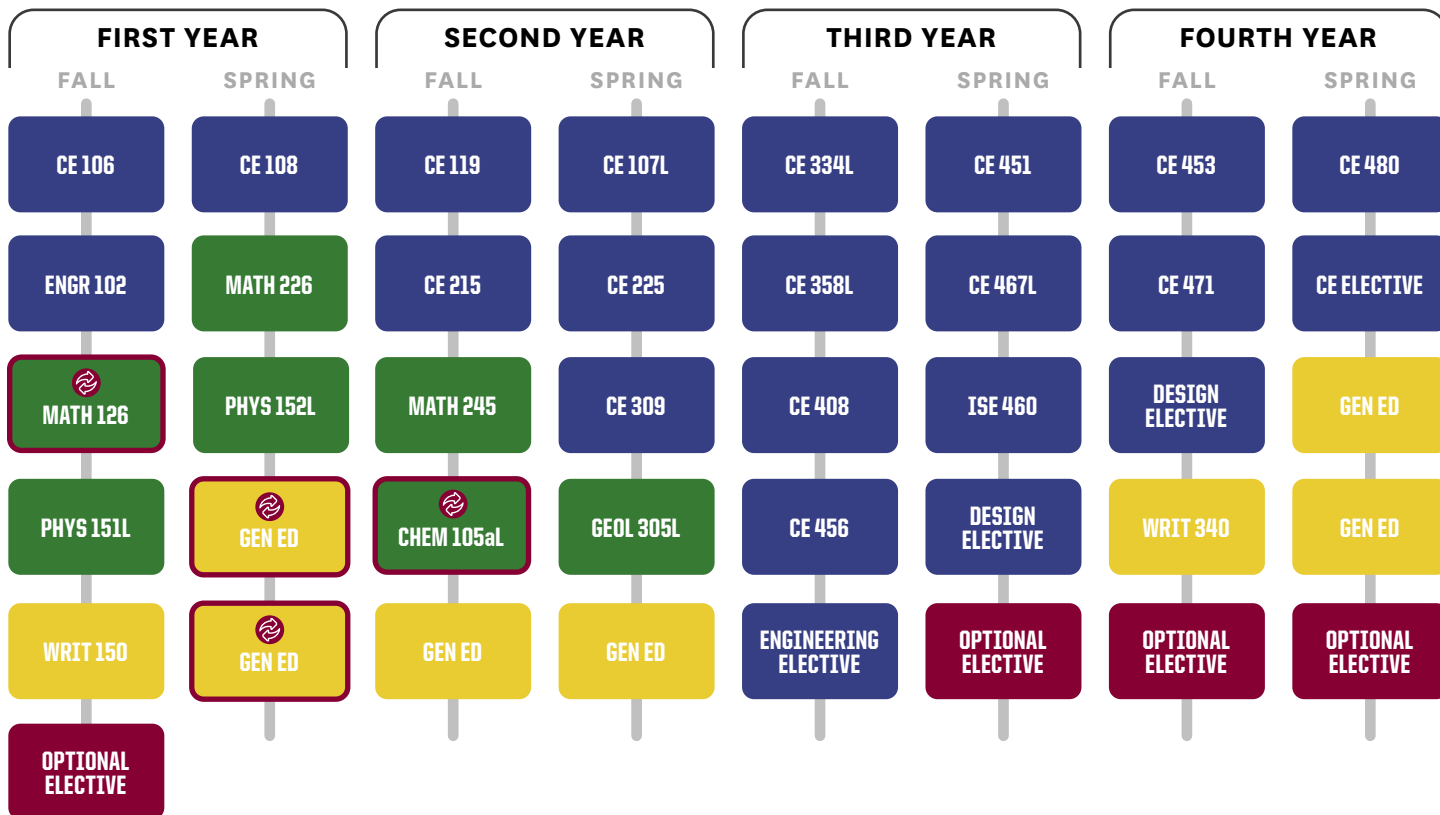
**Stephanie Istillarte Gonzalez | B.S. Civil Engr. '17, M.S. Green Technologies '18** Following the completion of her Master's program, Stephanie started working as a Building Information Modeling (BIM) Engineer with Hathaway Dinwiddie Construction Company. She uses 3D models to coordinate building systems prior to construction. In her work she identifies constructability concerns and prevents potential unforeseen field issues, adding savings and project efficiency. She has completed work at the CSU San Bernardino Student Union expansion and is currently beginning the construction at NBCUniversal Headquarters.



