CEE Undergraduate Handbook

2024-25 Edition v2

This handbook is updated every academic year.
It is recommended that students and advisors always use the current edition.

This is a living document and is updated every year. While very effort is expended to assure accuracy it undoubtedly possesses exceptions to this objective. If you identify discrepancies please inform the DUS (Joseph Nadeau, nadeau@duke.edu).

This handbook covers cohorts that matriculated in Fall 2018, and later. If you need a previous edition of this handbook for earlier matriculations, please contact the DUS.

To the Prospective Student

This Handbook's primary objective is to serve the students and advisors of the CE and EnvE programs. While this Handbook provides specifics about the programs if you feel you need more general information please feel free to contact me.

To the CE or EnvE Major

This Handbook is intended to afford you convenient access to the information that you will need while you shape and direct your academic and professional experiences while here at Duke.

Duke has a lot to offer, be sure to take of advantage of it as you prepare yourself for life beyond Duke.

To the Advisor

This Handbook is an accurate reflection of the programs offered by the faculty of the Department of Civil and Environmental Engineering. The primary audience for this handbook are declared CE and EnvE majors, however, it is also intended to acclimate new advisors to these programs and to serve as a convenient resource for established advisors.

Hold tantamount the needs, interests, and goals of your individual advisees as you mentor them while they navigate the curriculum and prepare for a life beyond Duke.

Joseph Nadeau
Director of Undergraduate Studies

nadeau@duke.edu
173 Hudson Hall Annex

Course Schedule Planning Template

Plan Description:_____

	Fall 20___	Spring 20___	Summer
First-Year			
	Fall 20___	**Spring 20___**	Summer
Sophomore			
	Fall 20___	**Spring 20___**	Summer
Junior			
	Fall 20___	**Spring 20___**	
Senior			

Table of Contents

Acronyms

For the user's convenience, a list of the abbreviations, acronyms, and systems used in this handbook are presented below.

ABET	originally stood for Accreditation Board for Engineering and Technology
AE	Architectural Engineering
ALP	Arts, Literature, and Performance [Trinity Area of Knowledge (AoK)]
AoK	Areas of Knowledge
AP	Advanced Placement
ARC	Academic Resource Center
ASCE	American Society of Civil Engineers
BSE	Bachelor of Science in Engineering
CAPS	Counseling and Psychological Services
CE	Civil Engineering (major)
CEE	Civil and Environmental Engineering (department, subject code)
CZ	Civilizations [Trinity Area of Knowledge (AoK)]
DEID	Duke Engineers for International Development
DCS	Duke Community Standard
DGS	Director of Graduate Studies
DukeHUB	A web interface that allows all members of the Duke Community to access the student information system from a single location. Student access point was formerly named ACES and the faculty/staff access point was formerly named STORM
DUS	Director of Undergraduate Studies
E&AS	Engineering and Applied Science
E/W	Environmental Engineering and Water Resources (a track of CE major)
EI	Ethical Inquiry [Trinity Mode of Inquiry (MoI)]
ENRENV	Energy and Environment, a certificate
EnvE	Environmental Engineering (major)
FE	Fundamentals of Engineering
FL	Foreign Language [Trinity Area of Knowledge (AoK)]
GC	Grand Challenge
GEO	Global Education Office
GRE	Graduate Record Examinations
GwDD	Graduation with Departmental Distinction
IPC	International Placement Credit
LEED	Leadership in Energy and Environmental Design
MoI	Modes of Inquiry
MEM	Master of Engineering Management
MEng	Master of Engineering
MS	Master of Science
NAE	National Academy of Engineering
NCEES	National Council of Examiners for Engineering and Surveying
NCSU	North Carolina State University

NS	Natural Science
PE	Professional Engineer
PhD	Doctor of Philosophy
R&D	Research and Development
S/M	Structural Engineering and Mechanics (a track of CE major)
SISS	The Student Information Services and Systems (SISS) Office assists the university central administrative and school offices to provide more efficient services to students, faculty and staff.
SS	Social Science [Trinity Area of Knowledge (AoK)]
SS/H	Social Science and Humanities
TOEFL	Test of English as a Foreign Language
XE	Chi Epsilon [National Civil Engineering Honor Society]

Preface

Applicable Matriculating Classes

This edition of the CEE Undergraduate Handbook is applicable to classes who have matriculated in Fall 2018 through Fall 2024.

If you need information related to classes who matriculated prior to Fall 2018, then please consult the 2021-22 v1 edition of this handbook. If needed, a copy can be obtained from the DUS.

Errors and Omissions

If you find an error (disastrous or inconsequential), or think that you *may* have located an error, please send an email to the DUS (Joseph Nadeau, nadeau@duke.edu) to report your finding. Error findings and any general feedback regarding this handbook would be greatly appreciated by users of future editions of this handbook. Thank you in advance for your assistance.

Matriculation versus Class-of-20xx

Policies and regulations to which you are held are those that are in effect when you matriculate, or first enroll at Duke. For this reason, this Handbook is constructed around matriculation date, as opposed to the more common way referring to a cohort of students by their class. Assuming a four-year curriculum, the correspondence between matriculation date and class-of designation is as follows:

2024-25 Standing	Matriculation Date	Class of
First-Year	Fall 2024	2028
Sophomore	Fall 2023	2027
Junior	Fall 2022	2026
Senior	Fall 2021	2025
	Fall 2020	2024

Programmatic and Policy Changes

Changes to programs and policies do occur. As a result, different requirements may apply to different cohorts of students. Every effort has been made throughout this handbook to highlight the different requirements applying to different cohorts.

Notable changes in the recent past include the following:

Fall 2024

- Mathematics will not be offering MATH 238L in Spring 2025, and perhaps beyond. The list of permissible courses that may be taken in lieu of "STA 130" (which recently has only been MATH 238L) has been expanded. The current list is MATH 230, 231, 238L, 340, STA 111L, and ECON 104D. This change is only applicable to current (Fall 2024)

sophomores, juniors, and seniors, as the curriculum for current (Fall 2024) first-year students does not have a "STA 130"-requirement.

- PHYSICS 152L starting Fall 2024 and going forward will be offered in both fall and spring semesters. (Prior to Fall 2024, PHYSICS 152L was a fall only course.)
- Students are now advised to take PHYSICS 152L concurrently with or after MATH 219. Note that PHYSICS 152L is *not* a prerequisite for any required course for either the CE or EnvE major.
- Pratt's EGR 103L requirement for students matriculating prior to Fall 2024 has been replaced by EGR 105L, Computing for Engineers, for students matriculating in Fall 2024, and beyond.
- CE major: (CEE 201L, EGR 305, and STA 130/MATH 238L)-requirements for students matriculating prior to Fall 2024 have been replaced by (CEE 251L, CEE 351, and an additional CEE upper-level elective)-requirements for student matriculating in Fall 2024, and beyond.
- EnvE major: ((CEE 201L *or* EGR 305), and STA 130/MATH 238L)-requirements for students matriculating prior to Fall 2024 have been replaced by (CEE 251L and CEE 351)-requirements for student matriculating in Fall 2024, and beyond.
- Web links have been updated.

Spring 2024

- Starting Spring 2023, probability & statistics content has been added to CEE 201L. As a result, the course number and title of CEE 201L has been changed to CEE 251L, Uncertainty, Design, and Optimization. CEE 251L counts in lieu of CEE 201L.
- Starting Fall 2023, probability & statistics content has been added to EGR 305. As a result, the course number and title of EGR 305 has been changed to CEE 351, Engineering Economics, Risk, and Decision-Making. CEE 351 has a prerequisite of CEE 251L and counts in lieu of EGR 305.
- Important NOTE regarding "STA 130 / MATH 238L / EGR 238L"-requirement.

  The requirements for CE and EnvE majors are changing effective with students matriculating in Fall 2024 (i.e., the Class of 2028), and later. A current CE or EnvE major, **may** be able to choose to follow this new curriculum. If you can do so, you may or may not wish to do so; the decision is yours.

  The new curriculum **effective for students matriculating in Fall 2024 (i.e., Class of 2028), or later** differs from the current curriculum as follows
  CE majors:
  - STA130/EGR238L/MATH238L requirement is **deleted**
  - an additional upper-level CEE elective **added** (making a total of 3)

  EnvE majors:
  - STA130/EGR238L/MATH238L requirement is **deleted**

- "CEE 201L or EGR 305" requirement is **deleted**
- CEE 201L/CEE 251L is **added**
- EGR 305/CEE 351 is **added**

Because probability and statistics have been added to CEE 201L (starting Spring 2023) and EGR 305 (starting Fall 2023), you can adopt the new curriculum if you have or will take both courses in Spring 2023, or later.

NOTE: If you have already satisfied the STA130/EGR238L/MATH238L requirement, then you are unlikely to want to switch to the new curriculum because your completed STA130/EGR238L/MATH238L course would count as a free elective and there would be an additional requirement to satisfy (CE = upper-level elective; EnvE = CEE 201L or EGR 305).

The following survey incorporates the above information and will assess whether you are eligible to adopt the new curriculum. If eligible, you will have the opportunity to declare your intent to switch to the new curriculum, if you wish to do so:

https://duke.qualtrics.com/jfe/form/SV_3OXxNgAP6UWpkKa

Fall 2023

- CEE 560, Environmental Transport Phenomena, is now a Spring-only course.

Fall 2022

- Degree requirements, check sheets, and sample schedules for classes that matriculated between Fall 2012 and Fall 2017 have been removed from the current handbook. If you need any of this information for those matriculation semesters please consult the 2021-22 v1 edition of the handbook and/or contact the DUS.
- Indications seem to be that EGR/MATH 238L, Fundamentals of Data Science and Decision Science, will likely only be taught in spring semesters going forward.
- Earth and Ocean Sciences (EOS) have changed their name to Earth and Climate Sciences (ECS).
- ECS/EOS 102, Dynamic Oceans, will no longer be offered after being taught its last time in Fall 2021.
- ECS/EOS 103, Climate Change for Future Leaders, has been added to the approved courses for the CE Natural Science elective and the EnvE Earth Science elective.
- The course name for CEE 461L was changed in summer 2020 to Environmental Aquatic Chemistry (previously it was Chemical Principles in Environmental Engineering). The new course name is now reflected in the degree requirements, course flow charts, and sample schedules for information pertaining to students who matriculated in Fall 2021, and after.

- Web links have been updated.

Fall 2021

- The mathematics sequence has been updated. The third course in the math sequence, MATH 212, has been replaced by MATH 218-2, Matrices and Vectors, and the fourth course, MATH 216, has been replaced by MATH 219, Multivariable Calculus.

Fall 2020

- The Statistics Department has opted to stop offering STA 130, which is required for all CE and EnvE majors. Students may take
    - EGR 238L/MATH 238L or
    - MATH 230/STA 230 **and** MATH 342

  in lieu of STA 130.
- Students with AP credit for Computer Science should take COMPSCI 201. Students without this AP credit should take EGR 103L.

Fall 2019

- Architectural Engineering certificate requirements updated.

Fall 2018

- CE and EnvE degree requirements *add* requirement for EGR 101L, Engineering Design and Communication, and *remove* the requirements for both CEE 205 (0.5 unit) and EGR 206 (0.5 unit).
- Due to the above changes and how course content was distributed from the removed courses to the added course (EGR 101L) and changes to CEE 132L, if CEE 132L is to be replaced it may be done by taking an upper-level CEE course (1.0 unit) **and** CEE 205 (0.5 unit) for a total of 1.5 units.
- Old course numbers (new course numbers were implemented in Fall 2012) are being removed from this handbook. Degree Check Sheets and Sample Schedules for earlier matriculation dates will be maintained.

ABET Accreditation

Both the CE and EnvE majors are accredited by the Engineering Accreditation Commission of ABET[1].

CEE versus CE

The Department of Civil and Environmental Engineering (CEE) administers two undergraduate majors, namely, Civil Engineering (CE) and Environmental Engineering (EnvE). Thus, CEE is a department and CE is one of the two undergraduate majors administered by the department.

[1] https://www.abet.org

Introduction and Overview

The infrastructure that makes up what we refer to as civilization is, for the most part, the work of civil and environmental engineers. Improving, or even maintaining, the quality of life is ever more challenging as urban problems in the industrialized nations of the world intensify, while rapid urbanization in many developing countries creates other opportunities and obligations for the civil and environmental engineer. The planning, design, construction, and maintenance of necessary facilities, in an era of increasingly scarce monetary and other resources, demand civil and environmental engineers dedicated to work for the public good and prepared to seek more efficient and effective solutions based on current technology. The challenges faced by civil and environmental engineers vary widely in nature, size, and scope, and encompass both the public and private sectors. Examples include homes, high-rise buildings, performance venues, airports, and seaports; networks of highways, long-span bridges, and tunnels; power generation structures including wind turbines and dams; distribution networks for drinking water and electrical power; collection networks for waste and flood control; Superfund sites and disposal facilities for hazardous wastes; and offshore and orbital structures.

This handbook provides an overview of the undergraduate programs in the Department of Civil and Environmental Engineering (CEE) at Duke University. It covers the program mission, educational objectives, requirements for both the Civil Engineering (CE) and Environmental Engineering (EnvE) majors, certificate information for the Architectural Engineering Certificate and the Energy & Environment Certificate, second major option with BME, Energy Engineering minor, study abroad advice, information about the 4+1 graduate opportunity, and research/independent study opportunities.

The Bachelor of Science in Engineering (BSE) degree with a major in civil engineering (CE) offers two study tracks that allow students to pursue interests in either (or both) structural engineering and mechanics (S/M), or environmental engineering and water resources (E/W). The CE major will be of interest to students interested in, in part, the design and construction of civil infrastructure. CE is accredited by the Engineering Accreditation Commission of ABET.

