Northwestern | McCORMICK SCHOOL OF ENGINEERING

Civil and Environmental Engineering

Undergraduate Civil and Environmental Engineering Handbook

2026-2027

September 2026[1]

Also available online

http://www.mccormick.northwestern.edu/civil-environmental/current-students/forms-documents.html

[1] Revised September 2026.

Academic Time Table

YEAR 1

What		When	How
Academic	Learn about civil and environmental engineering (CEE) majors	Orientation Week	Go visit Concrete Canoe and Steel Bridge tables at McCormick activity fair
		Start in Fall quarter	Meet with the civil engineering undergraduate program chair, Professor Garcia (Tech A222, ericvincent.garcia@northwestern.edu), or the environmental engineering program coordinator, Professor Wells (Tech A318, george.wells@northwestern.edu); speak with upper division students (Tech AG 52), attend NU ASCE or EnvEUS events
		Fall quarter	Take **CIV_ENV 101 -** Introduction to Civil & Environmental Engineering, a zero-credit seminar.
	Declare major	Preferably by 4th week of Spring quarter	Submit ***McCormick Freshman Declaration or Change of Major Form*** to McCormick Undergraduate Engineering Office (Tech L269)
	Plan for sophomore year curricula (BSCI and BSEN)	Spring quarter	Attend ***CEE Rising Sophomore Advising Seminar;*** develop your curriculum plan
	Begin completing social science and humanity theme	Can be as early as fall quarter of year 1 and should not be later than spring quarter of year 2	Discuss with your academic adviser; speak with upper-division students (NU ASCE/EnvEUS and NSEE (Northwestern Society of Environmental Engineers) members); submit ***Theme Form via MAS***
	Explore certificate programs, multiple majors, minors, BS/MS	Can be as early as Fall quarter of year 1	Discuss with your academic adviser; develop your curriculum plan
Professional and Career	Learn more about the CEE profession and meet with practitioners	Start with McCormick fall orientation week	Join and be an active member of NU ASCE (asce.mccormick.northwestern.edu) or EnvEUS (enveus.mccormick.northwestern.edu); attend job fairs
	Explore part time or summer research opportunities in CEE department	Start in Fall quarter	Speak with CEE faculty to learn their research activities
	Find summer internship in civil/environmental engineering and construction	Start in Fall quarter	Visit CEE career opportunities web page http://www.mccormick.northwestern.edu/civil-environmental/career-opportunities/ for job postings; speak with upper–classmen; meet with McCormick Office of Career Development (MCD) adviser; register with McCormick Connect (http://www.mccormick.northwestern.edu/mcd/McCormickConnect/index.html); take a career development course CRDV 301 (a zero credit, no tuition course); talk with CEE faculty members
		October	**Attend CEE Fall Career Fair** to learn about career in civil & environmental engineering even if you are not looking for a job or internship
		Winter & spring quarters	Take GenEng 220-1,2
		Start in mid-fall	Visit potential employers while home during holiday breaks
		January	**Attend CEE Winter Career Fair (if available)**
$$$	Explore fellowships such as Fulbright, Barry Goldwater, etc.	Spring quarter	Visit Office of Fellowships (http://www.northwestern.edu/fellowships/about/index.html)

Academic Time Table

YEAR 2

What		When	How
Academic	Transfer major from other engineering programs or Weinberg	Now	Meet with staff in McCormick Undergraduate Engineering Office (Tech L269); meet with civil engineering undergraduate program chair, Professor Garcia (Tech A222, ericvincent.garcia@northwestern.edu), or Professor Wells (Tech A318, george.wells@northwestern.edu) for environmental engineering; submit ***McCormick Change of Major, Adviser, Catalog Year Form,*** McCormick Academic Services (Tech L269)
	Complete social science and humanity theme	Continue from Year 1	Discuss with your academic adviser; speak with upper-division students (NU ASCE/EnvEUS and NSEE (Northwestern Society of Environmental Engineers) members); submit ***Theme Form via MAS***
	Explore certificate programs, multiple majors, minors, BS/MS	Continue from Year 1	Discuss with your academic adviser; develop your curriculum plan
	Explore Study Abroad	Fall quarter, see deadlines posted on Study Abroad Office website	Visit Study Abroad Office (http://www.northwestern.edu/studyabroad/index.html); discuss with your academic adviser; develop your curriculum plan
Professional and Career	Learn more about the CEE profession and meet with practitioners	Continue from Year 1	Join and be an active member of NU ASCE (asce.mccormick.northwestern.edu) or EnvEUS (enveus.mccormick.northwestern.edu) activities; attend job fairs
	Explore part time research opportunities in CEE department	Continue from Year 1	Speak with CEE faculty to learn their research activities
	Find summer internship in civil/environmental engineering and construction	Start in Fall quarter	Visit CEE career opportunities web page http://www.mccormick.northwestern.edu/civil-environmental/career-opportunities/ for job postings; speak with upper–classmen; talk with CEE faculty members
		October	**Attend CEE Fall Career Fair** to learn about careers in civil & environmental engineering even if you are not looking for a job or internship
		Start in mid-fall	Visit potential employers while home during holiday breaks
		January	**Attend CEE Winter Career Fair (if available)** to learn about careers in civil & environmental engineering even if you are not looking for a job or internship
	Explore co-op programs	Continue from Year 1	Meet with McCormick Office of Career Development (MCD) adviser; register or visit McCormick Connect (http://www.mccormick.northwestern.edu/mcd/McCormickConnect/index.html) and check job availability; or take a career development course CRDV 301 (a zero credit, no tuition course)
		Start in the fall quarter	Take CIV_ENV 101 Introduction to Civil & Environmental Engineering and GenEng 220-1,2 if not taken in Year 1
	Apply for external scholarships sponsored by professional and other organizations	Winter and Spring quarters	Information disseminated through CEE website and NUASCE, EnvEUS and NSEE listserv and websites.
	Explore or apply fellowships such as Fulbright, Barry Goldwater, and others	Start in Fall quarter	Visit Office of Fellowships (http://www.northwestern.edu/fellowships/about/index.html)

Academic Time Table

YEAR 3

What		When	How
Academic	Explore Architectural Engineering & Design (AED) Minor	Start in Fall quarter for 3 quarters	Begin taking CIV_ENV 385-1 and continue onto CIV_ENV 385-2 in the Winter quarter and CIV_ENV 385-3 in the Spring quarter.
	Transfer major from other engineering programs or Weinberg	Now may be challenging; it may not be possible to fulfill the BSCI or BSEN requirements in the rest of year 3 and year 4 without taking extra classes	Meet with a staff in McCormick Undergraduate Engineering Office (Tech L269); meet with civil engineering undergraduate program chair, Professor Garcia (Tech A222, ericvincent.garcia@northwestern.edu), or Professor Wells (Tech A318, george.wells@northwestern.edu) for environmental engineering; complete ***McCormick of Major, Adviser, Catalog Year Form***
	Complete social science and humanity theme	Continue from Years 1 and 2	Discuss with your academic adviser; speak with upper-division students (NU ASCE and EnvEUS members); submit ***Theme Form via MAS***
	Develop spreadsheet plans to complete certificate programs, multiple majors, minors, BS/MS	Now; multiple majors, minors, or certificate programs requires detailed planning	Discuss with your academic adviser; develop your curriculum plan
Getting Ready to Graduate	Apply for graduation	by Winter quarter	Submit ***McCormick Bachelor's Degree Application*** to McCormick UG Engineering Office (see page 69)
	Declare minors and certificates in McCormick	Winter quarter	Use appropriate declaration form in CEE UG handbook for Environmental minor and AED Certificate; Others, go to the department offices that award the minor or certificate.
	Persuading dual engineering degrees	As soon as you know	discuss with academic adviser; submit ***Dual Engineering Degree*** form to McCormick UG Engineering Office
	Explore graduate school	Start in Winter quarter	Study for and take GRE exam by October if needed; speak with faculty
		Quarter break and summer	Visit potential graduate schools
	Explore dual BS/MS program if GPA > 3.50	no later than within 4 courses from completing BS degree – you can always plan ahead	Discuss with MS program coordinator (http://www.civil.northwestern.edu/undergraduate/BS_MS/index.html); reach out to Graduate Studies in McCormick (mccormick-gradprograms@northwestern.edu) for more information about the combined BS/MS program.

Academic Time Table

YEAR 3

continued

What		When	How
Professional and Career	Learn more about the CEE profession and meet with practitioners	Continue from Years 1 and 2	Join and be an active member of NU ASCE (asce.mccormick.northwestern.edu) or EnvEUS (enveus.mccormick.northwestern.edu) activities; attend job fairs
	Rekindle exploration of part time research opportunities in CEE department	Start in Fall quarter	Speak with CEE faculty to learn their research activities
	Begin next cycle of finding summer internship	Start in Fall quarter	Visit CEE career opportunities web page http://www.mccormick.northwestern.edu/civil-environmental/career-opportunities/ for job postings; speak with upper–classmen; talk with CEE faculty members
		Start in Fall quarter if you didn't do it in Year 1 or Year 2	Meet with MCD adviser; register with McCormick Connect (http://www.mccormick.northwestern.edu/mcd/McCormickConnect/index.html) and check job availability
		October	**Attend CEE Fall Career Fair** to learn about career in civil & environmental engineering even if you are not looking for a job or internship
		Start in mid-fall	Visit potential employers while home during holiday breaks
		January	**Attend CEE Winter Career Fair (if available)** to learn about career in civil & environmental engineering even if you are not looking for a job or internship
	Continue co-op programs planning	Continue from Year 2	Meet with an adviser in MCD; register with McCormick Connect (http://www.mccormick.northwestern.edu/mcd/McCormickConnect/index.html) and check job availability
$$$$	Apply for external scholarships sponsored by professional and other organizations	Winter and Spring quarters	Information disseminating through CEE website and NUASCE and NSEE listserv and their websites.
	Apply for fellowships such as Fulbright, Barry Goldwater, and others	If haven't started in Fall quarter, the sooner the better	Go to Office of Fellowships (http://www.northwestern.edu/fellowships/about/index.html)

Academic Time Table

YEAR 4

What		When	How
Fundamental of Engineering (FE) exam	Review	Winter quarter	Take CIV_ENV 301-2 and borrow the FE review book from CEE Department
	Application	Go to NCEES.org	Register to take the exam
	Exam	all year long	visit NCEES.org for more information; exam is administrated online by NCEES http://ncees.org/exams/examinee-guide/
Getting Ready to Graduate	Apply to Graduate school	Fall quarter	Submit your applications
			Take GRE if needed
		Fall and Winter quarters and spring break	Visit the campus; meet the graduate program coordinators, students and faculty at schools you are interested in/admitted to.
	Explore graduate external fellowships such as NSF Research Fellow, SMART Fellow, etc. for those interested in pursuing Ph.D.	Fall quarter	Check ASEE web sites for deadline; go to Office of Fellowships (http://www.northwestern.edu/fellowships/about/index.html); speak with other Fellows in McCormick
	Explore dual BS/MS program if GPA 3.50 or above	No later than within 4 courses from completing BS degree – you can always plan ahead	Discuss with MS program coordinator (http://www.civil.northwestern.edu/undergraduate/BS_MS/index.html); reach out to Graduate Studies in McCormick (mccormick-gradprograms@northwestern.edu) for more information about the combined BS/MS program.
	Look for full time jobs	Fall quarter	Visit NU ASCE/EnvEUS or NSEE websites on job lists; submit resume to IL ASCE resume book; attend IL ASCE or other professional meetings (networking); go to engineering firm open houses.
			Register with McCormick Connect (http://www.mccormick.northwestern.edu/mcd/McCormickConnect/index.html) and check for companies that have hired CEE before or job availability
		October	**Attend CEE Fall Career Fair**
		Start in mid-fall	Visit potential employers while home during holiday breaks
		January	**Attend CEE Winter Career Fair (if available)**
$$$$	Apply for external scholarships for **graduate studies** sponsored by professional and other organizations	Winter and Spring quarters	Information disseminated through CEE website and CEE student organization listserv.

Preface

This handbook provides a comprehensive guide to the Civil and Environmental Engineering (CEE) programs in the Department of Civil and Environmental Engineering, McCormick School of Engineering and Applied Science (MEAS), at Northwestern University. We hope it will serve as a valuable resource throughout your undergraduate experience.

The information presented here is based on the 2026–2027 Northwestern Undergraduate Catalog. Sample curriculum flowcharts for Civil Engineering and Environmental Engineering are available online at https://www.mccormick.northwestern.edu/civil-environmental/students/forms-documents.html (CEE Forms & Documents).

This handbook is designed as a practical reference to the degree requirements, programs, policies, and procedures of the Department, School, and University. An Academic Timetable at the beginning of this document highlights key milestones to help you navigate your four-year program.

The CEE Department offers two ABET-accredited degree programs—the Bachelor of Science in Civil Engineering (BSCI) and the Bachelor of Science in Environmental Engineering (BSEN)—as well as a Minor in Environmental Engineering and a Minor in Architectural Engineering and Design (AED).

At Northwestern, you will also find opportunities to engage with professional activities and diverse communities. The CEE Department is home to two student organizations focused on professional development and interaction: the Northwestern University American Society of Civil Engineers (NU ASCE) student chapter and EnvEUS (Environmental Engineering Undergraduates Society), a student chapter of the American Academy of Environmental Engineers & Scientists (AAEES). Beyond campus, you may participate in the Study Abroad Program or join student projects around the globe through the various student organizations.