**Jennifer Villacis | B.S. Civil Engr., M.S. Structural Engr. '19** After completing a Master's through the Progressive Degree Program, Jennifer started work as a Graduate Structural Engineer at Arup located in Downtown Los Angeles. Since her start in Spring 2020, Jennifer has worked on projects in design and construction phases in both the commercial and government sectors. In the coming years, she is excited to help shape LA's sustainable future through her continued work in the built environment!



# Civil Engineering



## ENGINEERING

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- CE 107L:** Introduction to Civil Engineering Graphics
- CE 108:** Introduction to Computer Methods in Civil Engineering
- CE 119:** Probability Concepts & Civil Engineering
- CE 215:** Statics & Dynamics
- CE 225:** Mechanics of Deformable Bodies
- CE 309:** Fluid Mechanics
- CE 334L:** Mechanical Behavior of Materials
- CE 358L:** Elementary Theory of Structures
- CE 408:** Risk & Decision Analysis in Civil Engineering
- CE 451:** Water Resources & Coastal Engineering
- CE 453:** Water Quality Science & Engineering
- CE 456:** Structural Design I
- CE 467L:** Geotechnical Engineering
- CE 471:** Principles of Transportation Engineering
- CE 480:** Civil & Environmental Engineering Capstone Design
- ENGR 102:** Engineering Freshman Academy
- ISE 460:** Engineering Economy
- CE, ENGINEERING, & DESIGN ELECTIVES:** Specialized upper division courses you choose for your major/specialization.

## MATHEMATICS

- MATH 126:** Calculus II
- MATH 226:** Calculus III
- MATH 245:** Mathematics of Phys. & Engr.

## SCIENCE

- CHEM 105aL:** General Chemistry
- GEOL 305L:** Intro. to Engineering Geology
- PHYS 151L:** Mechanics & Thermodynamics
- PHYS 152L:** Electricity & Magnetism

## GENERAL EDUCATION

As a USC Viterbi student your General Education (Gen Ed) curriculum will include courses in the Arts, Humanistic Inquiry and Social Analysis.

## WRITING

- WRIT 150:** Writing & Critical Reasoning
- WRIT 340:** Advanced Writing

## ELECTIVES

Your optional electives are one way to build engineering+ into your curriculum by choosing classes of interest to you.



Courses with this symbol may be satisfied with certain AP, IB or A-Level exams.

With each requirement you replace with prior credit, you increase your optional electives, creating more flexibility for you to pursue additional electives and increase your engineering+ education.

*This is a simplified version of a complex curriculum with options and choices made between advisor and student. Course choices can vary by semester and adjust to include relevant topics and materials. Although every attempt has been made to ensure accuracy, the program requirements listed in the USC Catalogue supersede any information which may be contained in this or any other publication of any school or department. The information found in this document is not intended for advising purposes. The University reserves the right to change its policies, rules, regulations, requirements and course offerings at any time.*

# Civil Engr. (Building Science)

FIRST YEAR		SECOND YEAR		THIRD YEAR		FOURTH YEAR	
FALL	SPRING	FALL	SPRING	FALL	SPRING	FALL	SPRING
ENGR 102	CE 108	CE 106	CE 225	CE 119	CE 457	CE 334L	CE 460
PHYS 151L	PHYS 152L	CE 215	CE 309	CE 358L	CE 458	CE 408	ARCH 405bL
 MATH 126	MATH 226	ARCH 205aL	ARCH 114	CE 456	CE 467L	ARCH 214bg	GEOL 305L
WRIT 150	GEN ED	MATH 245	ARCH 205bL	ARCH 305aL	ARCH 305bL	ARCH 405aL	GEN ED
 GEN ED	OPTIONAL ELECTIVE	 CHEM 105aL	GEN ED	GEN ED	OPTIONAL ELECTIVE	WRIT 340	OPTIONAL ELECTIVE

## ENGINEERING

**CE 106:** Introduction to Civil Engineering  
**CE 108:** Intro. to Computer Methods in Civil Engr.  
**CE 119:** Probability Concepts & Civil Engineering  
**CE 215:** Statics & Dynamics  
**CE 225:** Mechanics of Deformable Bodies  
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**CE 358L:** Elementary Theory of Structures  
**CE 408:** Risk & Decision Analysis in Civil Engr.  
**CE 456:** Structural Design I  
**CE 457:** Structural Design II  
**CE 458:** Computational Structural Analysis  
**CE 460:** Construction Engineering  
**CE 467L:** Geotechnical Engineering  
**ENGR 102:** Engineering Freshman Academy