The Bachelor of Science in Engineering (BSE) degree is also offered with a major in environmental engineering (EnvE). The EnvE major will be of interest to students interested in obtaining an interdisciplinary undergraduate engineering degree that places emphasis on chemistry and bio-science fundamentals with applications to public health engineering. The Environmental Engineering program launched in Fall 2013 and responds to the needs of students looking for such an interdisciplinary engineering degree that prepares them to work as environmental engineers, graduate work in environmental engineering, or for advanced study in environmental law, medicine, public health, or global sanitation. The environmental engineering program will seek ABET accreditation for its first graduating class.

Your CEE Department

Mission Statement

The mission of Duke's Department of Civil and Environmental Engineering is to investigate, develop, and impart fundamental and advanced engineering knowledge relevant to the field of civil and environmental engineering and emerging global and national challenges. From a foundation of core technical knowledge and inquiry we provide an experiential exposure to innovative problem solving, research, leadership, and creativity that prepares our graduates for a successful career.

Educational Objectives for CE and EnvE Programs

The alumni of the CE and EnvE programs at Duke are expected to exhibit the following behaviors:

- Conceive, communicate, and contribute to effective and sustainable solutions to professional, multi-disciplinary challenges (in, for example, engineering design, project management, consulting, finance, and academia) by utilizing fundamental principles of mathematics, science, and engineering, and employing engineering methods and judgment as needed;
- Seek and engage in professional development, including advanced degrees and professional licensure, to enhance their capabilities and personal fulfillment;
- Be leaders in their professional and personal communities while responding ethically and boldly when confronted with modern societal and environmental challenges.

Student Outcomes for CE and EnvE Programs

CE and EnvE students will have the following capabilities upon completion of their degree:

1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. 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
3. an ability to communicate effectively with a range of audiences
4. 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
5. 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
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions

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

Who's Who in CEE and Pratt

This is not an exhaustive list of Duke, Pratt, and CEE administrators and staff, but rather those, whom due to their position or responsibilities, you are likely to interact with because of pursuing a CE or EnvE major.

Pratt Deans

The Dean of the Pratt School of Engineering is Dr. Jerome Lynch. The Associate Dean for Undergraduate Education is Dr. Lisa Huettel.

Jerome Lynch

Lisa Huettel

There are three deans for undergraduate advising: Dean Ben Cooke, Dean Carmen Rawls, and Dean Lupita Temiquel-McMillian. One of these three deans is your academic dean. In large part your academic dean is assigned to you based on your dorm assignment as a first-year student. You will have the same academic dean for all four years in Pratt. In addition to advising, each dean also has a program area and is assisted by a program coordinator.

The academic dean for advising is Dean Ben Cooke. Dean Cooke works closely with Wanda Bernoudy.

305 Teer Building
benjamin.cooke@duke.edu
919-660-5996

Ben Cooke

The academic dean for advising and outreach is Dean Carmen Rawls.

305 Teer Building
carmen.rawls@duke.edu
919-660-5996


Carmen Rawls

The academic dean for advising and student affairs is Dean Lupita Temiquel-McMillian. Dean McMillian works closely with Jennifer Ganley.

305 Teer Building
lupita.mcmillian@duke.edu
919-660-5996


Lupita Temiquel-McMillian

CEE Administration

The Chair of the Department of Civil and Environmental Engineering is Dr. Henri Gavin. The Associate Chair is Dr. David Schaad.

For Fall 2024, Dr. Gavin is on sabbatical. The Acting Chair for Fall 2024 is Dr. Schaad.


Henri Gavin


David Schaad

The Director of Undergraduate Studies (DUS) for the Department of Civil and Environmental Engineering is Dr. Joseph Nadeau.

173 Hudson Hall Annex
nadeau@duke.edu
919-660-5216


Joseph Nadeau

CEE Staff

The Undergraduate Program Coordinator and the face of CEE department is Rocky Rothrock.

123 Hudson Hall
rocky.rothrock@duke.edu
919-660-5200

Rocky Rothrock

The CEE department has two research and development (R&D) engineers whose responsibilities include CEE teaching laboratories and laboratory safety.

Jason Kait is the R&D engineer for the areas of structures, mechanics, and fluids.

051 Hudson Annex
jkait@duke.edu
919-660-5198

Jason Kait

Dwina Martin

Dwina Martin is the R&D engineer for the area of environmental engineering.

223 Wilkinson
dwina@duke.edu
919-660-5481

Pratt Staff

Pratt's Director of Undergraduate Student Affairs is Tarina Argese. She works with student groups (e.g., ASCE, DEID) and coordinates several programs including peer advising (i.e., E-Team) and Pratt tours.

316 Teer Engineering Building
tarina.argese@duke.edu
919-660-5442

Tarina Argese

The Manager of the Pratt Student Shop is Steven Earp.

Pratt Student Shop[2]

Steven Earp

Liaisons to Pratt

The liaisons within the Duke Career Hub[3] to the Pratt School of Engineering are Catherine Allen, Rachel Coleman, and Lauren Coury.

Catherine Allen

Rachel Coleman

Lauren Coury

Suite 036 Bryan Center, Career Community – Data, Technology, and Engineering[4]
919- 660-1050

The liaison within Duke University Libraries to the Pratt School of Engineering is Deric Hardy.

deric.hardy@duke.edu
919-660-5928
Undergraduate Library Services[5]

Deric Hardy

[2] https://studentshop.pratt.duke.edu/
[3] https://careerhub.students.duke.edu/
[4] https://careerhub.students.duke.edu/channels/data-technology-engineering/
[5] https://library.duke.edu/services/undergraduate

Personal, Academic, and Professional Integrity

[I]ntegrity is important in all areas of life. If we don't have integrity in the small things, if we find it possible to justify plagiarism or cheating or shoddy work in things that don't seem important, how will we resist doing the same in areas that really do matter, in areas where money might be at stake, or the possibility of advancement, or our esteem in the eyes of others?

Personal integrity is not a quality we're born to naturally. It's a quality of character we need to nurture, and this requires practice in both meanings of that word (as in practice the piano and practice a profession). We can only be a person of integrity if we practice it every day.[6]

Duke Community Standard[7] (DCS)

Duke University is a community dedicated to scholarship, leadership, and service and to the principles of honesty, fairness, respect, and accountability. Citizens of this community commit to reflect upon and uphold these principles in all academic and nonacademic endeavors, and to protect and promote a culture of integrity.

To uphold the Duke Community Standard:

- *I will not lie, cheat, or steal in my academic endeavors;*
- *I will conduct myself honorably in all my endeavors; and*
- *I will act if the Standard is compromised.*

ASCE Code of Ethics[8]

PREAMBLE

Members of The American Society of Civil Engineers conduct themselves with integrity and professionalism, and above all else protect and advance the health, safety, and welfare of the public through the practice of Civil Engineering.

Engineers govern their professional careers on the following fundamental principles:

- *create safe, resilient, and sustainable infrastructure;*
- *treat all persons with respect, dignity, and fairness in a manner that fosters equitable participation without regard to personal identity;*
- *consider the current and anticipated needs of society; and*

[6] Excerpted from Bill Taylor's "A Letter to My Students."
[7] https://registrar.duke.edu/university-bulletins/duke-community-standard
[8] https://www.asce.org/career-growth/ethics/code-of-ethics

- *utilize their knowledge and skills to enhance the quality of life for humanity.*

All members of The American Society of Civil Engineers, regardless of their membership grade or job description, commit to all of the following ethical responsibilities. In the case of a conflict between ethical responsibilities, the five stakeholders are listed in the order of priority. There is no priority of responsibilities within a given stakeholder group with the exception that 1a. takes precedence over all other responsibilities.[9]

CODE OF ETHICS

1. *SOCIETY*
   Engineers:
   a. *first and foremost, protect the health, safety, and welfare of the public;*
   b. *enhance the quality of life for humanity;*
   c. *express professional opinions truthfully and only when founded on adequate knowledge and honest conviction;*
   d. *have zero tolerance for bribery, fraud, and corruption in all forms, and report violations to the proper authorities;*
   e. *endeavor to be of service in civic affairs;*
   f. *treat all persons with respect, dignity, and fairness, and reject all forms of discrimination and harassment;*
   g. *acknowledge the diverse historical, social, and cultural needs of the community, and incorporate these considerations in their work;*
   h. *consider the capabilities, limitations, and implications of current and emerging technologies when part of their work; and*
   i. *report misconduct to the appropriate authorities where necessary to protect the health, safety, and welfare of the public.*

2. *NATURAL AND BUILT ENVIRONMENT*
   Engineers:
   a. *adhere to the principles of sustainable development;*
   b. *consider and balance societal, environmental, and economic impacts, along with opportunities for improvement, in their work;*
   c. *mitigate adverse societal, environmental, and economic effects; and*
   d. *use resources wisely while minimizing resource depletion.*

3. *PROFESSION*
   Engineers:
   a. *uphold the honor, integrity, and dignity of the profession;*

[9] This Code does not establish a standard of care, nor should it be interpreted as such.

b. *practice engineering in compliance with all legal requirements in the jurisdiction of practice;*
c. *represent their professional qualifications and experience truthfully;*
d. *reject practices of unfair competition;*
e. *promote mentorship and knowledge-sharing equitably with current and future engineers;*
f. *educate the public on the role of civil engineering in society; and*
g. *continue professional development to enhance their technical and non-technical competencies.*

4. *CLIENTS AND EMPLOYERS*
Engineers:
   a. *act as faithful agents of their clients and employers with integrity and professionalism;*
   b. *make clear to clients and employers any real, potential, or perceived conflicts of interest;*
   c. *communicate in a timely manner to clients and employers any risks and limitations related to their work;*
   d. *present clearly and promptly the consequences to clients and employers if their engineering judgment is overruled where health, safety, and welfare of the public may be endangered;*
   e. *keep clients' and employers' identified proprietary information confidential;*
   f. *perform services only in areas of their competence; and*
   g. *approve, sign, or seal only work products that have been prepared or reviewed by them or under their responsible charge.*

5. *PEERS*
Engineers:
   a. *only take credit for professional work they have personally completed;*
   b. *provide attribution for the work of others;*
   c. *foster health and safety in the workplace;*
   d. *promote and exhibit inclusive, equitable, and ethical behavior in all engagements with colleagues;*
   e. *act with honesty and fairness on collaborative work efforts;*
   f. *encourage and enable the education and development of other engineers and prospective members of the profession;*
   g. *supervise equitably and respectfully;*
   h. *comment only in a professional manner on the work, professional reputation, and personal character of other engineers; and*
   i. *report violations of the Code of Ethics to the American Society of Civil Engineers.*

Advising

Assemble a team of advisors. The department will assign you a faculty advisor but like all people your advisor will have strengths and weaknesses with regards to the types of information and advice they can provide.

Also see Who Can Help? on page 41.

First-Year Advising (360 Coaches)

Upon matriculation to Pratt students will be assigned a 360-coach for their first year in Pratt. These 360 coaches offer enhanced academic advising and mentoring opportunities.

There are approximately thirty (30) 360-coaches. As the group, these 360 coaches cover all four departments (BME, CEE, ECE, and MEMS) and all five majors (BME, CE, EnvE, ECE, and ME).

At the conclusion of the first-year students will either declare a major (this can be easily changed if a student changes their mind) or they will indicate the major that they most likely will major in. Based on this information, late in the summer between first-year and sophomore year students will be assigned an advisor in their declared major or the major they are most likely to later choose as their major.

Assignment and Reassignment of CEE Advisors

After declaring CE or EnvE as their major (or a first-year student indicating at the conclusion of the first-year that they believe CE or EnvE is most likely to be their major), a CEE faculty member will be assigned as the academic advisor. The assignment of CEE faculty member as an advisor is based upon the declared/expressed interests of the student, specifically, a "structural" interest (i.e., CE-S/M major/interest) or an "environmental" interest (i.e., CE-E/W or EnvE major/interest). Information that a student provides when declaring a major—and this may include a request for a specific advisor—is also considered when making specific advisor assignments to the greatest extent possible. That said, the department needs to balance the number of advisees per faculty member so not all advisor requests can be accommodated.

For any reason, students may request a new faculty advisor by contacting the DUS.

To declare a major (as well as a second major, minors, and certificates—or to make changes to a previous declaration), complete this online change of plan form.[10]

Pre-registration Advising

First-year students will meet with their 360 Coach and all other students (sophomores, juniors, and seniors) will meet with their faculty advisor during the pre-registration period in March/April for the following fall semester courses and in October/November for the following spring semester courses. Your faculty advisor will review your academic report, discuss with you the courses that you are considering, and, finally, release the hold on your registration for classes for the subsequent semester. Without this action by your advisor, you will not be able

[10] https://dukeuniversityregistrar.formstack.com/forms/academic_plan_change

to register for courses. Should you make any changes to your course plan after meeting with your advisor it is your responsibility to inform your advisor of those changes. Your advisor is likely to keep notes on your meetings and this will keep his or her notes accurate and, more importantly, your change in plan may trigger a comment from your advisor that could be beneficial to you.

During the advising meeting you should discuss any concerns or problems that you might be having academically, and you are encouraged to initiate conversations about the field of civil and/or environmental engineering that you may be interested in exploring further, and/or career options within the discipline.

Advisors use different means for scheduling advising appointments. The most common means is probably the Microsoft Bookings app in Office 365. Ideally, your faculty advisor will email you how to sign up for a meeting. If not, feel free to reach out to your advisor.

Career Advising

Students can discuss their career plans with their faculty advisors. In addition, Duke's Career Hub is available for career advising, support for career exploration, and assistance with job search skills such as networking, writing professional documents, and interviewing in preparation for securing summer internships, full-time employment, and other professional opportunities.

AP Credits

All CE and EnvE majors may utilize the following AP credits in lieu of the corresponding BSE degree requirement:

Duke Credit for AP Exam		BSE Degree Requirement
BIOLOGY 20 (19)	may be used in lieu of	BIOLOGY 201L (101L)
CHEM 20 (18)	may be used in lieu of	CHEM 101DL (31L)
CHEM 21 (19)	may be used in lieu of	CHEM 101DL (31L)
MATH 21 (31)	may be used in lieu of	MATH 111L (31L)
MATH 22 (32)	may be used in lieu of	MATH 112L (32L)
PHYSICS 25 (61)	may be used in lieu of	PHYSICS 151L (61L)
PHYSICS 26 (62)	may be used in lieu of	PHYSICS 152L (62L)

CE-E/W + BME: The "in lieu of"-equivalences noted above for BIOLOGY 20 and CHEM 20 do *not* apply to CE-E/W + BME majors.