Although this handbook provides guidance on undergraduate engineering education, the Northwestern Undergraduate Catalog remains the official source for defining academic programs and requirements. Final authority for academic degree requirements in BSCI and BSEN resides with the MEAS faculty, the McCormick School Curriculum Committee, and the CEE Department faculty. All curricula are subject to ABET accreditation requirements.

We hope you find this handbook a clear and useful resource as you progress through your years at Northwestern.

Marco Nie, Ph.D.
Professor and Chair
Civil and Environmental Engineering

Responsibility for Meeting Degree Requirements

Ultimately, students are responsible for understanding the degree requirements for their majors and for planning their course of study accordingly. The McCormick School Undergraduate Engineering Office serves as an invaluable resource for information and assistance regarding courses, registration, majors, study abroad, your degree progress, and more. Faculty advisers assigned to you will assist in course selection, but they are not responsible for ensuring that the courses selected meet degree requirements. That is the responsibility of the student.

Table of Contents

Academic Time Table 2
Preface 7
Introduction 10
Missions 11
Civil and Environmental Engineering
  Civil Engineering Profession 12
  Environmental Engineering Profession 13
Student Organizations 14
Internship and Career Development 15
Scholarships 15
Undergraduate Research 16
Academic Advising
  What to Expect from an Adviser 17
  What Not to Expect from an Adviser 18
  Student Responsibilities in the Student-Adviser Relationship 18
Bachelor of Science in Civil Engineering (BSCI)
  Program Educational Objectives 20
  Student Learning Outcomes 20
  Table CE.1 Mapping of BSCI Program Educational Objectives and Student Learning Outcomes 21
  Program Requirements 22
  Table CE.2 Sample BSCI Curriculum Flow Chart 29
  Table CE.3 Approved BSCI Technical Electives 31
  Table CE.4 Summary of MTS and ET Topic Units in BSCI 33
Bachelor of Science in Environmental Engineering (BSEN)
  Program Educational Objectives 34
  Student Learning Outcomes 34
  Table EE.1 Mapping of BSEN Program Educational Objectives and Student Learning Outcomes 35
  Program Requirements 37
  Table EE.2 Sample BSEN Curriculum Flow Chart 42
  Table EE.3 Summary of MTS and ET Units in BSEN 44
Minor in Environmental Engineering 45
Architectural Engineering and Design Minor Program 46
Undergraduate CEE Honors Program 48
Combined BS/MS Program 49

Introduction

Welcome to the Department of Civil and Environmental Engineering (CEE), McCormick School of Engineering and Applied Science at Northwestern University. The faculty and students at CEE look forward to interacting with you so that you can enjoy the maximum learning, social, and cultural experience Northwestern University offers you. This handbook is part of our effort to help you achieve this goal from the academic, professional, and career aspect. In addition to academic requirements, this handbook includes an academic timetable of some milestones such as declaration of major, internship, etc., that would guide you through your chosen program(s). We hope you will read this document and refer to it whenever you have an academic related question. Of course, our faculty and your peers are available to address any issue you may have. Please feel free to contact them.

A new edition of the handbook is published annually to coincide with each academic year and undergraduate catalog. Revisions will be made as needed each quarter. The modifications will be denoted by vertical lines at the left-hand margins for easy referencing. First revision is denoted by single vertical line. Second revision is denoted by double vertical lines. Third revision is denoted by double vertical lines with one being a heavy thickness line. Revision number and dates are shown on the cover page. The handbook is also available online http://www.mccormick.northwestern.edu/civil-environmental/current-students/forms-documents.html

To assist us in the continuing effort to improve this document, please send your suggestions and comments to Professor Eric Garcia, Program Director for Civil Engineering at ericvincent.garcia@northwestern.edu, or to Professor George Wells, Program Director for Environmental Engineering at george.wells@northwestern.edu.

Missions

Northwestern University

Northwestern is committed to excellent teaching, innovative research, and the personal and intellectual growth of its students in a diverse academic community.

Department of Civil and Environmental Engineering

We inspire and cultivate innovative leaders and problem solvers prepared to address complex societal-scale challenges in areas of resilient infrastructure, smart and sustainable cities, water and energy security, climate change, mobility of goods and people, and environmental protection. We achieve this mission through:

1. *Education that advances the intellectual development of our students using modern engineering curricula focused on quantitative and predictive methods, academic and professional mentoring, and service-based learning;*
2. *Research that leads to new theories and techniques and transforms our ability to design, construct, and manage society's infrastructure, control material behavior, and sustain natural and engineering systems around the world;*
3. *Cultivation of a diverse community of scholars, who, through motivation to serve society, are prepared to lead management and decision-making both inside and outside of the Civil and Environmental Engineering professions.*

The above mission statements can be found on the websites:
University – http://www.northwestern.edu/provost/about/index.html
Department – http://www.mccormick.northwestern.edu/civil-environmental/about/mission-vision-statement.html

Civil and Environmental Engineering

Civil Engineering Profession

Civil Engineering is an international profession that provides solutions for pressing societal challenges for both the natural and built environment. Civilian infrastructure systems provide safe and efficient transportation systems for people, food, and manufactured goods; safe and energy efficient residential and commercial buildings; support the ecological and human health by protecting the quality of water, air, and land; and support the energy sector with power plants and their support structures.

Civil Engineering bridges science and society, and thus plays a leading role in planning, designing, building, and ensuring a sustainable future. The American Society of Civil Engineers (ASCE) defines **sustainability** as *a set of economic, environmental and social conditions in which all of society has the capacity and opportunity to maintain and improve its quality of life indefinitely, without degrading the quantity, quality or the availability of natural resources and ecosystems*. The civil engineering profession recognizes the reality of limited natural resources, the desire for sustainable practice (including life-cycle analysis and sustainable design techniques), and the need for social equity in the consumption of resources.

Civil Engineers are the stewards of our natural resources and the built environment that support commerce, recreation, health, and other necessities of modern social economies. They design, construct, and manage these systems as well as the taller, longer, lighter, and more elegant structures that capture the imagination, such as airports, skyscrapers, bridges, etc. Each system has unique characteristics that challenge civil engineers to combine engineering knowledge with initiative and creativity to meet project objectives, protect the well-being of society and our finite natural resources, and meet budget constraints.

In addition to the applications of mathematics, physical, natural, and engineering sciences, Civil Engineers must incorporate excellent communication and people-skills, social, economic, managerial sciences, and collaborate with architects, public officials, owners, contractors, material suppliers and the public during various phases of a project. Their work may extend to materials science to develop new building materials, using advanced sensors and communication devices to monitor performance of bridges, tunnels, buildings in real time, over long distances, and under extreme conditions. Civil engineers have designed infrastructure that stretches the limit of materials, performance, and human desire while preserving our natural resources.

At Northwestern, the Civil Engineering curriculum is designed to satisfy students' diverse interests and professional goals. Students develop study plans suited to their unique interest, including extensive options for courses such as Architectural Engineering and Design Minor, Environmental Engineering Minor within our Department and Kellogg School of Management Certificate program for undergraduates to address the social, physical, and financial challenges of constructing and managing the nation's infrastructure.

While Civil engineering graduates typically work in engineering consulting firms, city and county public works, state departments of transportation, firms managing development and construction, various branches of federal government, and engineering material product industries, some of our graduates work in the aerospace industry, finance, medicine, law, politics, and policy development. A majority of Northwestern graduates receive at least one advanced degree. About half of these received advanced degrees are in other professional fields such as aerospace, business administration, medicine, and law. Others may work in research and development, and teaching.

Environmental Engineering Profession

- *Is the water safe to drink?*
- *Is the air dangerous to breathe?*
- *Should we eat the fish we catch or the crops we grow?*
- *Do our living and workspaces pose special threats to our health?*

Environmental Engineers are the technical professionals who identify and design solutions for environmental problems. They provide answers to the above questions, and deal with many other issues, about the potentially harmful interrelationships between civilization and the environment. Ultimately, they ensure the health of ecosystems and of humans.

Environmental engineers apply scientific and technological knowledge to eliminate or reduce environmental problems. They seek to shield the environment from the harmful effects of human activity, protect human populations from adverse environmental events such as floods and disease, and restore environmental quality for ecological and human well-being.

Traditionally, environmental engineering includes:

1. The identification and measurement of potentially harmful physical, chemical, and biological agents in the environment,
2. The transport and fate of these agents,
3. The effects of these agents on people and the environment, and
4. The design and operation of engineered systems for the maintenance and improvement of the quality of our environment.

The role of environmental engineering has been expanding in the past few decades. Increasingly, environmental engineers are being called upon to expand the focus of their efforts to address the challenges associated with alternative energy, sustainability, climate change, ecological restoration, and emerging public health threats.

Northwestern has developed an interdisciplinary approach to the education of environmental engineers. The four-year curriculum provides the students with a sound fundamental knowledge of environmental engineering principles and an opportunity to integrate other aspects such as basic science, social science, humanities, and public policy to their knowledge. Environmental Engineers stand at the threshold between natural environmental systems and human societies!

Student Organizations

The Department of Civil and Environmental Engineering is home to two student professional organizations. They are the **Northwestern University American Society of Civil Engineers** (NUASCE) Student Chapter and the **Environmental Engineering Undergraduate Society** (EnvEUS).

Northwestern University American Society of Civil Engineers Founded in 1852, the American Society of Civil Engineers represents more than 150,000 members of the civil engineering profession in 177 countries and is America's oldest national engineering society. ASCE stands at the forefront of a profession that plans, designs, constructs, and operates society's economic and social engine – the built environment – while protecting and restoring the natural environment.

The Mission of NUASCE is *to create a more informed and involved Civil Engineering community by providing opportunities to apply and further refine technical skills, increasing student and faculty interactions, and preparing students to enter the professional engineering industry.* Through NUASCE you will have the opportunity to meet other students with similar interests, network with professionals, and participate in exciting design competitions such as **concrete canoe** and **steel bridge**. Most importantly, the student chapter prides itself on creating a strong community of engineers, and they would love for you to join!!! For more information, visit their website: http://asce.mccormick.northwestern.edu.

Environmental Engineering Undergraduate Society (EnvEUS)
This student group is a chapter of the American Academy of Environmental Engineers & Scientist (AAEES) that provides free membership to students enrolled in environmental engineering programs and access to various resources such as webinars and career information.

The Mission of EnvEUS is to bring community to the environmental engineering department, promote collaboration, assist in networking, and provide knowledge of potential career paths. Also, by participating in competitions and projects focused on environmental sustainability they aim to give students the opportunity to put classroom skills to practical use. For more information, please visit their website: http://enveus.mccormick.northwestern.edu

CEE students also participate in other McCormick wide student organizations such as:
Engineers for a Sustainable World (https://northwestern.campuslabs.com/engage/organization/esw),
Engineers Without Border (http://sites.northwestern.edu/northwesternewb/),
Engineering World Health (https://northwestern.campuslabs.com/engage/organization/ewh-nu),
Global Architecture Brigades at Northwestern (http://www.empowered.org/Architecture-Brigades-at-Northwestern-University),
Global Water Brigades (https://sites.google.com/site/nuwaterbrigade/),
National Society of Black Engineers (https://northwestern.collegiatelink.net/organization/NSBE),
Society of Hispanic Professional Engineers (https://northwestern.collegiatelink.net/organization/shpe)
Society of Women Engineers (https://nu-swe.weebly.com/)

Internship and Career Development

Through the joint effort of NUASCE and EnvEUS, the inaugural **CEE Career Fair** was held in 2013. Since 2014, the Career Fair has been organized by the CEE Department with support from McCormick's Engineering Career Development office beginning in 2019. CEE Career Fair focuses on firms that hire civil and environmental engineering graduates for internships and for full time engineering positions. Starting in the 2016-2017 academic year, the Department provides a Career Fair during the Fall and an additional one in Winter if there is enough demand. **The Fall Career Fair is held in October, and IF one is held in the Winter it would be held in January**. Watch for the announcement of the event and call for registration and submission of resumes. The Department also maintains a web page http://www.mccormick.northwestern.edu/civil-environmental/career-opportunities/career-fair.html where internships and graduate engineer positions are posted when the information is sent to the Department. We suggest you check on the site periodically to see what is being posted.

McCormick Office of Career Development (MCD) http://www.mccormick.northwestern.edu/career-development/index.html provides career preparation and employment assistance through a variety of work-integrated learning programs including co-op engineering education, internships, research experience, and service learning. Register with McCormickConnect (http://www.mccormick.northwestern.edu/career-development/mccormickconnect.html) to receive information on job postings, resume submissions, interview schedules, career events, or meet with a MCD adviser. MCD is located in Ford Building Room 3.350.

Northwestern Career Advancement (NCA) (http://www.northwestern.edu/careers/) The mission of Northwestern Career Advancement is to foster excellence in career development, preparation, and professional opportunities for undergraduate and graduate students and alumni by providing comprehensive services and programming and by promoting strong partnerships with employers, academic departments, and the university community.

Scholarships

Students from the CEE Department have been successful in securing external scholarships in the past years. The scholarships ranged from $1000 to $7000 per year from Illinois Section ASCE, National ASCE, Tau Beta Pi, AISC, etc. Some students received fellowships, such as Barry Goldwater, Fulbright, Northwestern Alumnae Association Fellowship, and Thornton Tomasetti Foundation National Fellowship for post-BS studies.

Professional organizations offer scholarships to civil and environmental engineering students annually. Deadline on each scholarship is different and is announced throughout the year as information becomes available. Please check http://www.mccormick.northwestern.edu/civil-environmental/current-students/scholarships-fellowships-competitions.html periodically to see what is available.