## ARCHITECTURE

**ARCH 114:** Architecture: Culture & Community  
**ARCH 205abl:** Building Science I  
**ARCH 214bg:** World History of Architecture  
**ARCH 305abl:** Building Science II  
**ARCH 405abl:** Building Science III

## MATHEMATICS

**MATH 126:** Calculus II  
**MATH 226:** Calculus III  
**MATH 245:** Mathematics of Phys. & Engr.

## SCIENCE

**CHEM 105aL:** General Chemistry  
**GEOL 305L:** Intro. to Engineering Geology  
**PHYS 151L:** Mechanics & Thermodynamics  
**PHYS 152L:** Electricity & Magnetism

## GENERAL EDUCATION

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## WRITING

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USC Viterbi

School of Engineering

# Civil Engr. (Construction Engr. & Mgmt.)

FIRST YEAR		SECOND YEAR		THIRD YEAR		FOURTH YEAR	
FALL	SPRING	FALL	SPRING	FALL	SPRING	FALL	SPRING
CE 106	CE 108	CE 119	CE 107L	CE 334L	CE 451	CE 460	CE 480
ENGR 102	MATH 226	CE 215	CE 225	CE 358L	CE 467L	CE 471	CE ELECTIVE
MATH 126	PHYS 152L	MATH 245	CE 309	CE 408	ISE 460	CE 482	WRIT 340
PHYS 151L	GEN ED	CHEM 105aL	GEOL 305L	CE 456	DESIGN ELECTIVE	GEN ED	GEN ED
WRIT 150	GEN ED	GEN ED	GEN ED	ENGINEERING ELECTIVE	OPTIONAL ELECTIVE	OPTIONAL ELECTIVE	OPTIONAL ELECTIVE
OPTIONAL ELECTIVE							

## ENGINEERING

- CE 106:** Introduction to Civil Engineering
- CE 107L:** Introduction to Civil Engineering Graphics
- CE 108:** Introduction to Computer Methods in Civil Engineering
- CE 119:** Probability Concepts & Civil Engineering
- CE 215:** Statics & Dynamics
- CE 225:** Mechanics of Deformable Bodies
- CE 309:** Fluid Mechanics
- CE 334L:** Mechanical Behavior of Materials
- CE 358L:** Elementary Theory of Structures
- CE 408:** Risk & Decision Analysis in Civil Engineering
- CE 451:** Water Resources & Coastal Engineering
- CE 456:** Structural Design I
- CE 460:** Construction Engineering
- CE 467L:** Geotechnical Engineering
- CE 471:** Principles of Transportation Engineering
- CE 480:** Civil & Environmental Engineering Capstone Design
- CE 482:** Subsurface Foundation Design
- ENGR 102:** Engineering Freshman Academy
- ISE 460:** Engineering Economy
- CE, ENGINEERING, & DESIGN ELECTIVES:** Specialized upper division courses you choose for your major/specialization.

## MATHEMATICS

- MATH 126:** Calculus II
- MATH 226:** Calculus III
- MATH 245:** Mathematics of Phys. & Engr.

## SCIENCE

- CHEM 105aL:** General Chemistry
- GEOL 305L:** Intro. to Engineering Geology
- PHYS 151L:** Mechanics & Thermodynamics
- PHYS 152L:** Electricity & Magnetism

## GENERAL EDUCATION

As a USC Viterbi student your General Education (Gen Ed) curriculum will include courses in the Arts, Humanistic Inquiry and Social Analysis.

## WRITING

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- WRIT 340:** Advanced Writing

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# Civil Engr. (Environmental)

FIRST YEAR		SECOND YEAR		THIRD YEAR		FOURTH YEAR	
FALL	SPRING	FALL	SPRING	FALL	SPRING	FALL	SPRING
CE 110	CE 108	CE 119	CE 225	CE 358L	CE 363L	CE 410L	CE 467L
ENGR 102	MATH 226	CE 215	CE 309	CE 408	CE 402	WRIT 340	CE 480
MATH 126	PHYS 151L	ENE 215	ENE 200	CE 456	CE 451	GEN ED	CE 485
CHEM 105aL	GEN ED	MATH 245	CHEM 105bL	ISE 460	CHE 330	GEN ED	ENE 428
WRIT 150	GEN ED	PHYS 152L	OPTIONAL ELECTIVE	GEN ED	BISC 220L	OPTIONAL ELECTIVE	OPTIONAL ELECTIVE
OPTIONAL ELECTIVE				OPTIONAL ELECTIVE			