Neither AP credits nor their Duke credit carry course codes. However, the Pratt School of Engineering does attribute, and Pratt students may utilize, the following area of knowledge codes to the following AP exams:

Economics (SS)
English (ALP)
History (CZ)
Political Science (SS)
Psychology (SS)
World Language and Culture (FL)

Restrictions and clarifications on AP credits:

- **SS/H**: Only two AP credits may be applied toward the five SS/H courses.
- **SS/H**: An AP exam cannot be used to satisfy the "200-level or higher"-component of the depth requirement for the SS/H courses.
- **Math**: If MATH 21 is the only math AP credit you have, then enroll in MATH 122L.
- **Physics**: At least one (1) physics course must be taken post-matriculation to satisfy the Physics requirement in the Engineering curriculum. Students receiving AP credits for PHYSICS 25 and 26 must: a) take a Duke PHYSICS course at or above PHYSICS 153L; b) decline the AP credit for PHYSICS 26 and take PHYSICS 152L; or c) decline both AP credits and take both PHYSICS 151L and 152L.
- **Statistics**: AP credit for Statistics *cannot* be used in lieu of STA 130.
- **Waiving AP credit**: If an AP credit is used to meet a prerequisite for a course, then it is not possible to waive that AP credit at a later date and take the equivalent Duke course for credit.

Additional information on AP credits and International Placement Credits (IPC) is available at the Registrar's website.[11]

[11] https://registrar.duke.edu/student-resources/advanced-placement-credit/

BSE Degree Requirements

Curricular programs accredited by ABET must satisfy minimum requirements in mathematics, sciences, and engineering. In addition, the Pratt School of Engineering has requirements for all engineering students. To meet these constraints, the undergraduate degree program in civil engineering has specific requirements for undergraduate students. Samples of curricula for students with different CEE-related major choices are provided in Appendix C.

On Pratt's General BSE Degree Requirements

The general requirements mandated by Pratt for all BSE degrees can be found in the current Bulletin for Undergraduate Instruction and online.[12] It is not necessary for students to concern themselves with these requirements as they are all satisfied by all majors in Pratt. In other words, the CE Major Requirements and EnvE Major requirements specified below satisfy all general BSE degree requirements specified by Pratt. It is, however, worthwhile to mention two of these general requirements as they can be the genesis of requirements specified below within a major.

First, Pratt requires all majors to have four (4) natural science courses. As part of this, Pratt specifies one chemistry course and two physics courses, leaving one natural science elective to be specified by the major. Because this natural science elective is different for each engineering major, students should be very careful to satisfy the requirements applicable to his/her major.

Second, Pratt requires all majors to complete a course from four of the following seven areas: digital systems, electrical science, information and computer science, mechanics (solid and fluid), materials science, systems analysis, and thermal science and transfer processes. As part of this, Pratt requires a computer programming course (EGR 103L) which falls within the digital systems area. Depending on the major there may be an elective to assure that the four areas are covered.

Transferring from Trinity: The requirements presented below are for students who enter the Pratt School of Engineering upon matriculation at Duke. For students who transfer to the Pratt School from Trinity College the degree requirements remain the same, though the specific courses which are applied to satisfy those requirements may differ.

Course Credit Limitations

The 34 course credits used to meet BSE degree requirements have the following limitations:

- No more than 1.0 course credits in physical education activity may be used.
- No more than 1.0 course credits in music activity may be used.
- No house courses may be used.
- No more than 2.0 course credits of junior- or senior-level air science, military science, or naval science coursework may be used

[12] https://pratt.duke.edu/academics/undergrad/requirements/

BSE Common Core

The following courses are required of all majors in Pratt.

Undergraduate Writing

All majors in Pratt must take

WRITING 101 Academic Writing

This course is required of all students at Duke during their first year. Duke will designate half of the incoming class to enroll in WRITING 101 in the fall and the other half in the spring. It is not possible for students to select which semester to take this course nor to switch semesters.

Social Sciences and Humanities (SS/H) Electives

All majors in Pratt must take five (5) humanities and social science courses from approved[13] departments and programs subject to the following requirements:

- **Social Science**: At least one course must be a Social Science (SS),
- **Breadth**: At least two of the following three areas of knowledge must be covered: Arts, Literature, and Performance (ALP), Civilizations (CZ), and Foreign Language (FL), and
- **Depth**: At least two courses must be taken from the same approved department or program with at least one of the two courses at 200-level or higher,

and subject to the following restrictions:

- Each individual course must be at least 1.0 unit and have an area of knowledge code
- Courses utilized to meet the social science and breadth components can contribute only a single area of knowledge code even if the course possesses multiple codes, thus, a total of three unique courses will be required
- A maximum of two AP credits can be used
- AP credit cannot be used to meet the "200-level or higher"-component of the depth requirement
- Skill courses (0.5 unit courses such as PE, dance, music lesson) cannot be used
- Courses must be from, or cross-listed[14] with, an approved department or program.

This set of general education requirements incorporates elements of breadth and depth.

Approved Departments and Programs: Non-social science and non-humanities departments (including some engineering courses) apply for and receive SS, CZ, or ALP codes for some of their courses. Effective Fall 2013, the Pratt school requires that SS/H courses must be taken from, or cross-listed with, an approved department or program (see Appendix A).

Chemistry

All majors in Pratt are required to take one of the following two chemistry courses:

CHEM 101DL Core Concepts in Chemistry

[13] See Appendix A for a listing of approved humanities and social science departments and programs.
[14] EGR 305, even though cross-listed with ECON, may *not* be used toward the SS/H requirement.

CHEM 110DL	Honors Chemistry: Core Concepts in Context

Chemistry AP Credit (CE, EnvE): AP credit for either CHEM 20 (18) or CHEM 21 (19) may be used to satisfy this requirement.

Physics

All majors in Pratt are required to take the following physics courses:

PHYSICS 151L	Introductory Mechanics
PHYSICS 152L	Introductory Electricity, Magnetism, and Optics

subject to the constraint that at least one physics course must be taken post matriculation.

Physics AP Credit: AP credit for PHYSICS 25 may be used in place of PHYSICS 151L.

Physics AP Credit: AP credit for PHYSICS 26 may be used in place of PHYSICS 152L.

Post-matriculation Physics Course: At least one (1) physics course must be taken post-matriculation to satisfy the physics requirement in the engineering curriculum. If you have AP credit for PHYSICS 25 and 26, choose one of the following options as your physics course post-matriculation:

- If you are interested in a second major or a minor in physics, it is suggested that you follow the recommendations for potential physics majors and minors[15].
- If you have credit for multivariable calculus and you are **not** planning a second major or a minor in physics, it is suggested that you take PHYSICS 264L: Optics & Modern Physics.
- If you do **not** have credit for multivariable calculus and you are **not** planning a second major or minor in physics, it is recommended that you take one of the following:
    - PHYSICS 152L, or
    - an intermediate core physics course: PHYSICS 361, 362D, 363, 464, or 513, or
    - a gateway physics course (which have notable prerequisites), selected from: PHYSICS 305, 320L, 380, or 414.

PHYSICS 152L & MATH 219: It is advised to take PHYSICS 152L concurrently with or after MATH 219. Note that PHYSICS 152L is *not* a prerequisite for any required course for either the CE or EnvE major.

Mathematics

All majors in Pratt must take the following math courses (unless second majoring in math, see below):

Matriculation in Fall 2021, or later:

MATH 111L	Laboratory Calculus I	(differential calculus)
MATH 112L	Laboratory Calculus II	(integral calculus)
MATH 218-2	Matrices and Vectors	

[15] https://physics.duke.edu/undergraduate/course-selection/intro-placement

MATH 219	Multivariable Calculus	
MATH 353	Ordinary and Partial Differential Equations	

Matriculation prior to Fall 2021:

MATH 111L	Laboratory Calculus I	(differential calculus)
MATH 112L	Laboratory Calculus II	(integral calculus)
MATH 212	Multivariable Calculus	
MATH 216	Linear Algebra and Differential Equations	
MATH 353	Ordinary and Partial Differential Equations	

Math AP Credit: AP credit for MATH 21 is accepted in lieu of MATH 111L.

Math AP Credit: AP credit for MATH 22 is accepted in lieu of MATH 112L.

Placement – Q&A: Common questions concerning mathematics placement[16] are answered at the Department of Mathematics website.

Placement – MATH 21 only math AP: Enroll in MATH 122L.

Placement - Skipped Math Courses: If students are advised by the mathematics department to skip any courses in the math sequence listed above, those students must replace the skipped courses with additional math courses approved by the CEE DUS. The total number of math courses taken at Duke plus the number of math AP or transfer credits must be at least five. Approved math classes include: MATH 230, 333, 342, 361S, 451S, 453, 541. CE and EnvE majors are permitted to count their statistics requirement (STA 130) as a math course if they were instructed to skip a math course.

Math Second Majors: Students wishing to second major with mathematics will need to take MATH 111L, MATH 112L, either [MATH 212 and MATH 221] or [MATH 221 and MATH 222], and MATH 356.

Digital Computation and Computer Programming

Matriculation in Fall 2024, or later:

All majors in Pratt must take the following course:

EGR 105L	Computing for Engineers

Matriculation prior to Fall 2024:

All majors in Pratt must take at least one (1) of the following courses during the first year:

EGR 103L	Computational Methods in Engineering
COMPSCI 201	Data Structures and Algorithms

Computer Science AP Credit: Students with AP credit for Computer Science should enroll in COMPSCI 201. (Students without AP credit for Computer Science should enroll in EGR 103L.)

[16] https://math.duke.edu/undergraduate/course-placement/faq

CE Requirements

BSE Common Core

All CE majors must complete the BSE common core courses specified above.

CE Intro

All CE majors must take the following course

CEE 132L Engineering the Planet

Substitution: CEE 132L may be replaced with an upper-level CEE course (1.0 unit) **and** CEE 205 (0.5 unit), for a total of 1.5 units. If not taken in the first- or sophomore-year then CEE 132L must be replaced.

CE Core

All CE majors must take the following courses:

Matriculation in Fall 2024, or later:

EGR 101L	Engineering Design and Communication	
EGR 201L	Mechanics of Solids	
EGR 244L	Dynamics	
CEE 251L	Uncertainty, Design, and Optimization	(or CEE 201L, Spring 2023 or 2024)
CEE 301L	Fluid Mechanics	
CEE 302L	Introduction to Soil Mechanics	
CEE 351	Engineering Economics, Risk, and Decision-Making	(or EGR 305, Fall 2023)

EGR 101L: If EGR 101L is not taken in the first-year then it must be replaced with an upper-level CEE course.

Matriculation prior to Fall 2024:

EGR 101L	Engineering Design and Communication	
EGR 201L	Mechanics of Solids	
EGR 244L	Dynamics	
EGR 305	Engineering Systems Optimization and Economics	(or CEE 351)
CEE 201L	Uncertainty, Design, and Optimization	(or CEE 251L)
CEE 301L	Fluid Mechanics	
CEE 302L	Introduction to Soil Mechanics	
STA 130	Probability and Statistics in Engineering	(see **STA 130** note)

EGR 101L: If EGR 101L is not taken in the first-year then it must be replaced with an upper-level CEE course.

STA 130: The Statistics Department has opted to no longer offer STA 130 after Fall 2019. Further, MATH 238L will not be offered Spring 2025—and perhaps beyond. To complete this requirement take one of the following courses in lieu of STA 130**:**

- MATH 230/STA 230, Probability
- MATH 231, An Algorithmic Introduction to Probability & Applications
- MATH 238L/EGR 238L, Fundamentals of Data Analysis and Decision Science
- MATH 340, Advanced Introduction to Probability
- STA 111L, Probability and Statistical Inference
- ECON 104D, Statistical Foundations of Econometrics & Data Science

Statistics AP Credit: AP credit for statistics *cannot* be used to satisfy the STA 130 requirement.

CE Track

All CE majors must complete at least one track concentration: structural engineering and mechanics (S/M) or environmental engineering and water resources (E/W). Each track consists of four courses.

CE majors choosing the structural engineering and mechanics (S/M) track must complete:

CEE 421L	Matrix Structural Analysis
CEE 422L	Concrete and Composite Structures
CEE 423L	Metallic Structures
CEE 429	Integrated Structural Design

CE majors choosing the environmental engineering and water resources (E/W) track must complete:

CEE 461L	Environmental Aquatic Chemistry
CEE 462L	Biological Principles in Environmental Engineering
CEE 463L	Water Resources Engineering
CEE 469	Integrated Environmental Design

Natural Science Elective

The spirit of this requirement for CE majors is that students should have broad exposure to science including chemistry, physics, and one additional area of natural science.

All CE majors must complete the natural science elective requirement by taking one of the following courses:

BIOLOGY 201DL	Gateway to Biology: Molecular Biology
BIOLOGY 215/215L	Introduction to Mathematical Modeling in Biology
BIOLOGY 311	Systems Biology: An Intro. for the Quantitative Sciences
ECS/EOS 101	The Dynamic Earth
ECS/EOS 103	Climate Change for Future Leaders
ECS/EOS 201L	The Solid Earth: Minerals, Rocks, and Structural Geology
ECS/EOS 202	Ocean and Atmospheric Dynamics
ECS/EOS 220	Water Sciences
MARSCI 204	Integrative Oceanography

Biology AP Credit: AP credit for Biology may be used to satisfy this requirement.

Marine Lab: One of the following courses also satisfies this requirement:

BIOLOGY 308A/309A	Oceans in Human and Environmental Health
ECS/EOS 370A	Introduction to Physical Oceanography
MARSCI 204A	Integrative Oceanography

Inactive Courses: The following courses satisfy this requirement; however, they are inactive and it is not anticipated that they will be offered again:

BIOLOGY 275A	Biology for Engineers: Informing Engineering Decisions
ECS/EOS 102	The Dynamic Oceans

Transfer Credit: With prior DUS approval, it may be possible to utilize transfer credit to satisfy the NS elective requirement.