Students are also encouraged to apply for national fellowships or scholarships for undergraduate and graduate students. Office of Fellowships http://www.northwestern.edu/fellowships/index.html is extremely helpful in assisting you with the application process. A partial listing of fellowships applicable to our students is listed below. For a complete list and detail information, please visit Office of Fellowships.

Some important links

- Abel Wolman Fellowship
- Alumnae of Northwestern University Graduate Fellowship*
- American Association Of University Women Fellowship*
- American Association of University Women Fellowship (International)
- American Concrete Institute Scholarships
- American Geological Institute Minority Participation Program
- American Institute of Steel Construction Scholarships & Fellowships*
- American Society of Civil Engineers Fellowship*
- American-Scandinavian Foundation Grants & Fellowships
- ARCS Foundation Scholarships
- Barry M. Goldwater Scholarship*
- Benjamin A. Gilman International Scholarship
- Camargo Foundation Fellowship
- Cambridge Junior Research Fellowship
- Dwight David Eisenhower Transportation Fellowship*
- Environmental Protection Agency Science To Achieve Results Fellowships
- Ford Foundation Diversity Fellowships
- Fulbright U.S. Student Program*
- Gates Cambridge Scholarship
- Gem Fellowships For Minorities in Engineering And Science*
- Humboldt Foundation Scholarships & Fellowships
- Institute for Health Metrics and Evaluation (IHME) Post Bachelor Fellowship
- Marshall Scholarship*
- Morris K. Udall Scholarship*
- Multidisciplinary Research Program of the University Research Initiative (MURI)
- NASA Graduate Student Researchers Program
- National Defense Science & Engineering Graduate Fellowship
- National Institute Of Health National Research Service Awards
- National Science Foundation Facilitation Awards For Scientists and Engineers With Disabilities
- National Science Foundation Fellowship*
- Rhodes Scholarship
- Truman Scholarship
- US-UK Fulbright Commission | UK Summer Institutes
- Winston Churchill Foundation Scholarship

Scholarships/Fellowships denoted by an * have been awarded to CEE students within the past 10 years.

Undergraduate Research

Faculty members in the CEE Department hire undergraduate research assistants to work on their research projects. Please contact the faculty members individually to learn about their research and assistantship opportunities.

Academic Advising

Faculty Advising

When entering McCormick School of Engineering and Applied Science (MEAS) as freshmen, the student is assigned to one of the Freshmen Advisers in McCormick School. During the spring quarter of the freshmen year, this student is assigned a faculty adviser from their program of interest. This faculty member will stay with the student until they graduate or change programs.

When entering the Civil Engineering or Environmental Engineering program as a transfer, either from the McCormick School, other schools in Northwestern, or other universities, the student is assigned a faculty adviser from the student's program area. This faculty adviser will stay with the student until they graduate or change programs.

Faculty advisers help students translate their interests into an appropriate course of study, evaluate their curriculum and workload, monitor their progress toward a degree, and help students take advantage of the diverse opportunities available at Northwestern. Students should consult with their faculty advisers when they have questions about the academic requirements of the university, MEAS, and the degree program. Faculty advisers evaluate each quarter's program and progress and approve petition requests. Faculty adviser's approval is required for course registration each quarter.

Students who wish to petition for an exception to the program requirements should discuss the matter first with their advisers, who must approve any petition before it can be considered. To be effective, a faculty adviser must be aware of a student's academic and personal goals.

Students must consult with their faculty advisers during the preregistration advising period to receive approval of their course selections for the following quarter. Students are responsible for staying in contact with their faculty advisers and ensuring that the advisers are aware of their goals and progress. Academic difficulties may be avoided if the adviser is able to recognize problems early. Students often form strong intellectual bonds with their faculty advisers, and this is more apt to happen if the student takes the initiative. Another benefit of developing a relationship with the faculty adviser (and faculty members in general) is that students may wish to ask the adviser for a letter of recommendation at some point in their career. Such letters are most useful when they come from people who know the student well enough to accurately assess their capabilities.

What to Expect from an Adviser

1. ***Curriculum Advice***. Students should use their advisers as resources for planning their academic program and identifying academic and career goals. The adviser will be able to explain degree program requirements, scheduling/registration procedures, and other academic regulations. A faculty adviser may refer a student to other faculty members or offices that are better able to serve the student's needs.
2. ***Assistance***. Advisers can help students explore special programs, such as cooperative education, internships, study abroad, dual-degree, certificate programs, and dual major programs. They may also be helpful in obtaining tutorial assistance or transfer/advanced placement credit, as appropriate. Students often ask their advisers to provide letters of recommendation for scholarships, study abroad, employment, or graduate school.
3. ***Career Development***. While it is not the function of advisers to help students find employment, they should be able to give broad advice on careers in engineering and science and the academic background necessary for such careers. Samples for such advice may include:
    a. discuss professional opportunities for BSCI or BSEN graduates and the preparation and course of study needed to meet those positions,
    b. remind the students to start searching for internship,
    c. discuss the importance of summer internship for those who wish to practice upon graduation,

d. discuss the importance of participating in summer research such as Research Experience for Undergraduates (REU) for those who wish to pursue graduate studies,
e. discuss research opportunities available with CEE faculty during school year for undergraduate students,
f. discuss the availability of professional scholarships and fellowships,
g. discuss the general procedure in searching for post graduate employment and summer internship, and
h. provide information on post-graduate education and general requirements for admission to graduate programs.

A faculty adviser may refer a student to other faculty members or offices that are better able to serve the student's needs.

4. ***Availability***. Students should expect to have ready access to their advisers. Most advisers set aside several office hours each week and will usually make appointments outside those hours if necessary. Students are suggested to e-mail their advisers to schedule a meeting unless their open office hours are posted.
5. ***Personal Contact***. Students should expect to have personal relationships with their advisers, through which the advisers will become familiar with the students' backgrounds, academic records, and career plans.

What Not to Expect from an Adviser

1. ***Assessment of Effort Required for Specific Courses***. Advisers can determine the appropriateness of a given course in a student's program, but they cannot predict how difficult the course will be or how much effort it will require.
2. ***Help with Personal Problems***. Students should make their advisers aware of problems that interfere with academic progress, but advisers are not trained to provide counseling for personal problems, nor should they be expected to resolve housing or financial issues. However, they will refer students to the appropriate university office or program.
3. ***Job Search Assistance***. While students should be able to discuss career options with their advisers, it is not the adviser's responsibility to provide assistance beyond those presented in item 3 of "What to Expect from an Adviser" in a job search. Students should contact University Career Advancement http://www.northwestern.edu/careers/ or the McCormick Office of Career Development http://www.mccormick.northwestern.edu/mcd/index.html for help in finding employment. And **attend the Department of Civil and Environmental Engineering Career Fair in October and January** (see page 20).
4. ***Tutoring/Study Skills***. Advisers are often able to identify the need for tutoring, remedial course work, or improved study skills but should not be expected to provide the necessary assistance. Students in need of such assistance are generally referred to other resources, such as the CEE Department's tutoring assistance in basic engineering courses taught by our faculty.

Student Responsibilities in the Student-Adviser Relationship

1. ***Accept Referrals***. Students should be willing to accept referrals from their advisers and should review the results of such referrals with their advisers after the fact.
2. ***Initiate Contact***. Students are expected to initiate contact with their advisers for scheduling, course changes, and other matters in a timely fashion. Because of teaching commitments, research, and travel obligations, advisers may not be available on short notice. Students are urged to plan ahead and initiate contact with their advisers well in advance of specific deadlines.

3. ***Keep Advisers Informed***. Advisers can provide better advice if they are kept informed of their advisees' academic progress and career goals. Students should feel free to share this information with their advisers and can expect their advisers asking questions and providing appropriate guidance based on the dialogue.
4. ***Work to Develop Rapport***. The rapport necessary for good advising can occur only if both adviser and student make an active effort to develop it. Recognizing that individual advisers have their own styles and personalities; students should respond to the efforts of their advisers to get to know them and their academic interests.

Bachelor of Science in Civil Engineering (BSCI)

The Bachelor of Science in Civil Engineering program at Northwestern University is accredited by the Engineering Accreditation Commission of the ABET, Inc. (http://abet.org)

Program Educational Objectives

The Civil Engineering Program Educational Objectives (PEO) are:

1. Graduates employ their knowledge of science, mathematics, and engineering in civil and environmental engineering practice, research, and management as well as other professional fields such as law, medicine, and finance.
2. Graduates become leaders in organizations that focus on advanced problem solving for complex systems in multidisciplinary settings.
3. Graduates play key roles in the process of constructing and managing local and global civil and environmental engineering infrastructure systems.
4. Graduates are ethically engaged in a wide variety of organizations that require a diversity of thought, creativity, and curiosity to meet the challenges posed by a rapidly changing world.

Student Learning Outcomes

The student learning outcomes of the BSCI program at Northwestern University are the same as the outcomes (O1) through (O7) in the ABET accreditation criteria. These outcomes are:

O1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics including using modern tools

O2. 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

O3. an ability to communicate (written and/or orally) effectively with a range of audiences

O4. 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

O5. 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

O6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions

O7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies

The student learning outcomes support the program educational objectives given above. The relationship of student outcomes to program educational objectives showing how the PEO are attained is given in Table CE.1 and posted on the department web site http://www.mccormick.northwestern.edu/civil-environmental/undergraduate/civil-engineering/abet-objectives-outcomes.html. In this Table, PEO 1, *Graduates employ their knowledge of science, mathematics, and engineering in civil and environmental engineering practice, research, and management as well as other professional fields such as law, medicine, and finance*, is attained through outcomes (O1) and (O6). Similarly, PEO 2 is attained through outcomes (O1) to (05); PEO 3 is attained through outcomes (O3) to (O5); and PEO 4 is attained through outcomes (O3) to (O5) and (O7).

Table CE.1 Mapping of BSCI Program Educational Objectives and Student Learning Outcomes

BSCI Program Educational Objectives	BSCI Student Learning Outcomes
1. Graduates employ their knowledge of science, mathematics, and engineering in civil and environmental engineering practice, research, and management as well as other professional fields such as law, medicine, and finance.	O1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics including using modern tools O6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusion
2. Graduates become leaders in organizations that focus on advanced problem solving for complex systems in multidisciplinary settings.	O1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics including using modern tools O2. 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 O3. an ability to communicate (written and/or orally) effectively with a range of audiences O4. 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 O5. 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
3. Graduates play key roles in the process of constructing and managing local and global civil and environmental infrastructure systems	O3. an ability to communicate (written and/or orally) effectively with a range of audiences O4. 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 O5. 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
4. Graduates are ethically engaged in a wide variety of organizations that require a diversity of thought, creativity, and curiosity to meet the challenges posed by a rapidly changing world.	O3. an ability to communicate (written and/or orally) effectively with a range of audiences O4. 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 O5. 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 O7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies

Program Requirements

The minimum number of units required for the BSCI degree is 48 units. Among them are:

McCormick core course (26 units)

- Mathematics (4 units)
- Basic Sciences (4 units)
- Engineering Foundations (3 units)
- Design, Communications and Innovation (3 units)
- Social Sciences and Humanities (7 units)
- Unrestricted Electives (5 units)

Civil Engineering Major (22 units)

- Civil Engineering Foundations (8 units)
- Civil Engineering Breadth (4 units)
- Focus Areas (4 units)
- Cornerstone Design (1.34 unit)
- Capstone Design (1 unit)
- Technical Electives (4 units)
- Professional Development

The 48 units of courses must also meet the following criteria:

A. A ***minimum of 18 units of "Engineering Topics" (ET) and a minimum of 12 units of "Math/Science" (MTS) from the 48 units are required for the BSCI degree***. Note that NOT every course from every department in McCormick is classified as an engineering topic. Please consult with your adviser and McCormick partition list[2] for ET and MTS partitioning of courses offered by McCormick.

B. The cumulative GPA of the 22 units of Civil Engineering major courses must be 2.00 or higher.

C. NO P/N option course is permitted among the 22 units of Civil Engineering major courses. GEN_ENG 220-1,2 which has only a P/N optional is exempted from this requirement. Courses taken abroad for a grade, but recorded by the Northwestern University Registrar as P/N, may be exempted from this requirement.

D. A maximum of three (3) courses among the 22 Civil Engineering major courses may have a grade of D.

E. The only courses in the BSCI degree requirements that are eligible for P/N option are the seven (7) social science/humanities and five (5) unrestricted elective courses. Only four (4) 100- or 200-level courses may be taken P/N to satisfy the 7-unit requirement in the social science/humanities. Courses taken abroad for a grade, but recorded by the Northwestern University Registrar as P/N, may be exempted from this requirement.

F. A maximum of eight (8) P/N option units are permitted among 48 units required in satisfying the graduation requirement.

G. Only 1 unit per quarter may be taken P/N during freshman and sophomore years.

H. A GPA of NO less than 2.0 is required for all units presented for the BSCI degree.

I. The partial units from CHEM and Physics lab and professional development may be applied to unrestricted elective.

J. A maximum of one (1) unit of CIV_ENV 399 may be applied towards the 22 units of Civil Engineering major.

[2] McCormick partition list is available on the web, http://www.mccormick.northwestern.edu/academics/undergraduate/abet/course-partitioning.php. These partitions are valid only for the academic year the course is taken.