## ENGINEERING

**CE 108:** Intro to Computer Methods in Civil Engr.  
**CE 110:** Introduction to Environmental Engineering  
**CE 119:** Probability Concepts & Civil Engineering  
**CE 215:** Statics & Dynamics  
**CE 225:** Mechanics of Deformable Bodies  
**CE 309:** Fluid Mechanics  
**CE 358L:** Elementary Theory of Structures  
**CE 363L:** Water Chemistry & Analysis  
**CE 408:** Risk & Decision Analysis in Civil Engr.  
**CE 410L:** Introduction to Environmental Engineering Microbiology  
**CE 451:** Water Resources & Coastal Engineering  
**CE 456:** Structural Design  
**CE 467L:** Geotechnical Engineering  
**CE 480:** Civil & Environmental Engineering Capstone Design  
**CE 485:** Wastewater Treatment Design  
**CHE 330:** Chemical Engineering Thermodynamics  
**ENE 200:** Environmental Engineering Principles  
**ENE 215:** Energy Systems & Environmental Tradeoffs  
**ENE 428:** Air Pollution Fundamentals  
**ENGR 102:** Engineering Freshman Academy  
**ISE 460:** Engineering Economy

## MATHEMATICS

**MATH 126:** Calculus II  
**MATH 226:** Calculus III  
**MATH 245:** Mathematics of Phys. & Engr.

## SCIENCE

**BISC 220L:** Cell Biology & Physiology  
**CHEM 105aL:** General Chemistry  
**PHYS 151L:** Mechanics & Thermodynamics  
**PHYS 152L:** Electricity & Magnetism

## GENERAL EDUCATION

As a USC Viterbi student your General Education (Gen Ed) curriculum will include courses in the Arts, Humanistic Inquiry and Social Analysis.

## WRITING

**WRIT 150:** Writing & Critical Reasoning  
**WRIT 340:** Advanced Writing

## ELECTIVES

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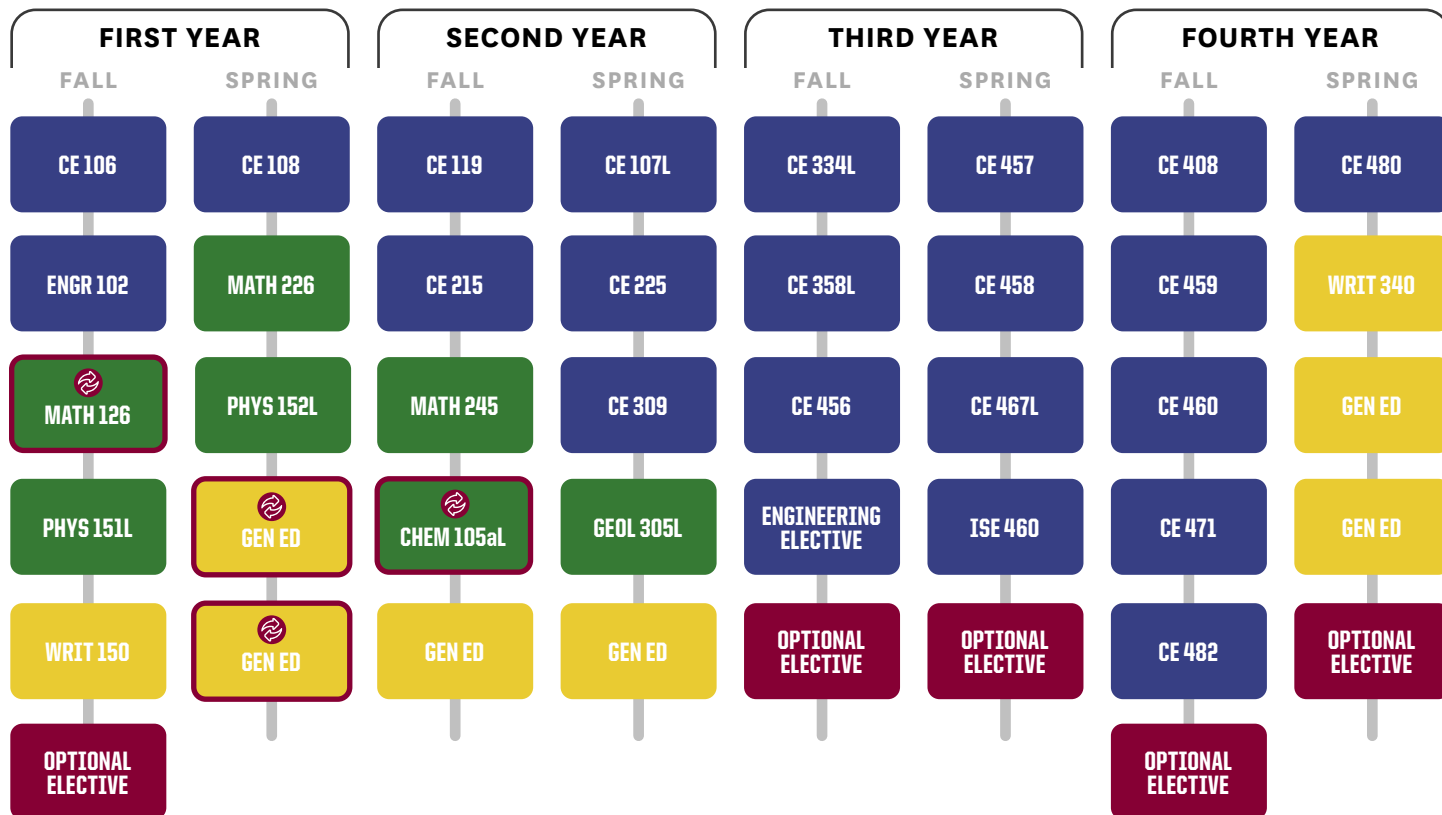