Engineering and Applied Science Elective

All CE majors must complete the engineering and applied sciences elective by completing one of the following courses (this list is supplemented with additional courses depending on the selected track, see below):

BME 253L	Biomedical Electronic Measurements I
BME 307	Transport Phenomena in Biological Systems
CEE 560	Environmental Transport Phenomena
CEE 581	Pollutant Transport Systems
COMPSCI 201	Data Structures and Algorithms
ECE 110L	Fundamentals of Electrical and Computer Engineering
ECE 311	Thermal Physics
EGR 224L	Electrical Fundamentals of Mechatronics
ME 221L	Structure and Properties of Solids
ME 331L	Thermodynamics
PHYSICS 271L	Electronics

S/M Track: Students completing the S/M track may also select from the following three courses:

CEE 461L	Environmental Aquatic Chemistry
CEE 462L	Biological Principles in Environmental Engineering
CEE 463L	Water Resources Engineering

E/W Track: Students completing the E/W track may also select from the following three courses:

CEE 421L	Matrix Structural Analysis
CEE 422L	Concrete and Composite Structures
CEE 423L	Metallic Structures

CEE Electives

All CE majors must take a required number of CEE electives which are CEE courses at the 300-, 400-, 500-, or 600-level. The number of required courses depends on matriculation date and

are detailed further below. These course requirements may be used to provide additional technical breadth or depth depending on the needs and interests of the individual student.

Recommended Courses:

CEE 393/394	*Research Independent Study*	fall, spring
CEE 493/494	*Research Independent Study*	fall, spring
CEE 690	*Advanced Topics (various sections)*	fall, spring
CEE 311	Architectural Engineering I	fall
CEE 506	Environmental Spatial Data Analysis	fall
CEE 520	Continuum Mechanics	fall
CEE 530	Introduction to the Finite Element Method	fall
CEE 566	Environmental Microbiology	fall
CEE 511	Construction Management	even falls
CEE 683	Groundwater Hydrology and Contaminant Transport	fall
CEE 315-20	Engr. Sustainable Design and the Global Comm.: Structural Focus	spring
CEE 315-60	Engr. Sustainable Design and the Global Comm.: Environmental Focus	spring
CEE 411	Architectural Engineering II	spring
CEE 560	Environmental Transport Phenomena	spring
CEE 575	Air Pollution Engineering	spring
CEE 661L	Environmental Molecular Biotechnology	spring
CEE 666	Aquatic Geochemistry	spring
CEE 541	Structural Dynamics	occasionally
CEE 667*	Chemical Transformation of Environmental Contaminants	occasionally
CEE 688	Turbulence 1	occasionally

*CEE 667 has a prerequisite of CEE 563 or CHEM 201D

Interinstitutional Registration Agreement: The Interinstitutional Registration Agreement[17] affords you the opportunity to take courses at select regional universities including North Carolina State University (NCSU). NCSU courses that might be of interest to you for satisfying this elective include Traffic Engineering, Mechanical and Electrical Systems in Buildings, Building Construction Engineering, and Introduction to Coastal and Ocean Engineering. Information about these and additional CEE courses at NCSU is available on NCSU's Department of Civil, Construction, and Environmental Engineering website.

Matriculation in Fall 2024, or later:
Three (3) CEE electives.

Matriculation prior to Fall 2024:
Two (2) CEE electives.

Free Electives

All CE majors must have two (2) course credits of free electives. See Course Credit Limitations on page 14.

[17] https://registrar.duke.edu/registration/special-registrations

Graduate School: Students planning to attend graduate school are strongly advised to use the free electives to take at least one additional CEE elective (making two in total), with at least one of them at the 500 level, or higher.

Satisfactory/Unsatisfactory: Free electives are the only courses counted toward degree requirements that may be taken on a Satisfactory/Unsatisfactory (S/U) basis.

EI Code

All CE majors must possess one ethical inquiry (EI) code among the 34 units used to meet degree requirements.

Courses Comprising the CE Major

There are occasions, particularly with certificate programs, when the number of courses that can double count toward another program (major, minor, or certificate) is limited in number (often two courses). In this context, the courses that comprise the CE major are as follows:

Matriculation in Fall 2024, or later:
EGR 244L
CEE 301L
CEE 302L
CEE 351
CEE Elective
CEE Elective
CEE Elective
If S/M Track: CEE 421L, CEE 422L, CEE 423L, and CEE 429
If E/W Track: CEE 461L, CEE 462L, CEE 463L, and CEE 469

Matriculation prior to Fall 2024:
EGR 244L
CEE 201L
CEE 301L
CEE 302L
CEE Elective
CEE Elective
If S/M Track: CEE 421L, CEE 422L, CEE 423L, and CEE 429
If E/W Track: CEE 461L, CEE 462L, CEE 463L, and CEE 469

EnvE Requirements

BSE Common Core

All EnvE majors must complete the BSE common core courses specified above.

EnvE Intro

All EnvE majors must take the following course

CEE 132L Engineering the Planet

Substitution: CEE 132L may be replaced with an upper-level CEE course (1.0 unit) **and** CEE 205 (0.5 unit), for a total of 1.5 units. If not taken in the first- or sophomore-year then CEE 132L must be replaced.

EnvE Core

All EnvE majors must take the following courses:

Matriculation in Fall 2024, or later:

EGR 101L	Engineering Design and Communication	
EGR 201L	Mechanics of Solids	
EGR 244L	Dynamics	
CEE 251L	Uncertainty, Design, and Optimization (or CEE 201L, Spring 2023 or 2024)	
CEE 301L	Fluid Mechanics	
CEE 351	Engr. Economics, Risk, and Decision-Making	(or EGR 305, Fall 2023)
CEE 461L	Environmental Aquatic Chemistry	
CEE 462L	Biological Principles in Environmental Engineering	
CEE 463L	Water Resources Engineering	
CEE 469	Integrated Environmental Design	
CEE 560	Environmental Transport Phenomena	(see **CEE 560** note)
ME 331L	Thermodynamics	(see **ME 331L** note)

EGR 101L: If EGR 101L is not taken in the first-year then it must be replaced with an upper-level environmental course.

CEE 560: It is recommended to have completed CEE 301L (fluids) and MATH 353 (diff eqns) before taking this course, however, it is not required. There is a benefit to taking this course before CEE 462L, but it is not required. Each student should consult with their adviser to determine the optimal sequence for them.

ME 331L: ME 331L may be replaced with an approved thermodynamics course.

Matriculation prior to Fall 2024:

EGR 101L	Engineering Design and Communication
EGR 201L	Mechanics of Solids
EGR 244L	Dynamics
CEE 301L	Fluid Mechanics
CEE 461L	Environmental Aquatic Chemistry

CEE 462L	Biological Principles in Environmental Engineering	
CEE 463L	Water Resources Engineering	
CEE 469	Integrated Environmental Design	
CEE 560	Environmental Transport Phenomena	(see **CEE 560** note)
ME 331L	Thermodynamics	(see **ME 331L** note)
STA 130	Probability and Statistics in Engineering	(see **STA 130** note)

EGR 101L: If EGR 101L is not taken in the first-year then it must be replaced with an upper-level environmental course.

CEE 560: It is recommended to have completed CEE 301L (fluids) and MATH 353 (diff eqns) before taking this course, however, it is not required. There is a benefit to taking this course before CEE 462L, but it is not required. Each student should consult with their adviser to determine the optimal sequence for them.

STA 130: The Statistics Department has opted to no longer offer STA 130 after Fall 2019. Further, MATH 238L will not be offered Spring 2025—and perhaps beyond. To complete this requirement take one of the following courses in lieu of STA 130:

- MATH 230/STA 230, Probability
- MATH 231, An Algorithmic Introduction to Probability & Applications
- MATH 238L/EGR 238L, Fundamentals of Data Analysis and Decision Science
- MATH 340, Advanced Introduction to Probability
- STA 111L, Probability and Statistical Inference
- ECON 104D, Statistical Foundations of Econometrics & Data Science

Statistics AP Credit: AP credit for statistics *cannot* be used to satisfy the STA 130 requirement.

ME 331L: ME 331L may be replaced with an approved thermodynamics course.

Natural Science Elective

All EnvE majors must take on of the following biology courses to satisfy the natural science elective:

BIOLOGY 201L	Gateway to Biology: Molecular Biology
BIOLOGY 202L	Gateway to Biology: Genetics and Evolution
BIOLOGY 212L	General Microbiology

Biology AP Credit: AP credit for BIOLOGY may be used to satisfy this requirement.

Marine Lab: One of the following courses also satisfies this requirement:
BIOLOGY 308A/309A Oceans in Human and Environmental Health

Inactive Courses: The following courses satisfy this requirement; however, they are inactive and it is not anticipated that they will be offered again:
BIOLOGY 275A Biology for Engineers: Informing Engineering Decisions

Earth Science Elective

All EnvE majors must take *one* (1) of the following earth science courses:

CEE 666	Aquatic Geochemistry
ECS/EOS 101	The Dynamic Earth
ECS/EOS 103	Climate Change for Future Leaders
ECS/EOS 201L	The Solid Earth: Minerals, Rocks, and Structural Geology
ECS/EOS 202	Ocean and Atmospheric Dynamics
ECS/EOS 220	Water Sciences
ECS/EOS 315	Waves, Beaches, and Coastline Dynamics
ECS/EOS 323	Hydrogeology
MARSCI 204	Integrative Oceanography

Marine Lab: One of the following courses also satisfies this requirement:

BIOLOGY 308A/309A	Oceans in Human and Environmental Health
EOS 370A	Physical Oceanography
ENVIRON 369LA	Biological Oceanography
ENVIRON 370A	Physical Oceanography
MARSCI 204A	Integrative Oceanography

Inactive Courses: The following courses satisfy this requirement; however, they are inactive and it is not anticipated that they will be offered again:

ECS/EOS 102	The Dynamic Oceans

Double Counting: This is a reminder that a unique course must be used to meet each degree requirement, thus, the same course (e.g., CEE 666) **cannot** be used to meet both the earth science elective and the upper-level environmental elective.

Systems Elective

Matriculation in Fall 2024, or later:

This elective is not applicable as all EnvE majors are required to take both CEE 251L and CEE 351 (as indicated above for the EnvE Core).

Matriculation prior to Fall 2024:

All EnvE majors must take one (1) of the following two (2) courses:

CEE 201L	Uncertainty, Design, and Optimization	(or CEE 251L)
EGR 305	Engineering Systems Optimization and Economics	(or CEE 351)

Upper-level Environmental Electives

All EnvE majors must take *two* (2) approved upper-level environmental electives. Preapproved courses include:

CHEM 201DL	Organic Chemistry I	fall, spring
CHEM 202L	Organic Chemistry II	fall, spring
CEE 393/394	*Research Independent Study* (seek approval of specific topic)	fall, spring

CEE 493/494	*Research Independent Study* (seek approval of specific topic)	fall, spring
CEE 690	*Advanced Topics* (seek approval of specific topics)	fall, spring
CEE 506	Environmental Spatial Data Analysis	fall
CEE 563	Chemical Fate of Organic Compounds	fall
CEE 566	Environmental Microbiology	fall
CEE 683	Groundwater Hydrology and Contaminant Transport	fall
BME 307	Transport Phenomena: Biological Systems	spring
CEE 302L	Soil Mechanics	spring
CEE 315-60	Engineering Sustainable Design and the Global Community	spring
CEE 564	Physical Chemical Processes in Environmental Engineering	spring
CEE 575	Air Pollution Engineering	spring
CEE 661L	Environmental Molecular Biotechnology	spring
CEE 666	Aquatic Geochemistry	spring
EGR 424L**	Energy & the Environment Capstone	spring
CEE 667*	Chemical Transformation of Environmental Contaminants	occasionally
CEE 688	Turbulence 1	occasionally

*CEE 667 has a prerequisite of CEE 563 or CHEM 201D

**ENERGY 395-1, Connections in Energy (0.5 unit), must be taken the semester prior to taking EGR 424L.

Marine Lab: The following courses offered at the Marine Lab are also preapproved upper-level environmental courses:

ENVIRON 370A	Physical Oceanography
ENVIRON 573A	Coastal and Marine Pollution
ENVIRON 585A	Fisheries Biogeography and Ecology
ECS/EOS 272A	Analysis of Ocean Ecosystems

Inactive Courses: The following courses satisfy this requirement; however, they are inactive and it is not anticipated that they will be offered again:

ENVIRON 382LA	Marine Molecular Ecology
ENVIRON 383LA	Marine Molecular Microbiology
ENVIRON 543A	Respiratory Proteins and the Environment

Note: This is a reminder that a unique course must be used to meet each degree requirement, thus, the same course (e.g., CEE 666) **cannot** be used to meet both the earth science elective and the upper-level environmental elective.

Free Elective

All EnvE majors must have *two* (2) course credits of free elective. See Course Credit Limitations on page 14.

Graduate School: Students planning to attend graduate school are strongly advised to take at least two CEE courses at the 500 level, or higher.

Satisfactory/Unsatisfactory: Free electives are the only courses counted toward degree requirements that may be taken on a Satisfactory/Unsatisfactory (S/U) basis.

EI Code

All EnvE majors must possess one ethical inquiry (EI) code among the 34 units used to meet degree requirements.

Courses Comprising the EnvE Major

There are occasions, particularly with certificate programs, when the number of courses that can double count toward another program (major, minor, or certificate) is limited in number (often two courses). In this context, the courses that comprise the EnvE major are as follows:

Matriculation in Fall 2024, or later:
EGR 244L
CEE 301L
CEE 351
CEE 461L
CEE 462L
CEE 463L
CEE 469
CEE 560
ME 331L
Upper-level environmental elective
Upper-level environmental elective

Matriculation prior to Fall 2024:
EGR 244L
CEE 301L
CEE 461L
CEE 462L
CEE 463L
CEE 469
CEE 560
ME 331L
Upper-level environmental elective
Upper-level environmental elective

Planning for Study Abroad

A number of CE and EnvE students take the option to study abroad for a semester and a majority of those students study abroad in the fall semester of junior year. Fewer students go in the spring semester of junior year, and there are a few students who go during sophomore year to the Duke in Berlin program.