Detailed Program Requirements

A. McCormick School Core Courses (26 Units)

The McCormick School (MEAS) Core Courses has 6 subgroups: *Basic Sciences* (4 units), *Engineering Foundations* (3 units), *Mathematics and Sciences* (4 units), *Design and Communications* (3 units), *Social Sciences/Humanities* (7 units), and *unrestricted electives* (5 units). **Bold face courses represent required courses**.

1. Basic Sciences (4 units)

i. **CHEM 131, 151, or 171 – General Chemistry**
ii. **PHYSICS 135-2 or 140-2 – General Physics 2**
iii. choose one course from Biological Sciences or Earth and Planetary Sciences
   a. CIV_ENV 203 – Earth in the Anthropocene ***(RECOMMENDED)***
   b. BIOL_SCI 215 – Genetics and Molecular Biology
   c. BIOL_SCI 217 – Physiology
   d. BIOL_SCI 219 – Cell biology
   e. EARTH 201 – Earth Systems Revealed
   f. EARTH 202 – Earth's Interior
iv. Chemistry, Physics, Biological Sciences, EARTH 201, 202, CIV_ENV 202, or CIV_ENV 203 listed in this group (see *Undergraduate Catalog*) and not taken (iii) above. EARTH 203 and ASTRON courses are not acceptable.

Notes:

(1) CHEM 131, 151, and 171 have a companion lab CHEM 132, 152, and 181, respectively.
(2) If no placement in Chemistry, CHEM 110 must be taken prior to CHEM 131. Only CHEM 131 is used to meet the basic sciences requirement. CHEM 110 may use to meet the unrestricted elective but does not satisfy basic sciences requirement.
(3) PHYSICS 135-2 or 140-2 has a companion lab PHYSICS 136-2.
(4) Each of the BIOL_SCI 215, 217, and 219 has a companion lab (BIOL_SCI 220 for 215, and 221 for 219) that carries 0.34 units each. The companion labs are not required to meet this 4th unit of Basic Science requirement for BSCI.
(5) 300 level and above Earth and Planetary Science courses may be petitioned to meet the non-chemistry/physics basic science requirement if the faculty teaching or the department offering the course would confirm, in writing, the course is a science course.

2. Engineering Foundations (3 units)

i. **GEN_ENG 150-0 – Programming for Engineers (or GEN_ENG 151-0 – Honors Programming for Engineers)**
ii. **GEN_ENG 231-0 – Probability and Statistics for Engineers**
iii. **GEN_ENG 241-0 – Linear Algebra for Engineers**

3. Mathematics (4 units)

i. **MATH 220-1 – Single-Variable Differential Calculus**
ii. **MATH 220-2 – Single-Variable Integral Calculus**
iii. **MATH 228-1 – Multivariable Differential Calculus for Engineering**
iv. **MATH 228-2 – Multivariable Integral Calculus for Engineering**

4. ***Design, Communications and Innovation (3 units)***
   i. **DSGN 106-1,2 (0.5 unit each) – Design Thinking and Communication**
   ii. **ENG 106-1,2 (0.5 unit each) – Writing in Special Contexts, must be taken concurrently with DSGN 106-1,2.**
   iii. choose one from:
      a. COMM_ST 102-0 – Public Speaking
      b. ENTREP 225-0 – Principles of Entrepreneurship
      c. ENTREP 325-0 – Engineering Entrepreneurship
      d. PERF_ST 103-0 – Analysis and Performance of Text
      e. PERF_ST 203-0 – Performance Culture and Communication
      f. PRDV 335-0 – Engineering Improv: From Allowing to Application
      g. BMD_ENG 390-2 – Biomedical Engineering Design 1

5. ***Social Science and Humanities (7 units)***

Seven courses are required to satisfy the requirements of this subgroup. The seven courses must meet the following criteria.

- Maximum of 5 units from either social science or humanities category
- At least 3 units must be thematically related
- No more than 3 units of 100-level courses
- AP, IB, and transfer credits are eligible to count toward this requirement

Foreign language study can be incorporated into the program, but should be started as early as possible, preferably in the freshman year.

Courses taken for a student's Social Science/Humanities requirement must be approved in advance by the McCormick Humanities Panel. Complete requirement information is at the McCormick Undergraduate Engineering Office web site, http://www.mccormick.northwestern.edu/students/undergraduate/social-science-humanities-theme/index.html. You must submit your theme form via McCormick Advising System (MAS). A sample of the screen shot is provided on page 62.

6. ***Unrestricted Electives (5 units)***

Unrestricted electives allow the students to take any course offered for credit by any school in the University so long as they have the prerequisites for it. Civil Engineering students have five unrestricted electives as part of the McCormick School Core Courses. Many students use these units to broaden their education by concentrating them in a particular areas (such as economics or a foreign language or music), while others take additional technical electives in their major or related fields. *One (1) of the five (5) units of unrestricted electives may be the combination of Chemistry Lab (0.34 unit from CHEM 142, 162, or 182), Physics Lab (0.34 unit from Physics 136-2), and* CIV_ENV *301-1 (0.34 unit).*

B. Civil Engineering Major (22 Units)

Additional 22 units beyond the McCormick Core Courses are required for the Civil Engineering major. The units are distributed among five categories: C*ivil engineering foundations* (8 units), *breadth* (4 units), *focus areas* (4 units), *technical electives* (5 units), and *Capstone and Cornerstone design* (2.34 units. *Note: 0.34 unit may be counted towards unrestricted electives*). At least 2 units within the focus areas and technical electives must be denoted as design course that meet ABET Civil Engineering Program criteria. No P/N grade option is permitted among these 22 courses. Maximum of one CIV_ENV 399 course is permitted among these 22 courses. In addition, it is highly recommended all

freshmen to register the zero unit seminar class CIV_ENV 101 to learn about civil and environmental engineering.

1. ***Civil Engineering Foundations (8 units)***
   i. CIV_ENV 202-0 – Biological and Ecological Principles
      or CIV_ENV 220-0 – Structural Art
   ii. **CIV_ENV 216-0 – Mechanics of Materials I**
   iii. CIV_ENV 304-0 – Civil and Environmental Engineering Systems Analysis
   iv. **GEN_ENG 211-0 – Engineering Physics - Statics**
   v. **GEN_ENG 212-0 – Engineering Physics - Dynamics**
   vi. **GEN_ENG 251-0 – Applied Ordinary Differential Equations**
   vii. MECH_ENG 222-0 – Thermodynamics & Statistical Mechanics - I
      or BMD_ENG 250-0 – Thermodynamics
      or CHEM_ENG 211-0 – Thermodynamics
   viii. MECH_ENG 241-0 – Fluid Mechanics I

2. ***Civil Engineering Breadth (4 units)***
   i. **CIV_ENV 221 – Theory of Structures I (*fall quarter, junior or senior year*)**
   ii. **CIV_ENV 250 – Earth Surface Engineering (*fall quarter, junior or senior year*)**
   iii. **CIV_ENV 260 – Environmental Systems & Processes (*spring quarter, sophomore year*)**
   iv. **CIV_ENV 371/376 – Introduction to Transportation Planning and Analysis / Transportation System Operations** (*fall quarter, junior or senior year*)

3. ***Focus Areas (4 units)***
   * Select courses from at least 2 areas listed below
   * **Must choose at least 2 design courses, labeled D (see note). Design courses can count towards either your Focus Areas or Technical Electives (item 6).**

Architectural Engineering & Design
CIV_ENV 386^{D} – High Performance Building Design
CIV_ENV 387 – Design of Sustainable Urban Districts
CIV_ENV 395 – Building Physics I and II (two units available)
Environmental Engineering
CIV_ENV 346^{D} – Ecohydrology
CIV_ENV 364^{D} – Sustainable Water Systems
CIV_ENV 366 – Dynamics in Chemical Transport and Reaction
Geotechnics
CIV_ENV 352^{D} – Foundation Design
CIV_ENV 353 – Energy Geostructures and Geosystems
CIV_ENV 395 – Geohazard Assessment and Mitigation
Management
CIV_ENV 330 – Engineering Project Management
CIV_ENV 332 – Construction Estimating
CIV_ENV 336 – Construction Scheduling

Structural Engineering

CIV_ENV 323[D] – Structural Steel Design

CIV_ENV 325[D] – Reinforced Concrete Design

CIV_ENV 320 – Structural Dynamics

CIV_ENV 321 – Properties of Concrete

Transportation

CIV_ENV 371[D]/376[D] - Introduction to Transportation Planning & Analysis or Transportation System Operations whichever is not taken in Breadth

Note: You must meet pre-requisite requirements to be in compliance with ABET accreditation criteria.

[D] denoted as design course that must meet ABET Civil Engineering Program criteria on content & instructor qualification (P.E.)

* ASCE defines many attributes to meet ABET Civil Engineering Program criterion on design component. Among them is the following: "*Engineering standards and realistic constraints are critical in civil engineering design. The program must clearly demonstrate where standards and constraints are taught and how they are integrated into the design components of the curriculum. In civil engineering, the most common types of standards are consensus standards, codes and regulations. Constraints explicitly cited in EAC/ABET General Criterion 3(2) are public health, safety, and welfare as well as global, cultural, social, environmental and economic factors.*"

4. ***Capstone and Cornerstone Design (2 units)***

- **CIV_ENV 201-1 + CIV_ENV 301-1 – Cornerstone Design + Lab**
- **CIV_ENV 382-1,2 – Capstone Design** (*0.5 unit each, winter and spring quarters*)

The 2 parts, 382-1 and 382-2, must be taken in sequence during the last winter and spring quarters prior to receiving a B.S. degree. To enroll, all other Civil Engineering Major requirements must be previously or concurrently completed. That is, the student must have completed, or have a plan in place to complete the other 20 units in the Civil Engineering Major by the time Civ_Env 382-2 is completed. It is possible for someone to leave other degree requirements, outside of the Civil Engineering Major, e.g., Theme or Unrestricted Elective, for after capstone.

Also, refer to item 8 on page 27, and the note following Table CE.2 on page 30, for courses that need to be taken in sequence leading up to Civ_Env 382-1,2. Capstone Design does not count towards the requirement of at least 2 units of design courses towards your Focus Areas or Technical Electives.

5. ***Technical Electives (5 units)***

Technical electives provide the students the opportunity to focus on a specialty area within civil engineering or to combine engineering with management or other fields. While the choices for technical electives are broad, there are still some restrictions. Selection of technical electives must meet the following:

i. A minimum of 12 units of "Math/Science", and 18 units of "Engineering Topics" from the 48 units is required for the BSCI degree. Note that NOT every course from every department in McCormick is classified as an engineering topic. Students should consult their adviser on courses classification. The course partitioning among mathematics and basic science, engineering topics, and general education for all the courses offered in McCormick School is available at https://www.mccormick.northwestern.edu/academics/undergraduate/abet/course-partitioning.html. These partitions are valid only for the academic year the course is taken. Table CE.4 on page 33 is a worksheet to help students keep track of the units earned towards their MTS or ET requirements.

ii. An approved list of Technical Electives appears on page 37. Other courses, such as those at https://www.mccormick.northwestern.edu/academics/undergraduate/abet/course-partitioning.html can be approved by petition on a case by case basis.
iii. CIV_ENV 395, 398, 399 may be acceptable through petition. Only 1 unit of 399 may be used to meet the 16 units of Civil Engineering major. For students completing the honor thesis where 2 units of 399 is required, only one (1) unit is used to meet the 16 units of Civil Engineering major. The second unit of 399 may be applied to unrestricted elective. A 399 project application form is required in order to receive a registration permission number.
iv. GEN ENG 220-1, 2 (a total of 1 credit) **or** DSGN 245/246 (a total of 1 credit) may be applied to one of five TE courses.
v. If a technical elective (such as CIV_ENV 395 or 399) is to be considered as design, the course must meet ABET's interpretation of design: the deliverable must be a detailed description of a process or a product to achieve a client's (community's) goal that meets local, regional, or national standards/codes/regulations. The design must require knowledge acquired from several areas of the Civil Engineering core courses. In Civil Engineering, a design project, when done in the real world, is one that would require a registered Professional Engineer's signature.

7 Professional Development (0.34 unit)

CIV_ENV 301-1 – Professional Development Seminar I (winter quarter only)
The 0.34 unit may be applied to unrestricted electives.

C. Professional Career

Engineering experience plays a big role in the success of an engineer's professional career. A student should seek this experience as soon as freshmen year. The best way to gain progressive technical experience is internship. An internship with a construction firm or local government provides the students an overview on the execution of a project. One will see how the design can become reality and the issues one will face between what is "on-paper" and what can be built safely and efficiently. There is nothing that can replace this hands-on experience and it will make you a better engineer.

1. **Summer Internship Preparation – Freshmen & Sophomores**

All freshmen and sophomores are **highly** recommended to take CIV_ENV 101 (Introduction to Civil and Environmental Engineering), a zero-credit course and Gen_Eng 220-1, 2 for a total of 1 course unit. **The courses introduce the civil and environmental engineering professions and skills necessary for students to attain an engineering summer internship as early as the summer after the freshmen year.** All students are encouraged to attend the Department Career Fair in October and January and to chat with engineers and young alumni at Meet-N-Greet, part of the Fall Career Fair program**.** The Fall CEE Career Fair, while seems extremely early in the academic year, is when most construction firms are looking for summer interns. Go to the CEE Career Fair and learn what these companies are looking for.

2. **Professional Licensure (Registration)**

All seniors are encouraged and **highly** recommended to take CIV_ENV 301-2 – Professional Development Seminar II. This is a no credit, no tuition course series on the review for Fundamental of Engineering (FE) Exam, first step in obtaining Profession Engineer (PE) registration.