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# Civil Engr. (Structural)



## ENGINEERING

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**CE 107L:** Introduction to Civil Engineering Graphics  
**CE 108:** Introduction to Computer Methods in Civil Engineering  
**CE 119:** Probability Concepts & Civil Engineering  
**CE 215:** Statics & Dynamics  
**CE 225:** Mechanics of Deformable Bodies  
**CE 309:** Fluid Mechanics  
**CE 334L:** Mechanical Behavior of Materials  
**CE 358L:** Elementary Theory of Structures  
**CE 408:** Risk & Decision Analysis in Civil Engineering  
**CE 456:** Structural Design I  
**CE 457:** Structural Design II  
**CE 458:** Computational Structural Analysis  
**CE 467L:** Geotechnical Engineering  
**CE 471:** Principles of Transportation Engineering  
**CE 480:** Civil & Environmental Engineering Capstone Design  
**CE 482:** Subsurface Foundation Design  
**ENGR 102:** Engineering Freshman Academy  
**ISE 460:** Engineering Economy  
**ENGINEERING ELECTIVES:** Specialized upper division courses you choose for your major/specialization.

## MATHEMATICS

**MATH 126:** Calculus II  
**MATH 226:** Calculus III  
**MATH 245:** Mathematics of Phys. & Engr.

## SCIENCE

**CHEM 105aL:** General Chemistry  
**GEOL 305L:** Intro. to Engineering Geology  
**PHYS 151L:** Mechanics & Thermodynamics  
**PHYS 152L:** Electricity & Magnetism

## GENERAL EDUCATION

As a USC Viterbi student your General Education (Gen Ed) curriculum will include courses in the Arts, Humanistic Inquiry and Social Analysis.

## WRITING

**WRIT 150:** Writing & Critical Reasoning  
**WRIT 340:** Advanced Writing

## ELECTIVES

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# Civil Engr. (Water Resources)

FIRST YEAR		SECOND YEAR		THIRD YEAR		FOURTH YEAR	
FALL	SPRING	FALL	SPRING	FALL	SPRING	FALL	SPRING
CE 106	CE 108	CE 119	CE 107L	CE 334L	CE 451	CE 471	CE 480
ENGR 102	MATH 226	CE 215	CE 225	CE 358L	CE 465	CE 476	WRIT 340
MATH 126	PHYS 152L	MATH 245	CE 309	CE 408	CE 467L	CE ELECTIVE	GEN ED
PHYS 151L	GEN ED	CHEM 105aL	GEOL 305L	CE 453	ISE 460	ENGINEERING ELECTIVE	GEN ED
WRIT 150	GEN ED	GEN ED	GEN ED	CE 456	OPTIONAL ELECTIVE	OPTIONAL ELECTIVE	OPTIONAL ELECTIVE
OPTIONAL ELECTIVE							