Fall junior year provides the greatest flexibility to accommodate CE and EnvE students studying abroad. Courses used to fulfill the Engineering & Applied Science elective (for example, thermodynamics, materials science), fluid mechanics, and some of the natural science electives are fairly common to engineering curricula around the world and can often be taken abroad.

The Global Education Office[18] holds an information session on an evening in October, and all interested Pratt students, especially sophomores, should attend. The session is announced in advance by email and is held within Pratt facilities. Students who plan to study abroad should also have individual meetings with staff from the Global Education Office.

Note that there are policies[19] on study abroad including grade point average and academic standing.

Considerable advance planning is required, and it helps if the student is at least a little ahead due to AP credit. Initial planning for study abroad should usually include more than one locale and final planning should include multiple curricular choices since, unlike at US universities, courses at foreign universities are sometimes suddenly and unexpectedly cancelled or subject to significant content change without warning.

CE and EnvE students may take two courses abroad related to the major. The remainder of courses taken abroad may fulfill other requirements. No more than two courses can be taken in place of the required CE departmental courses. In special cases, with prior approval of the Director of Undergraduate Studies (DUS), students may take two required courses plus a technical elective required for the major (CE: upper-level CEE elective; EnvE: upper-level environmental elective). The latter case might occur when there is an opportunity to study a subject not normally offered at Duke, or a course to fulfill a certificate requirement that goes beyond the basic CE or EnvE curriculum.

The Global Education Office maintains a database[20] of study abroad courses that have been pre-approved as equivalent Duke courses. Any courses not within the database must be pre-approved by the GEO office (which will involve the appropriate DUS) if they are to be transferred back to Duke for credit.

Courses Not in the Global Education Database: To obtain approval from the DUS for a course not in the Global Education database, the following information is required: course title, descriptive paragraph, a detailed syllabus, the name and author of the required text(s), the

[18] https://globaled.duke.edu/
[19] https://globaled.duke.edu/about/forms-policies
[20] https://courses.globaled.duke.edu/

year-level of the course at that university (e.g., taken by 3rd year students), and whether the course has a laboratory and if so how often it meets. Students are forewarned that while this information is usually fairly easy to obtain from US universities, it is often more challenging when dealing with foreign universities, and so it is important to start gathering this information in advance. The Global Education Office may be helpful if you encounter difficulty obtaining information. Understand that the DUS will be unwilling to search for this information on your behalf and needs to be presented with a complete package with easy access to all information (electronically or hard copy). Also note that there is no guarantee that a particular university will offer the desired courses, or that they are offered in the appropriate semester, so the student must adjust plans accordingly.

Courses with a Laboratory Component: The majority of CE required courses involve a laboratory component, designated by "L" following the number in the course designation. Often technical courses abroad do not have a laboratory component, or the "lab" is minimal or inadequate. In this common occurrence, the student must make up the lab component of the course upon return to Duke, during the next semester if possible. To do so, the student does not register for the Duke course, but rather contacts the instructor and arranges to attend one of the laboratory sections. CEE faculty are familiar with this arrangement, but the student should contact the DUS if a problem arises. The student must participate in all laboratory aspects of the course, e.g. working in a lab group, taking and analyzing data, writing lab reports, etc. When the lab period is used for a non-laboratory purpose, such as homework help sessions, test review, testing, etc., then the student is not obligated to attend. At the end of the semester, the course instructor must send an email to the DUS and the Academic Dean stating that the student participated in and passed (hopefully…) all aspects of the laboratory portion of the course. The instructor is not required to submit a letter grade. Only when this has occurred will the credit for the study abroad course appear on the transcript.

Civil Engineering (CE)

The CE curriculum affords any student the opportunity to study abroad in the fall of junior year, with a little planning. Students are always able to pursue study abroad during the summer semester. Many popular institutions for study-abroad offer technical courses that are pre-approved for Duke CE requirements. Alternatively, students can modify the typical CE course sequence in order to take social science and humanities electives when they are abroad.

For study abroad in the junior fall without any engineering courses, which is not necessary depending on the institution selected, you may

- Move fluid mechanics (CEE 301L) to sophomore spring. Note that CEE 301L has co-requisites of MATH 353 and EGR 244L, which are easily met if you have AP credit for MATH 21.
- Move engineering economics, risk, and decision-making (CEE 351) to senior fall.
- S/M Track: Move matrix structural analysis (CEE 421L) to senior fall
- E/W Track: Move environmental aquatic chemistry (CEE 461L) to senior fall.

Environmental Engineering (EnvE)

The EnvE curriculum affords any student the opportunity to study abroad in the fall of the junior year, with a little planning. Students are always able to pursue study abroad during the summer semester. Many popular institutions for study-abroad offer technical courses that are pre-approved for Duke EnvE requirements. Alternatively, students can modify the typical course sequence to take social science and humanities electives when they are abroad.

For study abroad in the junior fall without any engineering courses, which is not necessary depending on the institution selected, you may

- Move fluid mechanics (CEE 301L) to sophomore spring. Note that CEE 301L has co-requisites of MATH 353 and EGR 244L, which are easily met if you have AP credit for MATH 21.
- Move environmental aquatic chemistry (CEE 461L) to senior fall.

Get Involved

Getting involved in extracurricular activities related to your major is an excellent opportunity to gain related experience and demonstrate your affinity for your major which can be looked upon favorably by potential employers. Getting involved as a first-year or sophomore is a convenient means by which to get to know upper-class students. In some instances, ASCE in particular, scholarship and award opportunities exist for actively involved members.

To obtain the greatest benefit by getting involved it is best to participate actively over an extended period (be thinking leadership positions in these organizations) in one or two activities as opposed to spreading yourself too thin over many activities.

American Society of Civil Engineers (ASCE)

Duke's Student Chapter of the American Society of Civil Engineers[21] (ASCE) provides students with opportunities to participate in hands-on civil engineering competitions, to build relationships with other civil engineering students and faculty, and to learn about and get involved in civil engineering industries. Their main activities include preparing for the annual Carolinas Conference, where they compete in the Steel Bridge and Concrete Canoe competitions, among others.

Duke Engineers for International Development (DEID)

Duke Engineers for International Development[22] (DEID) is a student organization in the Pratt School of Engineering. Every year, DEID sends several groups of Duke students to locations around the globe to assess and implement engineering projects in the developing world. After working with communities to identify their needs, student teams collaborate with professors and professional mentors during the school year to design solutions that are then implemented in the upcoming summer. Students spend from several weeks to two months on-site with responsibilities ranging from project management to physical labor.

Engineering Student Government (ESG)

The mission of Engineering Student Government (ESG) is to represent the engineering student body in all matters related to the Pratt School of Engineering. We act as a conduit between the administration and students, provide support to engineering clubs and societies, and work to create a social outlet for engineers throughout the academic year.

Internships

Information on internship and employment opportunities is posted on the website of the Duke University Career Hub.[23] In addition to maintaining the websites mentioned above, the Career Center organizes various career-related activities that include: (a) career advising sessions, (b) career skills workshops, (c) providing information about specific industries and opportunities

[21] https://sites.duke.edu/asce/
[22] https://sites.duke.edu/deid/
[23] https://careerhub.students.duke.edu/

(d) alumni connections, and (e) seminars on internships and employment that are specific for engineering. The workshops and seminars are announced via emails and posted on the TV monitors in the engineering buildings.

The Career Hub is in Suite 036 Bryan Center and may be reached at 919-660-1050.

In addition to the Career Hub, the Director of Corporate and Industry Relations in the Pratt School of Engineering, Kirsten Shaw,[24] can help Pratt students connect with corporations for potential internship opportunities. For more information on internship opportunities, see this webpage.[25]

If information on internships, employment, and/or graduate school opportunities is sent directly to CEE faculty or the department, that information will be distributed to declared CE and EnvE students via email.

[24] kirsten.shaw@duke.edu
[25] https://pratt.duke.edu/life/resources/career-services/

Research Opportunities

There are two types of research opportunities for undergraduates: CEE independent study taken on a semester-by-semester basis and the Pratt Fellows program. Each opportunity has its own advantages and disadvantages, depending on the needs of the particular student, and these will be discussed below. Either research experience (provided at least 1.0 unit) may be utilized to meet Graduation with Departmental Distinction requirements and/or requirements for the Grand Challenge Scholars program.

There are several educational benefits to doing a research project. Beyond learning new project-related material, such projects typically require the student to draw on knowledge from a range of engineering disciplines, very similar to the work experience of professional engineers. Research projects typically pose more complex problems than found in a typical course setting, often with several viable solutions. Working with a faculty mentor is also an opportunity to get to know them personally, observe their thinking process and problem-solving strategies, and likely see creative approaches being developed. The greatest gain occurs when both the student and the advisor share a strong commitment to the project.

Students are strongly advised to enter any type of research project with a clear understanding of the overall level of commitment. It is important to have an up-front understanding with the faculty advisor/mentor about the following: project goals and schedule; basis for grading; expected number of hours per week; frequency of meetings; and whether the student will be working directly for the faculty member, or more for a postdoc or graduate student.

A common problem students experience with research projects is time management. Since the research project is often the largest project the student has undertaken, there is a tendency to underestimate how much time and effort will really be required. Understandably, there is also a tendency to postpone project work due to short-term deadlines in other courses. Without careful time management, the result can be a hasty ending without fully achieving goals.

Finally, regarding research projects, the student is advised to consider the difference between working in a research lab, and actually doing research - the latter being the primary goal. One is doing research when one is sufficiently well versed in the activity to make intellectual contributions to the effort. To make such contributions requires intellectual maturity and dedication to the activity.

Independent Study

Civil Engineering (CE) and Environmental Engineering (EnvE) majors may take independent study courses for academic credit during their junior and senior year. The upper-class years are the best time to undertake such activities, since the student has more intellectual maturity and a broader set of engineering skills to bring to bear on the project. Typically, CE and EnvE independent study activities are research related, although many have a significant design component.

CEE Independent work usually takes place during the fall-spring academic year and may encompass a range of project types ranging from basic research activity to design and

development projects. An advantage is more flexibility regarding project type, and the summer is left free for other activities such as internships, which are often most beneficial in the summer after junior year. A disadvantage can be short project duration, so it is best to have the independent study extend over more than one semester, giving adequate time to pursue the project in depth. Students should feel free to approach faculty members, whether or not they already know them, about independent work opportunities in areas of interest. Within a general area, the faculty member is often the best person to define the specific project and set realistic goals.

Pratt Fellows

The Pratt Fellows program involves a competitive selection process and obligates the student to (a) three independent study semesters, plus a ten-week summer internship on campus, or (b) four independent study semesters. Students apply to work on specific projects proposed by faculty in descriptive paragraphs. An advantage is that there is time for a very in-depth research experience, which can lead to a very positive experience. Also, a strong research experience can be excellent preparation for graduate school. Disadvantages include being unavailable for a summer internship, and that a considerable time investment in one activity. On balance, the Pratt Fellows program is an excellent choice for students who wish to assess their interest and aptitude for in-depth research and are planning to continue their education beyond the BSE degree.

NAE Grand Challenge Scholars

The NAE Grand Challenge (GC) Scholars Program[26] educates engineering undergraduates to have the technical expertise, breadth of knowledge, and the social, ethical, and environmental awareness to successfully pursue leadership positions in addressing the NAE Grand Challenges for Engineering.[27] This is accomplished by requiring each GC Scholar to propose and complete a five-component GC portfolio and GC senior thesis.

[26] https://pratt.duke.edu/academics/undergrad/research/grand-challenges-scholars/
[27] http://www.engineeringchallenges.org/

Second Major, Minor, and Certificate Programs

Opportunities exist for CE and EnvE students to combine their major with a second major, minor, or certificate. These additional programs can reside in either Pratt or Trinity.

Second Major: It is not uncommon for students to complete the requirements for a departmental major in arts and sciences while completing the requirements for a Bachelor of Science in Engineering (BSE) degree or satisfy simultaneously the requirements for two engineering majors. The second major requirements typically consist of 10 courses comprised of specific and elective courses in the discipline which are required by the department for its primary majors.

Minors: Most of the departments in Trinity have established minors and engineering students are eligible to enroll in them. The courses required for minors are specified by the department/academic program. A minimum of five courses is required, including at least three above the introductory level.

Certificate Programs: Certificate programs are topically organized courses of study that offer a distinctive, usually interdisciplinary, approach to a subject matter not available within any single academic unit. A minimum of six courses are required.

To complete these additional programs, students must meet the requirements for their major plus the specific program requirements as outlined in the Bulletin of Undergraduate Instruction.[28]

It is common for there to be a restriction on the number of courses for any major, minor, or certificate that can double count for any other major, minor, or certificate. The BSE degree check sheets have been constructed to clearly indicate which courses are Pratt general education courses (for which there is no restriction on double counting) and courses required for the major (for which there is often a limitation on double counting).

Below are listings of "notable" second majors, minors, and certificates. They are notable only in that recent CE or EnvE majors have completed these programs.

Notable Second Majors

Biomedical Engineering
Economics
Environmental Science
Language (e.g., German, Russian, Spanish)
Public Policy Studies

Notable Certificates

Architectural Engineering
Energy and the Environment
Global Health
Markets and Management Studies

[28] https://registrar.duke.edu/university-bulletins/undergraduate-instruction

Marine Science and Conservation Leadership

Notable Minors

Art
Asian and Middle Eastern Studies
Chemistry
Earth and Ocean Sciences
Economics
English
Environmental Science
Language (e.g., German, Russian, Spanish)
Mathematics
Physics
Psychology
Religion
Sociology

Architectural Engineering Certificate

Problem solving using design thinking is at the heart of the Architectural Engineering Certificate program. The portfolio of courses that make up the Certificate requirements provide students with the opportunity to explore the means through which the built environment is shaped; design, engineering and construction. The physical fabric of structure, enclosure and environmental systems are viewed not only for technical concerns but also for how each gives voice to the architectural and engineering concepts. Students work through the design process from initial problem definition to iterative exploration and final solution.