D. Tables, Charts, and Forms for BSCI

The Department has developed a number of tables, charts, and forms that you may need or find them useful in helping you plan and keep track of your course of studies. Some are also available on the CEE website, http://www.mccormick.northwestern.edu/civil-environmental/current-students/forms-documents.html. These tables, charts, and forms are:

Table CE.2 – Sample BSCI Curriculum Flow Chart (*available online*)
Table CE.3 – Approved BSCI Technical Electives (*available online*)
Table CE.4 –Summary of MTS and ET Topics Units in BSCI (*available in the online UG Handbook*)

Table CE.2 shows a flow chart for a typical BSCI curriculum by quarters. This flow chart, also displays the pre-requisite requirements, is intended to be a guide for program planning. Almost all of the students entering Northwestern University have earned Advanced Placement (AP) credits. Many students also interested in pursuing a dual major, minor, certificate program, etc. Each student's program flow chart is likely to be different.

Table CE.3 shows an approved list of technical electives. Courses not appeared on the list but meet the general guidelines listed here *may be* accepted by petition. Generally, acceptable technical electives are any course, 300 level or above in most Engineering, Biological Science, Chemistry, Geological Science (EARTH courses), Physics, Mathematics (including ES APPM), or other areas supporting the student's specialty (in civil engineering) such as Economics (for transportation area).

Students interested is pursuing interest in research, projects not available in courses offered by the department, McCormick School, or the University may register for CIV_ENV 399 – Project Application for an Independent Study. This independent study course carries one course unit and may be used to meet the technical elective requirement (max. 1 course may count towards technical elective). Students interested in registering for CIV_ENV 399 **must** submit a petition form, available at the end of this handbook and online, **signed by both the project adviser and the ABET coordinator**.

In order to be in compliance with ABET accreditation requirements that any ABET accredited engineering program must consist of a minimum of 12 units of math/science (MTS) and 18 units of engineering topics (ET). Table CE.6 shows a summary of MTS and ET unit distribution of all the required and elective courses in your program that consist of any of the MTS and ET distribution. The MTS and ET distribution of all courses offered in McCormick can be found on the McCormick web site https://www.mccormick.northwestern.edu/academics/undergraduate/abet/course-partitioning.html. **These partitions are valid only for the academic year the course is taken. It is recommended you keep a record of ET/MTS distribution of the elective courses you look up at the McCormick web site.**

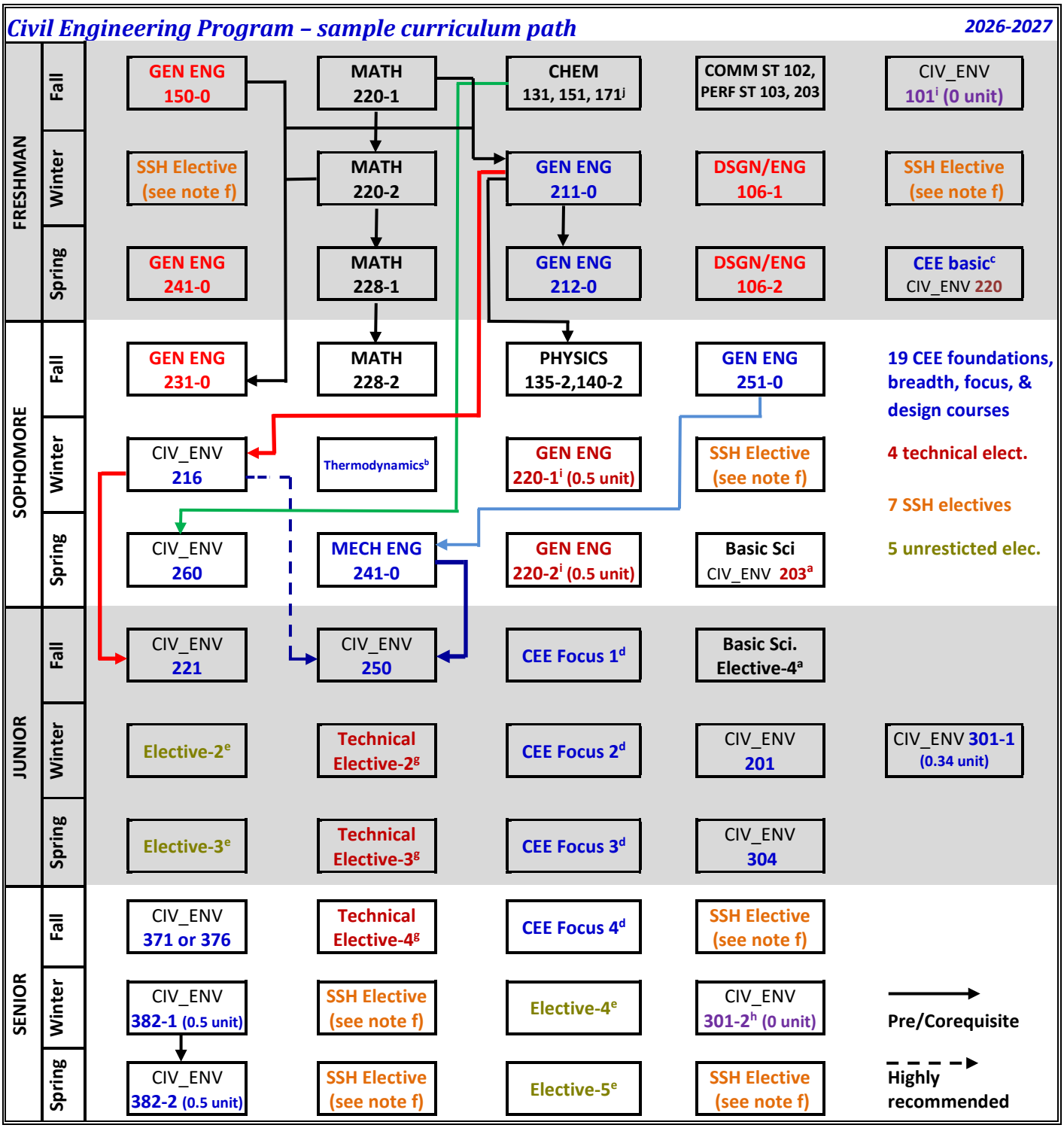
E. McCormick Advising System (MAS https://mas.mccormick.northwestern.edu/)

The McCormick's Advising System allows you 24/7 access to monitor your academic information, comments your adviser writes during your advising session, and your progress in meeting your degree requirements. Please keep in mind that MAS is a monitoring system, not your electronic adviser. Please visit with your adviser for academic, professional, and some personal consultation.

F. ConnectNU (https://www.northwestern.edu/undergraduate-advising/for-students/connectnu/)

ConnectNU is Northwestern's online advising platform for undergraduates to schedule appointments with school/college advisers and connect with other campus offices. Please consult with your adviser if s/he would use this system in conjunction with MAS. Please note that MAS is the only advising system that will do your degree audit.

Table CE.2 Sample BSCI Curriculum Plan



Please see notes on the page followed.

Table CE.2 (*continued*) Sample BSCI Curriculum Plan

Notes for the sample curriculum plan:

a. At least ONE MUST from BIO SCI, EARTH 201, 202, or CIV_ENV 203; the other can be any course except ASTRON and EARTH 203 listed in Basic Sciences.
b. May choose among MECH_ENG 222 (*offers in winter quarter only*), BMD_ENG 250 (*offers in winter quarter only*), and CHEM_ENG 211 (*offers in winter and spring quarters only*).
c. May choose among CIV_ENV 202, 205, and 220.
d. Choose a total of 4 courses from the approved list (**see page 25**) and 4 technical electives (**see page 26**). At least **two** must be design courses, as defined according to ABET.
e. May choose from any course offered for credit by the University. First unrestricted elective unit is from the two required basic science lab sessions and CIV_ENV 301-1
f. Courses must be selected to meet the Social Science-Humanities theme requirement.
g. An **APPROVED** list is at Table CE.3. Other courses can be approved by petition on a case by case basis. A **minimum of 12 units of Math/Science (MTS) and 18 units of Engineering Topics (ET) from 48 units are required for BSCI**. Consult with the partitioning table at https://www.mccormick.northwestern.edu/academics/undergraduate/abet/course-partitioning.html . These partitions are valid only for the academic year the course is taken. First technical elective unit is GenEng 220-1,2.
h. Fundamental of Engineering Exam Review – all seniors are highly recommended to take.
i. *CIV_ENV* ***101 (zero unit) and GEN ENG 220-1,2 for a total of 1 credit sequence is HIGHLY recommended for freshman and sophomores. Skills acquired from these courses are necessary for summer internship in civil and environmental engineering profession.***
j. If no placement in Chemistry, then take CHEM 110 & 131 sequence.

In compliance with ABET criteria, the following courses must be taken in sequence: **GE211→216→ 221→325** (red path in the flow chart); **GE251→ME 241→250** (blue path in the flow chart); and **221, 250, 260, 371/376 → 382. Focus area courses can be taken concurrently with 382.**

Table CE.3 Approved BSCI Technical Electives 2026-2027

Course No.	Course Title	Prerequisites	Quarter Offered	Units		
				Design	MTS	ET
CIV_ENV 303	Environmental Law & Policy	Jr/Sr	F	0	0	0
CIV_ENV 306	Uncertainty Analysis	GEN_ENG 231	F			0.5
CIV_ENV 308	Environmental Law & Policy	Jr/Sr	Sp	0	0	0
CIV_ENV 309	Environmental Law & Policy	Jr/Sr	W	0	0	0
CIV_ENV 317	Biogeochemistry	1 unit in chemistry; 1 unit is geo-sci, bio-sci, or env sci			1.0	
CIV_ENV 320	Structural Analysis – Dynamics	CIV_ENV 221	F			1.0
CIV_ENV 321	Concrete Properties		W			1.0
CIV_ENV 323	Structural Steel Design	CIV_ENV 216, 221	Sp (E)	1.0		1.0
CIV_ENV 325	Reinforced Concrete	CIV_ENV 216, 221	W	1.0		1.0
CIV_ENV 327	Finite Element Methods in Mechanics	CIV_ENV 216	F			1.0
CIV_ENV 328	Computational Forensics & Failure Analysis	CIV_ENV 327	Sp			1.0
CIV_ENV 330	Engineering Project Management	Jr/Sr	F			1.0
CIV_ENV 332	Building Construction Estimating	CIV_ENV 330	Sp			1.0
CIV_ENV 336	Project Scheduling	CIV_ENV 330	W			1.0
CIV_ENV 346	Ecohydrology			1.0		1.0
CIV_ENV 349	Environmental Management	Sr standing				1.0
CIV_ENV 352	Foundation Engineering	CIV_ENV 250	W(O)	1.0		1.0
CIV_ENV 353	Energy Geostructures and Geosystems	CIV_ENV 250				1.0
CIV_ENV 361-1	Environmental Microbiology					1.0
CIV_ENV 361-2	Public and Environmental Health	CIV_ENV 361-1				1.0
CIV_ENV 364	Sustainable Water Systems	CIV_ENV 260, ME 241, CIV_ENV 340 recomm	W	1.0		1.0
CIV_ENV 365	Environmental Laboratory	CIV_ENV 367				1.0
CIV_ENV 367	Chemical Processes in Aquatic Systems	BMD Eng 250				1.0
CIV_ENV 368	Sustainability: The City		F			1.0
CIV_ENV 370	Emerging Organic Contaminants	CHEM 210-1				1.0
CIV_ENV 371	Intro to Transportation Planning & Analysis	Jr standing	F	1.0		1.0
CIV_ENV 374	Data Science for Urban Systems					1.0
CIV_ENV 376	Transportation System Operations	Calculus, Statistics	F	1.0		1.0
CIV_ENV 385-1	AE&D I: Fundamentals of Design	Jr in engineering	F			1.0
CIV_ENV 385-2	AE&D II: Intermediate Studio	CIV_ENV 385-1	W			1.0
CIV_ENV 385-3	AE&D III: Advanced Studio	CIV_ENV 385-2	Sp			1.0
CIV_ENV 386	High Performance Architectural Design		F	1.0		1.0
CIV_ENV 387	Design of Sustainable Urban Developments	CIV_ENV 386; 385-1,2,3 recomm.	W			1.0
CIV_ENV 395	Special Topics in Civil Engineering	varies	F,W,Sp	varies		varies
CIV_ENV 398-1,2	Community-Based Design	jr/sr BSEN or BSCI	W,Sp			1.0, 1.0
CIV_ENV 399	Projects	approved by ABET coordinator	F,W,Sp	varies		varies
CIV_ENV 400-level except 499 if permitted by instructors, permission number required				varies		varies
ES APPM 311-1,2	Methods of Applied Mathematics	GenEng 205-4			0.9	0.1
ES APPM 311-3	Methods of Applied Mathematics	GenEng 205-4			1.0	0
ES APPM 312	Complex Variables	GenEng 205-4				
ES APPM 322	Applied Dynamical System	ES APPM 311-1,2				
ES APPM 346	Modeling and Computation in Science and Engineering	AMTH 234, 240, GenEng 205-4, PHYSICS 135-1,2			0.8	0.2

Table CE.3 Approved BSCI Technical Electives 2026-2027 (*continued*)