## ENGINEERING

**CE 106:** Introduction to Civil Engineering  
**CE 107L:** Introduction to Civil Engr. Graphics  
**CE 108:** Intro. to Computer Methods in Civil Engr.  
**CE 119:** Probability Concepts & Civil Engineering  
**CE 215:** Statics & Dynamics  
**CE 225:** Mechanics of Deformable Bodies  
**CE 309:** Fluid Mechanics  
**CE 334L:** Mechanical Behavior of Materials  
**CE 358L:** Elementary Theory of Structures  
**CE 408:** Risk & Decision Analysis in Civil Engineering  
**CE 451:** Water Resources & Coastal Engineering  
**CE 453:** Water Quality Science & Engineering  
**CE 456:** Structural Design I  
**CE 465:** Water Supply & Sewerage System Design  
**CE 467L:** Geotechnical Engineering  
**CE 471:** Principles of Transportation Engineering  
**CE 476:** Design of Hydraulic Systems  
**CE 480:** Civil & Environmental Engineering Capstone Design  
**ENGR 102:** Engineering Freshman Academy  
**ISE 460:** Engineering Economy  
**CE & ENGINEERING ELECTIVES:** Specialized upper division courses you choose for your major/specialization.

## MATHEMATICS

**MATH 126:** Calculus II  
**MATH 226:** Calculus III  
**MATH 245:** Mathematics of Phys. & Engr.

## SCIENCE

**CHEM 105aL:** General Chemistry  
**GEOL 305L:** Intro. to Engineering Geology  
**PHYS 151L:** Mechanics & Thermodynamics  
**PHYS 152L:** Electricity & Magnetism

## GENERAL EDUCATION

As a USC Viterbi student your General Education (Gen Ed) curriculum will include courses in the Arts, Humanistic Inquiry and Social Analysis.

## WRITING

**WRIT 150:** Writing & Critical Reasoning  
**WRIT 340:** Advanced Writing

## ELECTIVES

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# Environmental Engineering

FIRST YEAR		SECOND YEAR		THIRD YEAR		FOURTH YEAR	
FALL	SPRING	FALL	SPRING	FALL	SPRING	FALL	SPRING
CE 110	CE 108	CE 119	ENE 200	CE 408	CE 363L	CE 410L	CE 480
ENGR 102	MATH 226	ENE 215	ENE 410	ISE 460	CE 402	ENE 400	CE 485
MATH 126	PHYS 151L	MATH 245	CHEM 105bL	CHEM 322aL	CE 451	CHE 330	ENE 426
CHEM 105aL	GEN ED	PHYS 152L	BISC 220L	WRIT 340	ENE 300	GEN ED	SSCI 382L
WRIT 150	GEN ED	GEN ED	OPTIONAL ELECTIVE	GEN ED	ENE 428	OPTIONAL ELECTIVE	OPTIONAL ELECTIVE
OPTIONAL ELECTIVE				OPTIONAL ELECTIVE			

## ENGINEERING

- CE 108:** Introduction to Computer Methods in Civil Engineering
- CE 110:** Introduction to Environmental Engineering
- CE 119:** Probability Concepts & Civil Engineering
- CE 363L:** Water Chemistry & Analysis
- CE 402:** Computer Methods in Engineering
- CE 408:** Risk & Decision Analysis in Civil Engineering
- CE 410L:** Introduction to Environmental Engineering Microbiology
- CE 451:** Water Resources & Coastal Engineering
- CE 480:** Civil & Environmental Engineering Capstone Design
- CE 485:** Wastewater Treatment Design
- CHE 330:** Chemical Engineering Thermodynamics
- ENE 200:** Environmental Engineering Principles
- ENE 215:** Energy Systems & Environmental Tradeoffs
- ENE 300:** Contaminant Transport in the Environment
- ENE 400:** Quantitative Sustainability
- ENE 410:** Environmental Fluid Mechanics
- ENE 426:** Particulate Air Pollutants: Properties/Behavior/Measurement
- ENE 428:** Air Pollution Fundamentals
- ENGR 102:** Engineering Freshman Academy

## MATHEMATICS

- MATH 126:** Calculus II
- MATH 226:** Calculus III
- MATH 245:** Mathematics of Phys. & Engr.

## SCIENCE

- BISC 220L:** Cell Biology & Physiology
- CHEM 105aL:** General Chemistry
- CHEM 322aL:** Organic Chemistry
- PHYS 151L:** Mechanics & Thermodynamics
- PHYS 152L:** Electricity & Magnetism
- SSCI 382L:** Geographic Information Science: Spatial Analytics

## GENERAL EDUCATION

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## WRITING

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