Educational opportunities include cases study projects in which has students meeting regularly with construction team, engineers and architects on real projects on or near the Duke campus. The classes also include field trips to observe first had the process of conceiving and constructing modern buildings, from the sites for manufacturing of building materials to the studios Architect and Engineers designing structures to sites where buildings are currently under construction. The courses complement and extend what students learn in their engineering classes. Through hands-on design projects, students integrate what they know about the properties of materials with consideration of the aesthetics and functional needs of a building's users.

For more information contact the program director:

Chris Brasier, FAIA, LEED AP BD+C, MBA
Duke University, Adjunct Associate Professor
Clark Nexsen, Chief Practice and Culture Officer

chris.brasier@duke.edu

Chris Brasier

Requirements (Matriculation Fall 2019, or later)

Successful completion of four (4) required courses, one (1) architectural history elective, and one (1) elective are required for a certificate in Architectural Engineering.

Required Courses

CEE 311	Architectural Engineering I	fall
CEE 411	Architectural Engineering II	spring
CEE 422L	Concrete and Composite Structures	spring
CEE 423L	Metallic Structures	fall

Architectural History Elective (1 required)

ARTHIST 103D (F23, F24)	Introduction to the History of Architecture	*only* Fall 2023, Fall 2024
ARTHIST 284 (F23)	The Political History of Modern Architecture	*only* Fall 2023
ARTHIST 285D	Modern Architecture	occasionally

ARTHIST 286D	Postmodern Architecture	occasionally

Elective Courses (1 required)

CEE 421L*	Matrix Structural Analysis	fall
CEE 490.01 (F22)	Calculus of Sustainability	*only* Fall 2022
CEE 491/492**	Projects in Civil Engineering	fall, spring
CEE 511	Construction Management	even falls (e.g., Fall 2024)
EGR 201L*	Mechanics of Solids	fall, spring
ENVIRON 590	Sustainable Cities & Urban Design	occasionally
SUSTAIN 245 (S24)	Sustainability Theory and Practice	*only* Spring 2024

*Not permitted for CE-S/M majors (selection would violate double counting rules)

**Independent study must involve topics in the architectural engineering area, for one course credit work

Requirements (Matriculation Fall 2018, or earlier)

Successful completion of six (6) required and two (2) elective courses are required for a certificate in Architectural Engineering.

Required Courses

CEE 311	Architectural Engineering I
CEE 411	Architectural Engineering II
CEE 422L	Concrete and Composite Structures
CEE 423L	Metallic Structures
ARTHIST 285, 285D, or 286D	Modern/Postmodern Architecture
EGR 201L	Mechanics of Solids

Elective Courses

ARTSVIS 101	Introduction to Visual Practice
CEE 201L	Uncertainty, Design, and Optimization
CEE 421L	Matrix Structural Analysis
CEE 190/390	Special Topics in Civil Engineering
CEE 391/392	Projects in Civil Engineering
CEE 429	Integrated Structural Design
CEE 491/492	Projects in Civil Engineering
EGR 120L	Introduction to Structural Engineering
EGR 206	Engineering Communication
EGR 357	Aesthetics, Design, and Culture

Note: CEE 190, 390, 391, 392, 491, and 492 must involve topics in the architectural engineering area, for one course credit of work.

Global Development Engineering Certificate

Global development engineers work in an emerging and exciting field where they partner with marginalized or disadvantaged people to implement designed solutions for their specific societal needs.

This field combines technical and problem-solving skills with ethical understanding and cultural competency. Global development engineers partner with people around the world on projects that specifically address issues such as economic empowerment, environmental quality and access to health care.

The certificate in Global Development Engineering features an innovative curricular pathway that includes training in technical subjects as well as culture and language, ethics, public policy and economics. In addition to course work, those who pursue the certificate get real-world experience, implementing a designed solution either in the United States or abroad, and during a project-focused capstone course.

Requirements

Successful completion of seven (7) courses and one experiential component will lead to a Certificate in Global Development Engineering:

- One (1) introductory course
- Three (3) global competency courses
- Two (2) Technical courses
- One (1) capstone course
- An experiential component

Additional details regarding courses fulfilling these categories are available online: https://cee.duke.edu/undergrad/degrees/certificates/global-development-engineering

Have a Question?

There are various resources available to assist you including, but not limited to, this Handbook. Some of these additional resources are people and they are presented below as well as FAQs and information for students considering a transfer either to Pratt or to Trinity.

Who Can Help?

If you are unable to locate the factual answer to your question in this Handbook, including the Frequently Asked Questions below, or you are seeking personalized guidance or advice, the following resources are available to you.

Faculty Advisor

Your assigned faculty advisor is your primary contact in regard to exploring the profession, advising on the overarching aspects of your academic plans, registering for courses, and strategizing over near-term career objectives. Though your advisor possesses a wealth of knowledge and experience, and they have a lot to offer you, they likely will not possess the answers to all your questions. For example, they likely won't know what the workload is for a specific SS/H course. Utilize your faculty advisor for the types of information they are best suited to provide.

At times, some faculty members' travel schedules or other commitments may leave them unable to give each of their advisees as much time as is needed or desired, or academic issues may arise requiring the expertise of other faculty or administration. Under such circumstances, please contact the DUS.

E-Team (Peer Advisors)

The E-Team is comprised of upper-class engineering students who serve as Pratt's peer advisory group. They love to answer questions on classes, student groups, and life on campus, among others. You may reach members of the E-Team through the E-Team website.[29]

CEE Director of Undergraduate Studies (DUS)

Joseph Nadeau
173 Hudson Hall Annex
nadeau@duke.edu
919-660-5216

Joseph Nadeau

The Director of Undergraduate Studies (DUS) is responsible for monitoring and enforcing all aspects of the CEE undergraduate experience. These aspects include curricular requirements, advising, scheduling courses, and staffing teaching assistants. The DUS can assist you when, for example, your advisor cannot answer a question,

[29] https://pratt.duke.edu/life/resources/advising/

you need course approvals related to study abroad or taking a course at another university, you have concerns about a course, you like a change in advisor.

If the DUS is unable to resolve your question or issue, you should contact your Academic Dean.

Academic Dean

Pratt has three academic deans: Dean Jim Gaston, Dean Carmen Rawls, and Dean Lupita Temiquel-McMillian. Your academic dean is one of these three individuals. Your ACES account will indicate your academic dean.

Your academic dean can, for example, assist you in preparing four-year plans, discuss options if you are having difficulty, approve overloads and underloads, explain Pratt policies and procedures, etc.

Duke CEE LinkedIn Group

Join and consult the Duke CEE Students, Alumni, and Faculty LinkedIn group.[30] This is a restricted group open only to Duke CEE students, alumni, and faculty.

Frequently Asked Questions (FAQs)

I'm interested in environmental engineering. How do I decide between CE-E/W and EnvE?

Most importantly, you can't make the wrong decision. In other words, both majors are going to open to same set of proverbial doors. Having said that, if you are interested in constructed environmental projects then you might want to lean in the direction of the civil engineering (CE) major with an environmental engineering and water resources emphasis. If you are interested in pursuing a graduate degree in environmental engineering, then you might want to lean in the direction of the environmental engineering (EnvE) major. Just to be clear, CE majors can go to graduate school and EnvE majors can work on constructed environmental projects. In large part the decision comes down to which major resonates with you the most.

Can I transfer courses to Duke? If so, how do I do this?

Yes. The Pratt policy on transfer credits, and how the process works, is available at the Pratt Policies and Procedures webpage[31] (see "Transfer Credit: Entering First-Year Students" and "Transfer Credit: Current Students").

Considering a Transfer to or from Pratt?

If you are contemplating a transfer, either Trinity to Pratt or Pratt to Trinity, you should schedule a meeting with Dean McMillian. Additional information is available at the Pratt Policies and Procedures webpage[32] (see "Transfer To/From Trinity College").

[30] https://www.linkedin.com/groups/4982025/
[31] https://pratt.duke.edu/life/resources/policies/#policies
[32] https://pratt.duke.edu/life/resources/policies/#policies

Could You Benefit from Some Support?

Academic Resource Center (ARC)

The Academic Resource Center[33] (ARC) offers a variety of programs and services to support the academic work of all Duke undergraduates. Services are provided through the Academic Skills Instructional Program (ASIP), the Peer Tutoring Program (PTP), and the Program for Students with Disabilities (PSD). Students may receive highly individualized support through any of the three ARC programs. Opportunities for students to learn in groups are also offered each semester. "Self-serve" learning resources are available on their website. There, students can assess their academic skills and learning styles using inventories and self-assessment surveys. Online learning strategy handouts are also provided to guide students' learning in courses. The professional staff members of the ARC collaborate to ensure that each student who visits or is referred to the Center receives information and services based on individual academic support needs.

Academic Accommodations

Duke University is prepared to make reasonable academic adjustments and accommodations to allow students with documented disabilities full participation in the same programs and activities available to students without disabilities. Additional information is available on the Pratt Policies and Procedures webpage[34] (see "Academic Accommodations").

Counseling and Psychological Services (CAPS)

Counseling and Psychological Services[35] (CAPS) helps Duke students enhance strengths and develop abilities to successfully live, grow and learn in their personal and academic lives. They offer many services to Duke undergraduate, graduate, and professional students, including brief individual counseling/psychotherapy, consultation, couples and group counseling, assistance with referrals, and more. CAPS staff also provide outreach education programs to student groups, particularly programs supportive of at-risk populations, on a wide range of issues impacting them in various aspects of campus life.

The CAPS staff includes psychologists, clinical social workers, and psychiatrists experienced in working with college-age adults. From the everyday challenges of life to more profound impairment or "interruption" of daily functioning, they recognize that any student may face some level of challenge at any point in their careers here at Duke. Their work is guided by sensitivity to the needs of a diverse student body.

[33] https://arc.duke.edu/
[34] https://pratt.duke.edu/life/resources/policies/#policies
[35] https://students.duke.edu/wellness/caps/

Class Attendance and Missed Work

Information regarding illness, personal emergencies, religious observance, varsity athletic participation is available on Pratt's Policy and Procedures webpage[36] (see "Class Attendance and Missed Work).

[36] https://pratt.duke.edu/life/resources/policies/#policies

Want to Help?

There are several ways in which you may get involved that would benefit your peers, your department, and yourself. Some opportunities are paid while others are volunteer in nature.

Teaching Assistant

The CEE department frequently hires qualified undergraduate students to be teaching assistants for several courses administered by the department. These courses include, but are not necessarily limited to, the following

CEE 311	Architectural Engineering I	fall
CEE 351	Engr. Economics, Risk, and Decision-Making	fall
CEE 423L	Metallic Structures	fall
CEE 251L	Uncertainty, Design, and Optimization	spring
CEE 302L	Introduction to Soil Mechanics	spring
CEE 411	Architectural Engineering II	spring
CEE 422L	Concrete and Composite Structures	spring
EGR 201L	Mechanics of Solids	fall, spring

There is a brief online application which becomes available during the pre-registration period for the semester in question. If interested in applying, contact the DUS.

E-Team (Peer Advisors)

The E-Team is a group of upper-class peer advisors. This is a volunteer program. If you think you'd like to get involved contact Pratt's Director of Undergraduate Student Affairs, Jennifer Ganley, to learn more.

Pratt Tour Guide

Tour guides for Pratt introduce prospective Pratt students and their parents to Pratt programs and facilities. This is a paid position and there is typically a general call for applications in February. If you are interested in learning more about being a tour guide contact Pratt's Director of Undergraduate Student Affairs, Jennifer Ganley.

Pratt Events

There are several occasions throughout the year when Pratt hosts large groups of visitors. Blue Devil Days and Pratt in Focus are examples of such events. Would you like to volunteer your time and enthusiasm (often in exchange for lunch and a T-shirt) to help welcome these visitors to Pratt and assist them in making the most of their time while here? If so, please contact Pratt's Director of Undergraduate Student Affairs, Jennifer Ganley, to learn more.

DukeReach

DukeReach[37] directs students, faculty, staff, parents, and others to the resources available to help a student in need. Services participating in DukeReach come from across campus.

Are you concerned about your physical or mental health? Has a student's behavior caused you to worry about his or her potential future actions? Through the DukeReach website they hope to provide you with the resources you need to assist a student or, get the appropriate help so that someone else may do so.

[37] https://students.duke.edu/wellness/dukereach/

Transitioning Beyond Your BSE

Fundamentals of Engineering (FE) Exam

All CE and EnvE majors are *highly* encouraged to take the Fundamentals of Engineering (FE) exam[38] before graduating.

The FE exam is one of the first steps in the process of earning a Professional Engineer (PE) license. A PE license is required in many instances for the practice of engineering akin to passing the bar to practice law and becoming licensed to practice medicine.

The FE exam is broad in coverage and the ease with which the exam can be passed is greatly enhanced by taking the exam before graduating while the fundamentals upon which it is based is fresh in your mind. In statistics maintained by NCEES, the percentage of takers who pass the exam diminishes significantly the longer someone waits to take the exam after graduating. Take the exam during your senior year!

The FE exam is administered by National Council of Examiners for Engineering and Surveying (NCEES) and is valid for subsequent PE licensing in all states. The requirements and licensing as a PE, however, varies by state. The FE exam is computer-based and administered year-round at NCEES-approved Pearson VUE test centers. There are two such testing locations within 20 miles of campus, one in Durham and one in Raleigh. Exams are scheduled in a six-hour window during the months of January-February, April-May, July-August, and October-November. The exam consists of 110 multiple choice questions and the fee is approximately $175 (study aids, etc. are additional expenses).

The January-February exam period is probably the ideal period to take the FE exam. You will have completed the majority of your technical coursework and yet the time frame is sufficiently far removed from the often-hectic end of the senior spring semester.