Course No.	Course Title	Prerequisites	Quarter Offered	Units		
				Design	MTS	ET
EARTH 320	Global Tectonics	EARTH 202, PHYSICS 135-2			1.0	
EARTH 323	Seismology and Earth Structure	EARTH 202, MATH 250, PHYSICS 135-2			1.0	
EARTH 324	Earthquakes and Tectonics	EARTH 202, MATH 250, PHYSICS 135-2			1.0	
EARTH 328	Tectonics and Structural Geology	EARTH 201, MATH 240, PHYSICS 135-1		0	0	0
EARTH 330	Sedimentary Geology	EARTH 201		0	0	0
ECON 281	Introduction to Applied Econometrics	ECON 201, 202, MATH 220, STAT 210		0	0	0
ECON 310-1	Microeconomics I	ECON 201, 202, MATH 220		0	0	0
ECON 354	Issues in Urban and Regional Economics	ECON 281, 310-1,2		0	0	0
ECON 355	Transportation Economics and Public Policy	ECON 281, 310-1,2		0	0	0
ECON 381-1	Econometrics I	STAT 210, ECON 310-1, 311		0	0	0
ECON 381-2	Econometrics II	ECON 381-1		0	0	0
GEN ENG 220-1,2 **or** DSGN 245/246	Analytic and Computer Graphics Intro to Computer Aided Design					1.0
IEMS 304	Statistical Methods for Data Mining	IEMS 303		0		1.0
IEMS 307	Quality Improvement by Experimental Design	IEMS 201, 303				1.0
IEMS 313	Deterministic Models and Optimization	GenEng 205-1, MATH 230				1.0
IEMS 315	Stochastic Models and Simulation	IEMS 202, GenEng 205-1, co-req. IEMS 303				1.0
MAT SCI 316-1,2	Microstructural Dynamics	MAT SCI 315				1.0
MAT SCI 318	Materials Selection	MAT SCI 201				1.0
MAT SCI 332	Mechanical Behavior of Solids	MAT SCI 316-1,2				1.0
MATH 310-1,2,3	Probability and Stochastic Processes	MATH 234; 240			1.0	
MATH 314	Probability and Statistics for Econometrics	MATH 234			1.0	
MATH 325	Complex Analysis	MATH 234, 240			1.0	
MATH 336-1,2	Introduction to the Theory of Numbers	MATH 234; MATH 336-1			1.0	
MATH 342	Introduction to Differential Geometry	MATH 234, 240			1.0	
MATH 351	Fourier Analysis and Boundary Value Problems	MATH 250			1.0	
MECH ENG 314	Theory of Machines – Dynamics	ME 202				1.0
MECH ENG 315	Theory of Machines – Design of Elements	MAT SCI 201, CIV_ENV 216				1.0
MECH ENG 316	Mechanical Systems Design	ME 315				1.0
MECH ENG 317	Molecular Modeling and the Interface to Micromechanics					1.0
MECH ENG 341	Computational Methods for Engineering Design	senior standing				1.0
MECH ENG 358	Experimental Engineering II					1.0
MECH ENG 359	Reliability Engineering	GenEng 205-4				1.0
MECH ENG 360	Mechanics of Sports					1.0

NOTE: F = fall quarter, W = winter quarter, Sp = spring quarter; O = odd year, E = even year
All CIV_ENV 400 level courses requires instructor permission AND permission number from CEE office.
All 399 courses require submission of a course proposal and approval from ABET Coordinator.

IMPORTANT NOTICE: A minimum of 18 units of "Engineering Topics" from the 48 units is required for the BSCI degree. NOT every course from every department in McCormick is classified as an engineering topic. Before registering please consult with your adviser and http://www.mccormick.northwestern.edu/academics/undergraduate/abet/course-partitioning.php **for course partitioning of math/science and engineering topics.**

Table CE.4 Summary of MTS and ET Topic Units in BSCI

Student Name: **Student ID:**

Unit Count	Category	Courses with **Math/Science** Topics	Quarter	Grade	Units
1	Math	Math 220-1 – Single Variable Differential Calculus			1.0
2		Math 220-2 – Single Variable Integral Calculus			1.0
3		Math 228-1 – Multivariable Differential Calculus for Engineering			1.0
4		Math 228-2 – Multivariable Integral Calculus for Engineering			1.0
5-6	Engineering Foundations	GEN_ENG 241 - Linear Algebra			1.0
		GEN_ENG 231 - Probability and Statistics			1.0
7.34	Basic Science	Chem 131, 151, or 171 – General Chemistry			1.34
8.68		Physics 135-2, or 140-2 – General Physics			1.34
9.68		CIV_ENV 203, Biological Science or Earth 201, 202			1.0
10.68		Basic science elective, exclude Earth 203, Astro courses			1.0
11.18	Civil Engineering Foundations	GEN_ENG 211 - Engineering Physics - Statics			**0.5**
11.68		GEN_ENG 212 - Engineering Physics - Dynamics			**0.5**
12.68		GEN_ENG 251 - Differential Equations			**1.0**
					Total Math/Science units (*minimum of 12***) 12.68**

Unit Count	Category	Courses with **Engineering Topics**	Quarter	Grade	Units
1	Design	DSGN 106-1 – Design Thinking and Communication			0.5
		DSGN 106-2 – Design Thinking and Communication			0.5
2	Engineering Foundations	GEN_ENG 150 - Programming for Engineers			1.0
2.5	Civil Engineering Foundations	GEN_ENG 211 - Engineering Physics - Statics			0.5
3		GEN_ENG 212 - Engineering Physics - Dynamics			0.5
4		CIV_ENV 216 – Mechanics of Materials			1.0
5		Thermodynamics			1.0
6		Mech_Eng 241 – Fluid Mechanics I			1.0
7		CIV_ENV 304 – CEE Systems Analysis			1.0
7+x1		CIV_ENV 220 – Structural Art, or CIV_ENV 202 – Bio & Eco Principles, or CIV_ENV 205 – Economics and Finance for Engineers			x1
8+x1	CE Breadth	CIV_ENV 221 – Theory of Structures I			1.0
9+x1		CIV_ENV 250 – Earth Surface Engineering			1.0
10+x1		CIV_ENV 260 – Environmental Systems and Processes			1.0
11+x1		CIV_ENV 371 or 376 – Transportation Plan/Analysis or Transportation System Operations			1.0
12+x1	F.A. 1	*Must select from approved list*			1.0
13+x1	F.A. 2	*Must select from approved list*			1.0
14+x1	F.A. design	*Must select from approved list*			1.0
15+x1	F.A. design	*Must select from approved list*			1.0
16+x1	Cornerstone & Capstone Design	CIV_ENV 201– Cornerstone Design			1.0
16.34+x1		CIV_ENV 301-1 – Cornerstone Lab			0.34
17.34+x1		CIV_ENV 382-1,2 – Capstone Design			1.0
17.34+x1+x2 +x3+x4+x5	Technical Electives	*GenEng 220-1,2 recommended*			x2
		elective courses are in italic fonts			x3
		elective courses are in italic fonts			x4
		elective courses are in italic fonts			x5
					Total Engineering Topic units (*minimum 18 units***) = 17.34+x1+x2+x3+x4+x5**

Bachelor of Science in Environmental Engineering (BSEN)

The Bachelor of Science in Environmental Engineering at Northwestern University is accredited by the Engineering Accreditation Commission of the ABET, Inc. (http://www.abet.org/)

Program Educational Objectives

The Environmental Engineering Program Educational Objectives (PEO) are:

1. Graduates excel in the engineering practice, research and management associated with the protection and conservation of ecological and human health.
2. Graduates play key roles in the analysis of the behavior of complex natural and engineered environmental systems and design infrastructure in a sustainable way to meet societal needs.
3. Graduates apply their broad environmental engineering training to excel and become leaders in a diverse range of professions including engineering consulting, industry, medicine, law, government, communication, and education.
4. Graduates think critically, behave ethically and consider the technical and social consequences of their work, especially as it affects the health, safety and environment of both ecological and human communities.
5. Graduates apply their knowledge creatively and innovatively throughout their careers to meet the challenges posed by a rapidly changing world.

Student Learning Outcomes

The student learning outcomes of the BSEN program at Northwestern University are the same as the outcomes (O1) through (O7) in the ABET accreditation criterion 3. These outcomes are:

O1. an ability to identify, formulate, and solve **complex** engineering problems by applying principles of engineering, science, and mathematics including using modern tools

O2. 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

O3. an ability to communicate (written and/or orally) **effectively** with a range of audiences

O4. 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

O5. 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

O6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusion

O7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies

The student learning outcomes support the program educational objectives given above. The relationship of student outcomes to program educational objectives showing how the PEO are attained is given in Table EE.1 and posted on the department web site http://www.mccormick.northwestern.edu/civil-environmental/undergraduate/environmental-engineering/abet-objectives-outcomes.html. In this Table, PEO 1, *Excel in the engineering practice, research and management associated with the protection and conservation of ecological and human health*, is attained through outcomes (O1). Similarly, PEO 2 is attained through outcomes (O2), (O4), and (O5); PEO 3 is attained through outcomes (O2) to (O4) and (O7); PEO 4 is attained through outcomes (O4) and (O7); and PEO 5 is attained through outcomes (O1), (O3), and (O5) to (O7).

Table EE.1 Mapping of BSEN Program Educational Objectives and Student Learning Outcomes

BSEN Program Educational Objectives	**BSEN Student Learning Outcomes**
1. Excel in the engineering practice, research and management associated with the protection and conservation of ecological and human health.	O1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics including using modern tools.
2. Play key roles in the analysis of the behavior of complex natural and engineered environmental systems and design infrastructure in a sustainable way to meet societal needs.	O1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics including using modern tools. O2. 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. O4. 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. O5. 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.
3. Apply their broad environmental engineering training to excel and become leaders in a diverse range of professions including engineering consulting, industry, medicine, law, government, communication, and education.	O1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics including using modern tools. O2. 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. (O3) an ability to communicate effectively. O4. 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. O7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.
4. Think critically, behave ethically and consider the technical and social consequences of their work, especially as it affects the health, safety and environment of both ecological and human communities.	O4. 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. O7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

BSEN Program Educational Objectives	**BSEN Student Learning Outcomes**
5. Apply their knowledge creatively and innovatively throughout their careers to meet the challenges posed by a rapidly changing world.	O1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics including using modern tools. O3. an ability to communicate (written and/or orally) effectively with a range of audiences. O5. 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. O6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusion. O7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Program Requirements

The minimum number of units required for the BSEN degree is 48 units. Among them are:

McCormick core course (26 units)

- Mathematics (4 units)
- Basic Sciences – Physics and Chemistry (4 units)
- Engineering Foundations (3 units)
- Design, Communications and Innovation (3 units)
- Social Sciences and Humanities (7 units)
- Unrestricted Electives (5 units)

Environmental Engineering Major (22 units)

- Environmental Engineering Core Courses (8 units)
- Technical Electives (3 units)

The 48 units of courses must also meet the following criteria

1. A ***minimum of 18 units of "Engineering Topics" from the 48 units is required for the BSEN degree***. Note that NOT every course from every department in McCormick is classified as an engineering topic. Please consult with your adviser and McCormick partition list[3] on courses classified as engineering topics.
2. The 3 units of Environmental Engineering technical electives must be classified as 100% Engineering Topic.
3. The only courses in the BSEN degree that are eligible for P/N option are the seven (7) social science/humanities, five (5) unrestricted elective courses, and the GEN_ENG 220-1,2 sequence. Only four (4) 100- or 200-level courses may be taken P/N to satisfy the 7-unit requirement in the social science/ humanities. Courses taken abroad for a grade but recorded by the Northwestern University Registrar as P/N may be exempted from this requirement.
4. A maximum of eight (8) P/N option units are permitted among 48 units required to satisfy the graduation requirement.
5. Only 1 unit per quarter may be taken P/N during freshman and sophomore years.
6. A GPA of NOT less than 2.0 is required for all units presented for the BSEN degree.

Detailed Program Requirements

A. McCormick School Core Courses (26 Units)

The McCormick School (MEAS) Core Courses has 6 subgroups: *Basic Sciences* (4 units), *Engineering Foundations* (3 units), *Mathematics and Sciences* (4 units), *Design and Communications* (3 units), *Social Sciences/Humanities* (7 units), and *unrestricted electives* (5 units). This group of courses is largely "menu-driven" in that options are provided to permit different engineering disciplines to select specific courses in several of these categories (and further sub-categories) from a fixed set of courses to focus on the needs of the particular discipline. If the discipline elects not to specify courses to be taken for that discipline, the student is free to choose from the list of courses offered for each subgroup. These options primarily apply to the sub-group of Basic Sciences and to a limited extent, the communications portion of Design and Communications (1 elective course). Considerable latitude is afforded in selecting courses within the Social Science/Humanities sub-group. Unrestricted electives permit a student to take any course

[3] McCormick partition list is available on the web, http://www.mccormick.northwestern.edu/academics/undergraduate/abet/course-partitioning.php. These partitions are valid only for the academic year the course is taken.

offered for credit by the University (so long as applicable pre-requisites are satisfied). **Bold face courses represent required courses**.

1. ***Basic Sciences (4 units)***

i. **CHEM 131, 151, 171 – General Chemistry**
ii. **CHEM 132, 152, 172 – General Physical Chemistry**
iii. **PHYSICS 135-2 or 140-2 – General Physics 2**

Note: Each Chemistry and Physics course includes mandatory companion lab that carries 0.34 units. Lectures and labs combined yield 4 units of basic sciences.