If you are looking for a way to prepare for the exam, then one recommendation is to use a review manual available through various publishers. One such publisher is Professional Publications, Inc.[39]

Are you considering skipping the FE exam? The path of one's career is likely to consist of some unanticipated arcs, turns, and perhaps even turnabouts. You may not be expecting to need the FE exam at this time but that *could* change. A few years ago a CE student was going into investment banking after graduating and didn't take the FE exam, despite pleas—such as those here—to do so. As you might be imagining, investment banking turned out not to be the perfect match for this student and she decided after a few years to return to her major and pursue a career in civil engineering. Pursuing this path is aided by having taken and passed the FE exam so this is what that student then embarked on. Studying for the FE exam a few years after graduation can be rewarding but I suspect most people would prefer to do something

[38] https://ncees.org/exams/fe-exam/
[39] https://ppi2pass.com/

else. Cover your bases and take the FE exam before you graduate while you are best prepared. Please.

Employment Information

Information on internship and employment opportunities is posted on the website of the Duke University Career Hub.[40] In addition to maintaining the websites mentioned above, the Career Hub organizes various career-related activities that include: (a) career advising sessions, (b) career skills workshops, (c) providing information about specific industries and opportunities (d) alumni connections, and (e) seminars on internships and employment that are specific for engineering. The workshops and seminars are announced via emails and posted on the TV monitors in the engineering buildings. The Career Hub is located in Bryan Center, Suite 036.

In addition to the Career Hub, Pratt's Director of Corporate and Industry Relations, Kirsten Shaw,[41] can help you connect with corporations for potential internship opportunities. For more information, visit the undergraduate internship webpage.[42]

If information on internships, employment, and/or graduate school opportunities is sent directly to the CEE faculty or the department, that information will be distributed to declared CE and EnvE students via email.

Graduate and Professional School Information

One of your best sources of information on graduate school is your faculty advisor and the Director of Graduate Studies.

Advising for professional (medical, law, business) programs is available through Trinity's Academic Advising Center's pre-professional advisors[43].

4+1: BSE+MS/MEng/MEM

The 4+1 program offers a five-year combined Bachelor of Science in Engineering (BSE) degree and a master's degree. There are three options for the master's degree: Master of Science (MS), Master of Engineering (MEng), or Master of Engineering Management (MEM) degree. This program is a great opportunity for students who want to broaden their undergraduate research experience or to obtain advanced training in civil or environmental engineering. With the MEng and MEM degrees technical courses are supplemented with business-related courses. More information about all three 4+1 programs is provided at the 4+1 webpage[44] and a comparison of the graduate degrees can be found here.[45]

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[40] https://careerhub.students.duke.edu/
[41] kirsten.shaw@duke.edu
[42] https://pratt.duke.edu/life/resources/career-services/
[43] https://advising.duke.edu/preprofessional-studies/
[44] https://pratt.duke.edu/academics/undergrad/four-plus-one/
[45] https://pratt.duke.edu/academics/masters/degrees/

The combined degrees require that the students fulfill the standard degree requirements for the Bachelor of Science in Engineering plus an additional 30 suitable graduate units[46] (10 courses) of upper-level courses for the master's degree. The number of graduate units that can be completed during the senior year varies depending on the specific master's degree that is sought. Courses cannot be applied to both the BSE degree and the master's degree, and undergraduate Independent Study courses cannot be applied toward the master's degree requirements. Completing two or more graduate courses in your senior year (for which you do *not* pay *graduate* tuition) enables you to easily complete the remaining 8 graduate courses in one year beyond your BSE.

The MS degree is awarded by the Graduate School and both the MEng and MEM degrees are awarded by the Pratt School of Engineering. Because of this and other factors there are differences in the requirements for each of the three 4+1 programs. Details can be found on the individual program webpages but some of these differences are outlined below.

Take the GRE[47] in the fall of your senior year. A TOEFL[48] score may be required.

MS: A maximum of two graduate courses taken in the spring of your senior year can count toward your MS degree. Apply[49] for (provisional) spring admission to Duke's Graduate School during the fall of your senior year.

MEng or MEM: A maximum of four graduate courses taken your senior year (fall and/or spring) can count toward your MEng degree. You can apply[50] as early as spring of your junior year to as late as spring of your senior year.

[46] For graduate-level courses, a 3-hour/week course is a 3 graduate unit course. In other words, 3 graduate units is equivalent to 1 undergraduate unit.
[47] https://www.ets.org/gre.html
[48] https://www.ets.org/toefl.html
[49] https://gradschool.duke.edu/admissions/
[50] https://meng.pratt.duke.edu/apply

CEE Honors and Awards

Graduation with Departmental Distinction (GwDD)

Graduation with Departmental Distinction is awarded to students who, in the opinion of the CEE faculty as represented by the Honors and Awards Committee, have demonstrated exceptional achievement in the areas of their special interest by conducting independent research and presenting the research project with a distinguished piece of writing and an oral presentation. CE and EnvE students who have a final grade point average of 3.500 or higher and have successfully completed at least one unit of CEE independent study, which could be a part of the Pratt Fellows program or the NAE Grand Scholars program, are eligible to apply for the distinction.

Additional details can be found on the GwDD website.[51]

Chi Epsilon

Membership in Chi Epsilon, the national civil engineering honor society, recognizes academic achievement as well as demonstrated character, practicality, and sociability. The Duke University student chapter of Chi Epsilon was established in 1964. Students may be eligible for membership in their junior or senior year. Nominations are sent to prospective members in the fall of each year.

Aubrey Palmer Award

Professor Aubrey Palmer (May 29, 1912 – January 30, 1981) was one of the most loved and respected members of the School of Engineering faculty. He taught at Duke for over 37 years, touched many lives, and encouraged, challenged, and motivated hundreds of engineering students. This Award, established in 1980, is presented annually to a civil engineering senior, or seniors, in recognition of outstanding academic achievement.

Brewster Snow Award

This award, established in 1979, is presented annually to a senior, or seniors, who have demonstrated academic excellence, interest, and enthusiasm in the study of environmental engineering.

Eric I. Pas Award

This award, established in 1998 in memory of Dr. Eric Pas, former Director of Undergraduate Studies in Civil and Environmental Engineering, is presented to the graduating civil engineering senior judged by the faculty of the Department to have conducted the most outstanding independent study project.

[51] https://cee.duke.edu/undergrad/students/graduation-distinction

ASCE Outstanding Senior Prize

The American Society of Civil Engineers (ASCE) Outstanding Senior Prize is presented annually to a graduating civil engineering senior, or seniors, in recognition of an exceptional, positive impact on the student chapter of ASCE. The award is selected by the Department's faculty and is sponsored by the North Carolina Section of ASCE. The award consists of a certificate that is awarded at the NC ASCE Section's Annual Meeting in the fall following graduation, and first year Associate Member dues in ASCE.

Other Honors at Duke

There are several other ways in which you may earn academic honors for your work. Details on dean's list, honor societies (e.g., Tau Beta Pi, Phi Beta Kappa), and Latin honors may be found at this Duke website.[52]

In addition, Pratt offers these awards:

The *Pratt School of Engineering Student Service Award*, establish in 1978, is given to the graduating senior who, by contributions of time, effort, and spirit, has significantly benefitted the community of the School of Engineering.

The *Otto Meier, Jr. Tau Beta Pi Award* is presented in recognition of Dr. Meier's leadership in establishing the North Carolina Gamma Chapter on January 10, 1948, and his continuous service until April 19, 1975, as Chapter Advisor. This award is given annually to the graduating Tau Beta Pi member who symbolized best the distinguished scholarship and exemplary character required for membership.

The *Walter J. Seeley Scholastic Award* is presented annually by the Engineering Student Government to the member of the graduating class of the School who has achieved the highest scholastic average in all subjects, and who has shown diligence in pursuit of an engineering education. The award was initiated to honor the spirit of academic excellence and professional diligence demonstrated by the late Dean Walter J. Seeley. The ESG hopes that this award will serve as a symbol of the man and the ideals for which he stood.

[52] https://trinity.duke.edu/undergraduate/academic-policies/honor-societies

Appendix A: Approved Social Science and Humanities Departments and Programs

In recent years there has been a proliferation of non-social science and non-humanities departments (including some engineering departments) applying for and receiving SS, CZ, or ALP Areas of Knowledge codes for some of their courses. These particular codes, therefore, are no longer exclusive to social science and humanities departments as they once were. Given that the five SS/H courses are intended to allow you to explore in breadth and depth disciplines of social sciences and humanities, the Pratt school requires (effective Fall 2013) that SS/H courses must be taken from, or cross-listed with, one of the following departments or programs (see the list of exceptions that follow):

Department/Program	**Subject Code(s)**
African & African American Studies	AAAS, SWAHILI
Art, Art History, and Visual Studies	ARTHIST, ARTSVIS, CINE, CMAC, HCVIS, VMS
Arts of the Moving Image	AMI
Asian and Middle Eastern Studies	AMES, ARABIC, CHINESE, HEBREW, HINDI,... JPN, KOREAN, PERSIAN, SANSKRIT, TIBETAN
Canadian Studies	CANADIAN
Classical Studies	CLST, GREEK, LATIN
Cultural Anthropology	CULANTH
Dance (1.0 unit courses with code only)	DANCE
Documentary Studies	DOCST
East Asian Studies	EAS
Economics	ECON
Education	EDUC
English	ENGLISH
Ethics	ETHICS
Gender, Sexuality, and Feminist Studies	GSF
Germanic Languages and Literature	GERMAN
Global Cultural Studies in Literature	LIT
History	HISTORY
Innovation & Entrepreneurship	I&E
International Comparative Studies	ICS
Islamic Studies	ISLAMST
Jewish Studies	JEWISHST
Latin American Studies	LATAMER
Latino/a Studies in the Global South	LSGS
Linguistics	LINGUIST
Markets and Management Studies	MMS
Medieval and Renaissance Studies	MEDREN
Music	MUSIC
Philosophy	PHIL
Political Science	POLSCI
Psychology	PSY

Public Policy Studies	PUBPOL
Religious Studies	RELIGION
Romance Studies	ROMST, CREOLE, FRENCH, ITALIAN, PORTUGUE,... QUECHUA, SPANISH
Science & Society	SCISOC
Slavic and Eurasian Studies	SES, BALTFIN, POLISH, ROMANIAN, RUSSIAN,... SERBCRO, TURKISH, UKRAIN, UZBEK
Sociology	SOCIOL
Theater Studies	THEATRST
Women's Studies	WOMENST

Please note that, as illustrated above, individual departments and programs may constitute one *or more* subject codes.

EXCEPTIONS

EGR 305/ECON 212: Even though EGR 305 is cross listed with ECON (within the economics department) it cannot be used toward the SS/H requirement.

Appendix B: BSE Degree Check Sheets

The check sheets presented below are intended to be a one-page overview of the BSE degree requirements for the applicable major. These check sheets can be used in lieu of the academic advisement report (at least as they pertain to BSE degree requirements) available to students through ACES and to advisors through STORM.

The language used within the check sheets is terse and is intended to serve as a crutch in recalling the specific requirements elaborated on in detail elsewhere in the Handbook.

Matriculation: F24

The degree check sheets on the following pages are applicable to students who matriculated in fall 2024.

As a suggestion in how one might complete the SS/H elective section of the check sheet please consider the following example. This is *not* a proposed plan of courses but rather an illustration of crossing out AoK codes that do not apply for courses taken and circling the codes that will be applied in order to satisfy the SS/H requirements in regard to having an SS course and completing two of the three areas: ALP, CZ, and FL. The depth requirement is indicated by filling in the circles corresponding to the two courses from the same approved department or program where at least of the two is at the upper-level (200-level, or higher). CE and EnvE students matriculating in fall 2014, or later, are required to possess an EI code among the 34 units required for the degree. This student studied abroad, which is the reason for the two transfer (TR) grades.

SS/H Electives		____ AoK ____	Depth				
15.	POLSCI 90B_____	SS ~~ALP~~ ~~CZ~~ ~~FL~~	●	~~EI~~	2010 Fall	AP	See **SS/H, EI**
16.	MUSIC 161-1_____	~~SS~~ (ALP) ~~CZ~~ ~~FL~~	○	~~EI~~	2011 Spring	[redacted]	See **SS/H, EI**
17.	CULANTH 207_____	SS ~~ALP~~ (CZ) ~~FL~~	○	~~EI~~	2012 Fall	TR	See **SS/H, EI**
18.	MMS 220_____	SS ~~ALP~~ ~~CZ~~ ~~FL~~	○	~~EI~~	2012 Fall	TR	See **SS/H, EI**
19.	POLSCI 344_____	(SS) ~~ALP~~ ~~CZ~~ ~~FL~~	●	(EI)	2013 Spring	[redacted]	See **SS/H, EI**

Matriculation: F24

Name:_____

	Pratt's General Education Courses (w/ some CE restrictions)	**Semester**	**Grade**	**Notes**
1.	WRITING 101 ……			
2.	MATH 111L or 21 ……			
3.	MATH 112L or 22 or 122L ……			
4.	MATH 218-2 ……			
5.	MATH 219 ……			
6.	MATH 353 ……			
7.	CHEM 101DL or 20 or 21 ……			
8.	PHYSICS 151L or 25 ……			See **Physics**
9.	PHYSICS 152L or 26 ……			See **Physics**
10.	EGR 101L ……			
11.	EGR 105L …..(or EGR 103L) ……			E&AS: Digital systems
12.	EGR 201L ……			E&AS: Mechanics-solids
13.	CEE 132L, ……			See **Intro**
14.	CEE 251L ….. (or CEE 201L S23, S24) ……			E&AS: Systems analysis
	Science and Free Electives			
15.	NS Elective _____ ……			See **NS**
16.	E&AS Elective _____ ……MoI			See **E&AS**
17.	_____[1/0.5] _____[-/0.5] EI			See **Free, EI**
18.	_____[1/0.5] _____[-/0.5] EI			See **Free, EI**
	SS/H Electives ____ AoK ____ Depth			
19.	_____ SS ALP CZ FL ○ EI			See **SS/H, EI**
20.	_____ SS ALP CZ FL ○ EI			See **SS/H, EI**
21.	_____ SS ALP CZ FL ○ EI			See **SS/H, EI**
22.	_____ SS ALP CZ FL ○ EI			See **SS/H, EI**
23.	_____ SS ALP CZ FL ○ EI			See **SS/H, EI**
	CE Major Courses			
24.	EGR 244L ……			
25.	CEE 301L ……			
26.	CEE 302L ……			
27.	CEE 351 ….. (or EGR 305 F23) ……			
28.	CEE 421L ……			
29.	CEE 422L ……			
30.	CEE 423L ……			
31.	CEE 429 ……			
32.	CEE Elective _____ ……			**Upper-level** CEE course
33.	CEE Elective _____ ……			**Upper-level** CEE course
34.	CEE Elective _____ ……			**Upper-level** CEE course

GENERAL NOTES: (1) This check sheet is terse; see Handbook for all details. (2) All courses are [1] unit, unless noted otherwise; (3) Highlighted items are unique to the S/M track. (4) All courses must be successfully completed; no more than 2 courses with grade of D-, D, or D+.