2. ***Engineering Foundations (3 units)***

i. **GEN_ENG 150-0 – Programming for Engineers (or GEN_ENG 151-0 – Honors Programming for Engineers)**
ii. **GEN_ENG 231-0 – Probability and Statistics for Engineers**
iii. **GEN_ENG 241-0 – Linear Algebra for Engineers**

3. ***Mathematics (4 units)***

i. **MATH 220-1 – Single-Variable Differential Calculus**
ii. **MATH 220-2 – Single-Variable Integral Calculus**
iii. **MATH 228-1 – Multivariable Differential Calculus for Engineering**
iv. **MATH 228-2 – Multivariable Integral Calculus for Engineering**

4. ***Design, Communications and Innovation (3 units)***

i. **DSGN 106-1,2 (0.5 unit each) – Design Thinking and Communication**
ii. **ENG 106-1,2 (0.5 unit each) – Writing in Special Contexts, must be taken concurrently with DSGN 106-1,2.**
iii. choose one from:
   a. COMM_ST 102-0 – Public Speaking
   b. ENTREP 225-0 – Principles of Entrepreneurship
   c. ENTREP 325-0 – Engineering Entrepreneurship
   d. PERF_ST 103-0 – Analysis and Performance of Text
   e. PERF_ST 203-0 – Performance Culture and Communication
   f. PRDV 335-0 – Engineering Improv: From Allowing to Application
   g. BMD_ENG 390-2 – Biomedical Engineering Design 1

5. ***Social Science and Humanities (7 units)***

Seven courses are required to satisfy the requirements of this subgroup. The seven courses must meet the following criteria.

- Maximum of 5 units from either social science or humanities category
- At least 3 units must be thematically related
- No more than 3 units of 100-level courses
- AP, IB, and transfer credits are eligible to count towards this requirement

Foreign language study can be incorporated into the program, but should be started as early as possible, preferably in the freshman year.

Courses taken for a student's Social Science/Humanities requirement must be approved in advance by the McCormick Humanities Panel. Complete requirement information is at the McCormick Undergraduate Engineering Office website, http://www.mccormick.northwestern.edu/students/undergraduate/social-science-humanities-theme/index.html. You must submit your theme form via McCormick Advising System (MAS).

6. *Unrestricted Electives (5 units)*

Unrestricted electives allow the students to take any course offered for credit by any school in the University so long as they have the prerequisites for it. Environmental Engineering students have five unrestricted electives as part of the McCormick School Core Courses. Many students use these to broaden their education by concentrating them in a particular area (such as economics or a foreign language or music), while others take additional technical electives in their major or related fields.

B. Environmental Engineering Major (22 Units)

Additional 22 units beyond the McCormick Core Courses are required for the Environmental Engineering major. The units are distributed between gateway (3 units), basic engineering (7 units), core + design (9 units), and technical electives (3 units) courses. A 0.34-unit CIV_ENV 301-1 (lab for 201-1) is also required of all BSEN majors. This 0.34-unit may be applied towards the unrestricted elective units.

1. *Basic Engineering (7 units)*

i. ***Thermodynamics (1 unit**)- choose one from below:*
   a. BMD_ENG 250-0 Thermodynamics
   b. CHEM_ENG 211-0 Thermodynamics

ii. **CIV_ENV 304-0 Civil and Environmental Engineering Systems Analysis**
iii. GEN_ENG 211-0 Engineering Physics - Statics
iv. GEN_ENG 212-0 Engineering Physics - Dynamics
v. GEN_ENG 251-0 Applied Ordinary Differential Equations
vi. MAT_SCI 201-0 Introduction to Materials Science and Engineering Principles
vii. MECH_ENG 241-0 Fluid Mechanics I

2. *Gateway Courses (3 units)*

i. **CIV_ENV 201 – Cornerstone Design**
ii. **CIV_ENV 202 – Biological and Ecological Principles**
iii. **CIV_ENV 203 – Earth in the Anthropocene**

3. *Environmental Engineering Core + Design Courses (9 Units)*

The core and gateway courses provide students with the necessary foundations in Biology and Chemistry, taught in an engineering context, as well as Earth Science fundamentals and specialized engineering courses. This suite of classes leads to the senior Capstone Design course (CIV_ENV 382-1,2), which brings together students from Civil and Environmental Engineering degrees, working in teams. The Environmental Engineering program builds on a suite of gateway courses to more advanced courses that are shared with beginning graduate students entering our MS and PhD programs. The program offers some flexibility, reflecting the broad academic interests of Northwestern students.

i. **CHEM 215-1/235-1– Organic Chemistry I and Laboratory**
ii. **CIV_ENV 260 – Environmental Systems and Processes**
iii. **CIV_ENV 346 – Ecohydrology**
iv. **CIV_ENV 361-1 – Environmental Microbiology**
v. **CIV_ENV 364 – Sustainable Water Systems**
vi. **CIV_ENV 365 – Environmental Laboratory**
vii. **CIV_ENV 366 – Dynamics in Chemical Transport and Reaction**
viii. **CIV_ENV 367 – Chemical Processes in Aquatic Systems**
ix. **CIV_ENV 382-1,2 – Capstone Design**

4. ***Technical Electives*** **–** choose three (3) courses

Technical electives provide the students the opportunity to tailor their interests to specific aspects of Environmental Engineering. Technical electives must be taken from the list below. We are suggesting 3 different tracks based on sets of courses organized around specific themes.

General rules:

- **all three** (3) of these electives must carry 100% engineering topics[4];
- **only one** (1) CIV_ENV 399 can be counted towards a technical elective;
- **at least two** (2) technical electives must be CIV_ENV courses.

See below for further details about current offerings.

5. ***Professional Development (0.34 unit)***

CIV_ENV 301-1 – Cornerstone Lab (*winter quarter only*) The 0.34 unit may be applied to unrestricted electives.

C. Tables, Charts, and Forms

The Department has developed several tables, charts, and forms that you may find useful in helping you plan and track your course of studies. These tables, charts, and forms are provided at the end of this handbook for easy access. They are also available on the CEE website, http://www.mccormick.northwestern.edu/civil-environmental/current-students/forms-documents.html. These tables, charts, and forms are:

Table EE.2 – Sample BSEN Curriculum Flow Chart (*available in UG Handbook*)
Table EE.3 – Summary of MTS and ET Topics Units in BSEN (*available in UG Handbook*)

Table EE.2 shows a flow chart for a typical BSEN curriculum by quarters. This flowchart, which also displays the prerequisite requirements, is intended to serve as a guide for program planning. Almost all the students entering Northwestern University have accepted Advanced Placement (AP) credits. Many students are also interested in pursuing a dual major, minor, certificate program, etc. Each student's program flow chart is likely to be different.

Students interested in pursuing research or projects not available in courses offered by the department, the McCormick School, or the University may register for CIV_ENV 399 – Project Application for an Independent Study. This independent study course carries one course unit and can be used to meet the technical elective requirement (max. 1 course unit may count towards technical elective). Students interested in registering for CIV_ENV 399 **must** submit a petition form, available at the end of this handbook, which has been signed by both the project adviser and the ABET coordinator.

In order to be in compliance with ABET accreditation requirements that any ABET accredited engineering program must consist of a minimum of 12 units of math/science (MTS) and 18 units of engineering topics (ET). Table EE.3 provides a summary of the MTS and ET unit distribution for all required and elective courses in your program that include any of the MTS and ET distributions. The MTS and ET distribution of all courses offered in McCormick can be found on the McCormick website http://www.mccormick.northwestern.edu/academics/undergraduate/abet/course-partitioning.php. These partitions are valid only for the academic year in which the course is taken.

[4] McCormick partition list is available on the web, http://www.mccormick.northwestern.edu/academics/undergraduate/abet/course-partitioning.php. These partitions are valid only for the academic year the course is taken.

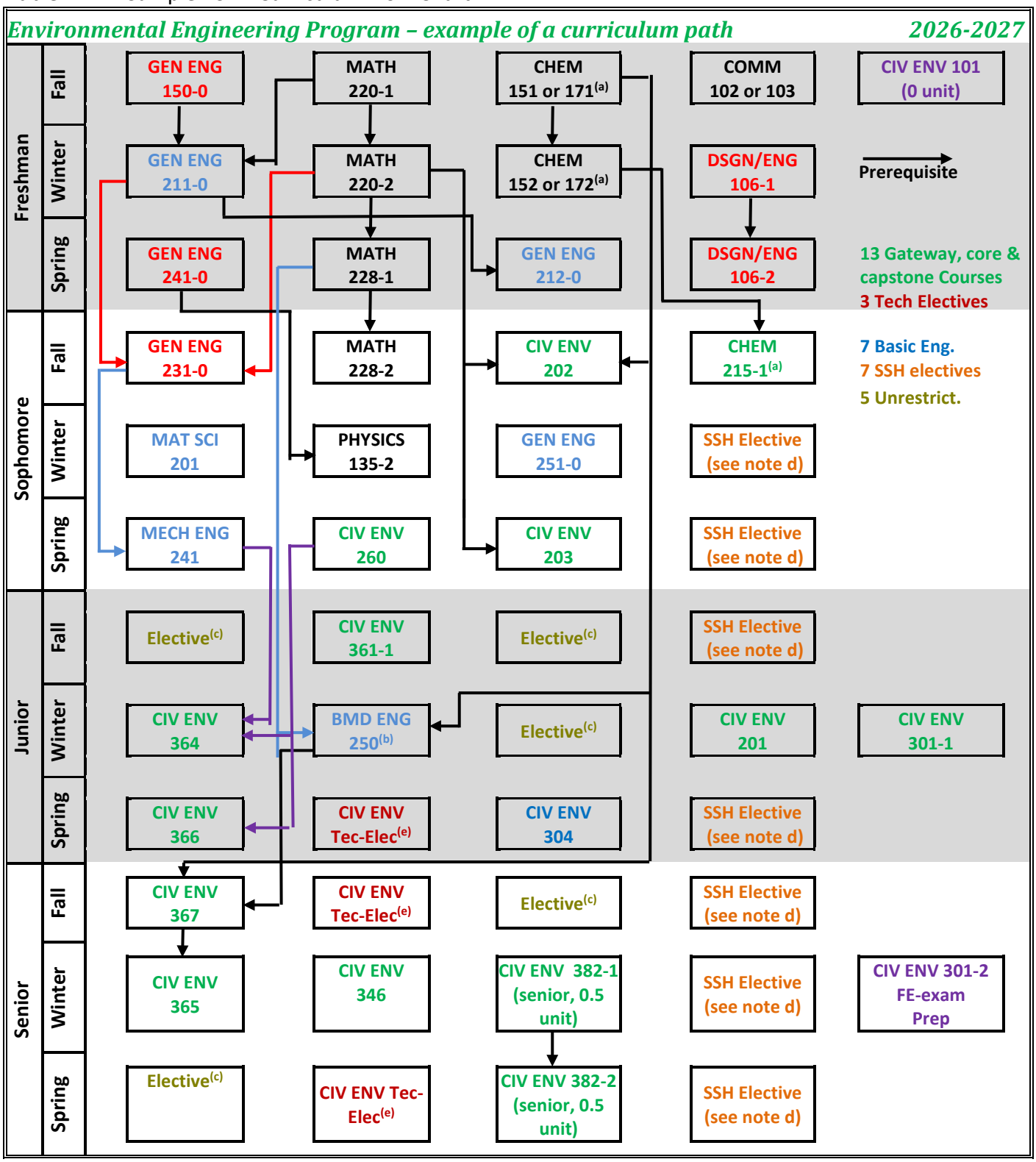
D. McCormick Advising System (MAS https://mas.mccormick.northwestern.edu/)

The McCormick's Advising System allows you 24/7 access to monitor your academic information, comments your adviser writes during your advising session, and your progress in meeting your degree requirements. Please keep in mind that MAS is a monitoring system, not your electronic adviser. Please visit with your adviser for academic, professional, and some personal consultation.

E. ConnectNU (https://www.northwestern.edu/undergraduate-advising/for-students/connectnu/)

ConnectNU is Northwestern's online advising platform for undergraduates to schedule appointments with school/college advisers and connect with other campus offices. Please consult with your adviser to determine if they would use this system in conjunction with MAS. Please note that MAS is the only advising system that will do your degree audit.

Table EE.2 – Sample BSEN Curriculum Flow Chart



Notes:

a. These courses have a laboratory requirement CHEM 161, 162, or 181, 182. If no placement in Chemistry then take CHEM 110 in the Fall, and then CHEM 131, 132 with associated laboratories CHEM 141, 142. CHEM 215-1 has a laboratory requirement CHEM 235-1.

b. May choose from BME 250 or CHEM ENG 211 (need approval from ChemE Department for enrollment). Other Basic Engineering Thermodynamics course can be taken after approval.

c. May choose from any course offered for credit by the University.

d. Courses must be selected to meet the Social Science-Humanities requirement.

e. Choose courses from the approved list: all 3 must carry 100% engineering topics; courses listed are recommended.

Environmental Engineering Program 2026-2027

Social Science-Humanities Requirement (7 units)

Seven courses are required to satisfy the requirements of this subgroup. The seven courses must meet the following criteria.

- Maximum of 5 units from either social science or humanities category
- At least 3 units must be thematically related
- No more than 3 units of 100-level courses
- AP credits allowed

Foreign language study can be incorporated into the program, but should be started as early as possible, preferably in the freshman year.

Courses taken for a student's Social Science/Humanities requirement must be approved in advance by the McCormick Humanities Panel. Complete requirement information is at the McCormick Undergraduate Engineering Office web site, http://www.mccormick.northwestern.edu/students/undergraduate/social-science-humanities-theme/index.html. You must submit your theme form via McCormick Advising System (MAS).

Technical Electives (TE) – choose three courses

Technical Electives must be taken from the lists below. We are suggesting 3 different tracks based on sets of courses organized around specific themes. **General rule**: *All three (3) of these electives must carry 100% engineering topics[1], only one (1) CIV ENV 399 can be counted towards a technical elective.*

Urban Sustainability	
	CIV_ENV 368 – Sustainability: The City
	CIV_ENV 387 - Design of Sustainable Urban Districts
	CIV_ENV 353 – Energy Geostructures and Geosystems
Fate of contaminants in the Environment	
	CIV_ENV 361-2 – Public and Environmental Health
	CIV_ENV 395 – Indoor Air Quality
	CIV_ENV 449 – Environmental Particles & Surface Chemistry or CIV_ENV 399 Research Project (100% ET)
Resource Recovery	
	CIV_ENV 353 – Energy Geostructures and Geosystems
	CIV_ENV 442/443 - Environmental Biotechnology/Microbial Ecology for Resource Recovery
	CIV_ENV 368 – Sustainability: the City or CIV_ENV 399 Research project (100% ET)

A la carte: If you do not want to follow any of these tracks you need to take 3 courses that count towards 100% engineering content as follows:

1. Two courses from the following list: CIV_ENV 361-2, 368, 395-Indoor Air Quality, 387, 353, 398-1 and -2
2. Any engineering 300 level - or higher - course counting towards 100% engineering content or the GEN-ENG 220-1,2 sequence. You can also choose courses at the graduate-level courses such as CIV_ENV 440(2), 449(2), or CIV_ENV 442/443(2). Only 1 CIV_ENV 399 can be counted towards a technical elective.

[1]Please see the following website to identify courses that are allocated 100% engineering topic: https://www.mccormick.northwestern.edu/academics/undergraduate/abet/course-partitioning.html

[2] Requires instructor permission and a permission number from the office of the Department.

Updated 11-03-2026

Table EE.3 Summary of MTS and ET Units in BSEN

Student Name: Student ID:

Unit Count	Category	Courses with **Math/Science** Topics	Quarter	Grade	Units
1	Math	MATH 220-1 – Single Variable Differential Calculus			1.0
2		MATH 220-2 – Single Variable Integral Calculus			1.0
3		MATH 228-1 – Multivariable Differential Calculus for Engineering			1.0
4		MATH 228-2 – Multivariable Integral Calculus for Engineering			1.0
5-6	**Engineering Foundations**	GEN_ENG 241 - Linear Algebra			**1.0**
		GEN_ENG 231 - Probability and Statistics			**1.0**
7.34	Basic Science	CHEM 131, 151, 171 – General Chemistry			1.34
8.68		CHEM 132, 152, 172 – General Physical Chemistry			1.34
9.02		PHYSICS 135-2 or 140-2 – General Physics			1.34
9.52	***Basic Engineering***	GEN_ENG 211 - Engineering Physics - Statics			**0.5**
10.02		GEN_ENG 212 - Engineering Physics - Dynamics			**0.5**
11.02		GEN_ENG 251 - Differential Equations			**1.0**
12.02	Major and Gateway Courses	CIV_ENV 202 – Biological and Ecological Principles			1.0
13.02		CIV_ENV 203 – Earth in the Anthropocene			1.0
14.02		CHEM 215-1/235-1 – Organic Chemistry			1.0
					Total Math/Science units = 14.02

Unit Count	Category	Courses with **Engineering Topics**	Quarter	Grade	Units
1	Design	DSGN 106-1 – Design Thinking and Communication			0.5
		DSGN 106-2 – Design Thinking and Communication			0.5
2	Engineering Foundations	GEN_ENG 150 - Programming for Engineers			**1.0**
3	Basic Engineering	MECH_ENG 241 – Fluid Mechanics I			1.0
3+x1		BMD_ENG 250 – Thermodynamics or CHEM_ENG 211 - Thermodynamics			1.0
4+x1		CIV_ENV 304 – CEE Systems Analysis			1.0
5+x1		MAT_SCI 201 – Introduction to Materials			1.0
5.5+x1		GEN_ENG 211 - Engineering Physics - Statics			**0.5**
6+x1		GEN_ENG 212 - Engineering Physics - Dynamics			**0.5**
7+x1	Major and Gateway Courses	CIV_ENV 201 – Cornerstone			1.0
8+x1		CIV_ENV 260 – Environmental Systems & Processes			1.0
9+x1		CIV_ENV 346 – Ecohydrology			1.0
10+x1		CIV_ENV 361-1 – Environmental Microbiology			1.0
11+x1		CIV_ENV 364 – Sustainable Water Systems			1.0
12+x1		CIV_ENV 365 – Environmental Laboratory			1.0
13+x1		CIV_ENV 366 – Dynamics in Chemical Transport and Reaction			1.0
14+x1		CIV_ENV 367 – Chemical Processes in Aquatic Systems			1.0
15+x1		CIV_ENV 382-1,2 – Capstone Design			1.0
18+x1	*Tech. Elec*	*Minimum 3 Tech Electives with 100% Engineering Topic*			3.0
					Total Engineering Topic units = 19.0

Minor in Environmental Engineering

Minor Requirements (8 units)

Core courses (6 units)

CIV_ENV 201 – Cornerstone Design
CIV_ENV 202 – Biological & Ecological Principles
CIV_ENV 203 – Earth in the Anthropocene
CIV_ENV 260 – Environmental Systems and Processes
CIV_ENV 346– Ecohydrology
CIV_ENV 364 – Sustainable Water Systems

Electives (2 units)

Choose 2 courses from below:

i. CIV_ENV 361-1 – Environmental Microbiology
ii. CIV_ENV 362-2 – Public and Environmental Health
iii. CIV_ENV 366 – Dynamics in Chemical Transport and Reaction
iv. CIV_ENV 367 – Chemical Processes in Aquatic Systems
v. CIV_ENV 368 – Sustainability: The City
vi. CIV_ENV 398-1 – Community Based Design I
vii. CIV_ENV 398-2 – Community Based Design II
viii. CIV_ENV 399 – Independent Study (*limit to 1 unit*)
ix. Any CIV_ENV 400 level course by permission

Additional Information

1. No more than 3 courses may be used to fulfill requirements in the student's major program.
2. A grade of at least C– is required in each course for the minor.
3. Students should discuss with the minor coordinator how best to satisfy prerequisites for required courses.
4. A completed **Intent to Pursue the Environmental Engineering Minor** (that is available online on MAS: McCormick Advising system) must be submitted to McCormick Academic Office 3 quarters before the beginning of the final undergraduate quarter.
5. A completed **Declaration for the Environmental Engineering Minor** using MAS must be submitted to the McCormick Academic Services Office before the beginning of the final undergraduate quarter.

Architectural Engineering and Design Minor Program

The Architectural Engineering and Design (AED) Minor program requires a mixture of design imagination, knowledge of materials and systems, and a variety of analytic and management tools. Architects, who traditionally have led the design effort, are best known for the aesthetic element of their products. It is the integration of architecture and engineering perspectives that leads to buildings that are path-breaking in functionality, aesthetics, economy, and sustainability. This minor prepares students for advanced study in architecture, or for practice in many areas of building technology and design, where a knowledge of the architectural process is highly valuable.

Required Courses (3)

1. CIV_ENV 385-1 – Design Studio I: Fundamentals – Self-referential design problem. *Pre-requisite: Junior standing in engineering*.
2. CIV_ENV 385-2 – Design Studio II: Intermediate – Contextual design problem. *Prerequisite: CIV_ENV 385-1.*
3. CIV_ENV 385-3 – Design Studio III: Advanced – Complex design problem. *Prerequisite: CIV_ENV 385-2.*

History of Design (1)

4. CIV_ENV 220 – Structural Art or ART_HIST 3

AED Seminar (1)

5. CIV_ENV 281 – 1,2,3 – Professional Development Seminar (0.34 units per quarter for 3 quarters)

Design & Analysis Techniques (3) (choose three electives from the following courses, or by petition)

CIV_ENV 323 – Structural Steel Design
CIV_ENV 325 – Reinforced Concrete Design
CIV_ENV 395 – Timber, Masonry, and Hybrid Structures Design
CIV_ENV 352 – Foundation Engineering
CIV_ENV 353 – Energy Geostructures and Geosystems
CIV_ENV 368 – Sustainability: The City
CIV_ENV 386 – High Performance Building Design
CIV_ENV 387 – Design of Sustainable Urban Districts
CIV_ENV 388-1,2 – Buildings Physics I and Building Physics II

Recommended Unrestricted Electives for Certificate Program (could be used as components of theme requirements)

1. ART HIST 370 1, 2 Modern Architecture and Design
2. Art Theory and Practice (select one course)
   i. ART 120 – Basic Painting or
   ii. ART 125 – Basic Drawing or
   iii. ART 140 – Basic Sculpture
   iv. Advanced courses in Art Theory and Practice
3. History and/or Sociology
   i. HISTORY 322-1, 2 – Development of the Modern American City
   ii. SOCIOL 207 – Problems of Cities
   iii. SOCIOL 301 – The City: Urbanization and Urbanism

Additional Conditions for Awarding Minor in AED

1. Completion of all requirements for McCormick B.S. degree.
2. Course with grades lower than a "C" or taken P/N will not be acceptable for this minor.
3. At least five (5) courses used to meet the AED Certificate requirements must not be counted towards the 21 units of major program requirements.
4. Submit a AED Minor declaration form (available online on MAS – McCormick Advising System or at http://www.mccormick.northwestern.edu/civil-environmental/current-students/forms-documents.html) to McCormick Office of Undergraduate Engineering at least 3 quarters before the beginning of the final undergraduate quarter.

Undergraduate (Departmental) Honors Program
Civil and Environmental Engineering

The accelerated, intensive study through McCormick's Honors Programs isn't for everyone. However, if you're up to the challenge, we encourage you to apply for honors in your area of study **during your junior or pre-senior year**, **at least three full quarters before completing your degree requirements**.

A student with a strong academic record may be admitted to McCormick's Honors Program any time during their junior or pre-senior year.

Qualifications

- At the time of admission to the program, the student must have a cumulative grade point average (GPA) of 3.50 or higher.
- Students must file their application with the **Office of Undergraduate Engineering** at least three full quarters before completing their degree requirements.

Application

Admission to the Honors Program will be confirmed by filing an ***Honors Program Application*** **Form** with the ***Office of Undergraduate Engineering*** in Tech L269. This form must be signed by the appropriate advisers.

Requirements

- Complete at least three (3) units of approved advanced study with a B average or better. This could be done by taking courses normally accepted at the graduate level. Courses taken would only apply to the undergraduate degree.
- Complete an extended independent study program (at least two quarters of CIV_ENV 399) on the same topic leading to an acceptable report. *Note: only one quarter of CIV_ENV 399 may be used to meet the Technical Elective requirement, the other CIV_ENV 399 unit may be used to meet the Unrestricted Elective requirement.*

Honors Program Advisers

Each department chair arranges for a person or group within the department to administer and advise its honors program. The person or group defines units of approved advanced study and independent study. They also evaluate the performance of each honors student at the end of the project to determine if the definition of success is met.

Recognition

Successful completion of the Honors Program will be entered on the student's transcript. Recognition will also be given in the Commencement Program. In evaluating each student's performance, if it is not judged to meet the standards of success, the student will receive course grades and credits as earned.

Departmental Honors Contacts

Civil Engineering: Professor Eric Garcia (ericvincent.garcia@northwestern.edu),
Environmental Engineering: Professor George Wells (george.wells@northwestern.edu)

Combined BS/MS Program

While you are an undergraduate student, careful coordination of your class schedule may allow you to complete either a Bachelor of Science in civil engineering or a Bachelor of Science in environmental engineering and a Master of Science degree from the McCormick School of Engineering and Applied Science. Sometimes, though, additional quarters are needed. There are many compelling reasons to consider earning a master's degree, including:

- Increased starting salary
- Enhanced job opportunities
- Greater potential for job advancement
- Familiarity with McCormick programs and faculty
- Greater convenience prior to starting employment

Students can pursue a master's degree in the same department as their BS, or in a different department. For the greatest success, students considering the BS/MS program should discuss their plans by the end of their junior year.

Application Procedures

Here are the steps to be considered for admission to the BS/MS program in the Department of Civil and Environmental Engineering:

- Meet with the appropriate MS program director (see below)
  - Environmental engineering science: Erica Hartmann
  - Geotechnical engineering: Alessandro Rotta Loria
  - Structural engineering: Federico Ciardo
  - Transportation engineering: Amanda Stathopoulos
  - Engineering Built Environment: Giorgia Chinazzo

  to develop the MS study plan necessary for application to The Graduate School.

Applying

- Submit application online through College Net.
- **3 Letters of Recommendation** (2 should be references; **1 MUST be your undergraduate advisor**) from faculty within the CEE department to support your application to The Graduate School.
- **REQUIRED FOR ADMISSION:** Download and complete the Combined Degree Program form. You will need to review this form with your undergraduate advisor. You MUST list your undergraduate advisor as one of your recommenders. They will then submit the signed Combined Degree Program form in lieu of a letter of recommendation.
- The other option is to apply to The Graduate School for admission as an MS student through the general **application process**.

Deadline

Please consult The Graduate School website for application submission deadline in each quarter. The deadlines are usually at least one month prior to the start of the new quarter.