Physics: At least 1 physics course must be taken post-matriculation. If AP credit for both 25 & 26, then one of 153L, 264, 361, 362, or 363) must be taken post-matriculation. Alternatively, AP credit for 26 can be waived by taking 152L. Cannot take 151 and use AP for 26--unless the only physics AP credit you have is for 26.

Intro: May be replaced with CEE 205 (0.5 unit) **AND** an upper-level CEE course (1.0 unit). CEE 132L may only be taken in 1st or 2nd year.

NS: BIOLOGY 20, 201L, 215, 275A, 311, EOS 101, 102, 201L, 202, or 370A.

E&AS: BME 253L, 307, 461L, 462L, 463L., 560, 581, COMPSCI 201, ECE 110L, 311, EGR 224L, ME 221L, 331L, or PHYSICS 271L.

SS/H: 5 courses from approved departments or programs (see Handbook); limit of 2 APs. 1 SS; 2 of the 3 areas: ALP, CZ, FL; 2 from the same department or program where 1 (cannot be AP) is upper-level. Only 1 AoK code can be applied per course.

Upper-level: Engineering courses = 300-level or higher. SS/H courses = 200-level or higher.

Free: The only courses of the 34 that may be taken Satisfactory/Unsatisfactory (S/U) are free electives. Minimal limitations apply, see Handbook.

EI: 1 of the 34 courses must have an ethical inquiry (EI) code. EI is a Mode of Inquiry (MoI).

Matriculation: F24

Name:_____

	Pratt's General Education Courses (w/ some CE restrictions)	**Semester**	**Grade**	**Notes**
1.	WRITING 101 ……			
2.	MATH 111L or 21 ……			
3.	MATH 112L or 22 or 122L ……			
4.	MATH 218-2 ……			
5.	MATH 219 ……			
6.	MATH 353 ……			
7.	CHEM 101DL or 20 or 21 ……			
8.	PHYSICS 151L or 25 ……			See **Physics**
9.	PHYSICS 152L or 26 ……			See **Physics**
10.	EGR 101L ……			
11.	EGR 105L …..(or EGR 103L) ……			E&AS: Digital systems
12.	EGR 201L ……			E&AS: Mechanics-solids
13.	CEE 132L ……			See **Intro**
14.	CEE 251L ….. (or CEE 201L S23, S24) ……			E&AS: Systems analysis
	Science and Free Electives			
15.	NS Elective _____ ……			See **NS**
16.	E&AS Elective _____ ……MoI			See **E&AS**
17.	_____[1/0.5] _____[-/0.5] EI			See **Free, EI**
18.	_____[1/0.5] _____[-/0.5] EI			See **Free, EI**
	SS/H Electives ____ AoK ____ Depth			
19.	_____ SS ALP CZ FL ○ EI			See **SS/H, EI**
20.	_____ SS ALP CZ FL ○ EI			See **SS/H, EI**
21.	_____ SS ALP CZ FL ○ EI			See **SS/H, EI**
22.	_____ SS ALP CZ FL ○ EI			See **SS/H, EI**
23.	_____ SS ALP CZ FL ○ EI			See **SS/H, EI**
	CE Major Courses			
24.	EGR 244L ……			
25.	CEE 301L ……			
26.	CEE 302L ……			
27.	CEE 351 ….. (or EGR 305 F23) ……			
28.	CEE 461L ……			
29.	CEE 462L ……			
30.	CEE 463L ……			
31.	CEE 469 ……			
32.	CEE Elective _____ ……			**Upper-level** CEE course
33.	CEE Elective _____ ……			**Upper-level** CEE course
34.	CEE Elective _____ ……			**Upper-level** CEE course

GENERAL NOTES: (1) This check sheet is terse; see Handbook for all details. (2) All courses are [1] unit, unless noted otherwise; (3) Highlighted items are unique to the E/W track. (4) All courses must be successfully completed; no more than 2 courses with grade of D-, D, or D+.

Physics: At least 1 physics course must be taken post-matriculation. If AP credit for both 25 & 26, then one of 153L, 264, 361, 362, or 363) must be taken post-matriculation. Alternatively, AP credit for 26 can be waived by taking 152L. Cannot take 151 and use AP for 26--unless the only physics AP credit you have is for 26.

Intro: May be replaced with CEE 205 (0.5 unit) **AND** an upper-level CEE course (1.0 unit). CEE 132L may only be taken in 1st or 2nd year.

NS: BIOLOGY 20, 201L, 215, 275A, 311, EOS 101, 102, 201L, 202, or 370A.

E&AS: BME 253L, 307, 421L, 422L, 423L, 560, 581, COMPSCI 201, ECE 110L, 311, EGR 224L, ME 221L, 331L, or PHYSICS 271L.

SS/H: 5 courses from approved departments or programs (see Handbook); limit of 2 APs. 1 SS; 2 of the 3 areas: ALP, CZ, FL; 2 from the same department or program where 1 (cannot be AP) is upper-level. Only 1 AoK code can be applied per course.

Upper-level: Engineering courses = 300-level or higher. SS/H courses = 200-level or higher.

Free: The only courses of the 34 that may be taken Satisfactory/Unsatisfactory (S/U) are free electives. Minimal limitations apply, see Handbook.

EI: 1 of the 34 courses must have an ethical inquiry (EI) code. EI is a Mode of Inquiry (MoI).

Matriculation: F24

Name:_____

Pratt's General Education Courses (w/ some EnvE restrictions)					**Semester**	**Grade**	**Notes**
1.	WRITING 101 ……..…...						
2.	MATH 111L or 21 …….....						
3.	MATH 112L or 22 or 122L ……..……..						
4.	MATH 218-2 ……..						
5.	MATH 219 …..……						
6.	MATH 353 ……						
7.	CHEM 101DL or 20 or 21 ……						
8.	PHYSICS 151L or 25 ……..						See **Physics**
9.	PHYSICS 152L or 26 ……..						See **Physics**
10.	BIOLOGY 201DL……..……..						See **Biology**
11.	EGR 101L ……						
12.	EGR 105L …..(or EGR 103L) ..……..						E&AS: Digital systems
13.	EGR 201L ……						E&AS: Mechanics-solids
14.	ME 331L or approved thermo course ……..						E&AS: Therma/Transfer
15.	CEE 132L ……						See **Intro**
16.	CEE 251L ….. (or CEE 201L S23, S24) ……..						E&AS: Systems analysis
Free Elective				MoI			
17.	_____[1/0.5]	_____[-/0.5]		EI			See **Free, EI**
18.	_____[1/0.5]	_____[-/0.5]		EI			See **Free, EI**
SS/H Electives		____ AoK ____	Depth				
19.	_____	SS ALP CZ FL	○	EI			See **SS/H, EI**
20.	_____	SS ALP CZ FL	○	EI			See **SS/H, EI**
21.	_____	SS ALP CZ FL	○	EI			See **SS/H, EI**
22.	_____	SS ALP CZ FL	○	EI			See **SS/H, EI**
23.	_____	SS ALP CZ FL	○	EI			See **SS/H, EI**
EnvE Major Courses							
24.	EGR 244L ……						
25.	CEE 301L ……						
26.	CEE 351 ….. (or EGR 305 F23) ……..						
27.	CEE 461L ……						
28.	CEE 462L ……						
29.	CEE 463L ……						
30.	CEE 469 ……..						
31.	CEE 560 ……..						
32.	Earth Science Elective _____ ……..……						See **EarthSci**
33.	Upper-level Environ Elective _____ …….						See **UpEnvIron**
34.	Upper-level Environ Elective _____ …….						See **UpEnvIron**

GENERAL NOTES: (1) This check sheet is terse; see Handbook for all details. (2) All courses are [1] unit, unless noted otherwise; (3) All courses must be successfully completed; no more than 2 courses with grade of D-, D, or D+.

Physics: At least 1 physics course must be taken post-matriculation. If AP credit for both 25 & 26, then one of 153L, 264, 361, 362, or 363) must be taken post-matriculation. Alternatively, AP credit for 26 can be waived by taking 152L. Cannot take 151 and use AP for 26--unless the only physics AP credit you have is for 26.

Intro: May be replaced with CEE 205 (0.5 unit) **AND** an upper-level CEE course (1.0 unit). CEE 132L may only be taken in 1st or 2nd year.

Biology: This is the NS elective for EnvE majors. May be replaced with an approved biology course.

EarthSci: CEE 666, EOS 101, 102, 201L, 202, 315, or 323.

UpEnviron: See list of pre-approved upper-level environmental courses on page 26.

SS/H: 5 courses from approved departments or programs (see Handbook); limit of 2 APs. 1 SS; 2 of the 3 areas: ALP, CZ, FL; 2 from the same department or program where 1 (cannot be AP) is upper-level. Only 1 AoK code can be applied per course.

Upper-level: Engineering courses = 300-level or higher (100- or 200-level). SS/H courses = 200-level or higher (100- or 200-level).

Free: The only courses of the 34 that may be taken Satisfactory/Unsatisfactory (S/U) are free electives. Minimal limitations apply, see Handbook.

EI: 1 of the 34 courses must have an ethical inquiry (EI) code. EI is a Mode of Inquiry (MoI).

Matriculation: F21, F22, F23

The degree check sheets on the following pages are applicable to students who matriculated in fall 2021, fall 2022, or fall 2023.

As a suggestion in how one might complete the SS/H elective section of the check sheet please consider the following example. This is *not* a proposed plan of courses but rather an illustration of crossing out AoK codes that do not apply for courses taken and circling the codes that will be applied in order to satisfy the SS/H requirements in regards to having an SS course and completing two of the three areas: ALP, CZ, and FL. The depth requirement is indicated by filling the circles corresponding to the two courses from the same approved department or program where at least of the two is at the upper-level (200-level, or higher). CE and EnvE students matriculating in fall 2014, or later, are required to possess an EI code among the 34 units required for the degree. This student studied abroad, which is the reason for the two transfer (TR) grades.

SS/H Electives		____ AoK ____	Depth				
15.	POLSCI 90B_____	SS ~~ALP CZ FL~~	●	~~EI~~	2010 Fall	AP	See **SS/H, EI**
16.	MUSIC 161-1_____	~~SS~~ ALP ~~CZ FL~~	○	~~EI~~	2011 Spring	[redacted]	See **SS/H, EI**
17.	CULANTH 207_____	SS ~~ALP~~ CZ ~~FL~~	○	~~EI~~	2012 Fall	TR	See **SS/H, EI**
18.	MMS 220_____	SS ~~ALP CZ FL~~	○	~~EI~~	2012 Fall	TR	See **SS/H, EI**
19.	POLSCI 344_____	SS ~~ALP CZ FL~~	●	EI	2013 Spring	[redacted]	See **SS/H, EI**

Matriculation: F21, F22, F23

Name:_____

	Pratt's General Education Courses (w/ some CE restrictions)	**Semester**	**Grade**	**Notes**
1.	WRITING 101			
2.	MATH 111L or 21			
3.	MATH 112L or 22 or 122L			
4.	MATH 218-2			
5.	MATH 219			
6.	MATH 353			
7.	STA 130			See **STA 130**
8.	CHEM 101DL or 20 or 21			
9.	PHYSICS 151L or 25			See **Physics**
10.	PHYSICS 152L or 26			See **Physics**
11.	EGR 101L			
12.	EGR 103L			E&AS: Digital systems
13.	EGR 201L			E&AS: Mechanics-solids
14	EGR 305/CEE 351			E&AS: Systems analysis
15.	CEE 132L,			See **Intro**
	Science and Free Electives			
16.	NS Elective _____			See **NS**
17.	E&AS Elective _____ ....MoI			See **E&AS**
18.	_____[1/0.5] _____[-/0.5] EI			See **Free, EI**
19.	_____[1/0.5] _____[-/0.5] EI			See **Free, EI**
	SS/H Electives ____ AoK ____ Depth			
20.	_____ SS ALP CZ FL ○ EI			See **SS/H, EI**
21.	_____ SS ALP CZ FL ○ EI			See **SS/H, EI**
22.	_____ SS ALP CZ FL ○ EI			See **SS/H, EI**
23.	_____ SS ALP CZ FL ○ EI			See **SS/H, EI**
24.	_____ SS ALP CZ FL ○ EI			See **SS/H, EI**
	CE Major Courses			
25	EGR 244L			
26	CEE 201L/CEE 251L			
27.	CEE 301L			
28.	CEE 302L			
29.	CEE 421L			
30.	CEE 422L			
31.	CEE 423L			
32.	CEE 429			
33.	CEE Elective _____			**Upper-level** CEE course
34.	CEE Elective _____			**Upper-level** CEE course

GENERAL NOTES: (1) This check sheet is terse; see Handbook for all details. (2) All courses are [1] unit, unless noted otherwise; (3) Highlighted items are unique to the S/M track. (4) All courses must be successfully completed; no more than 2 courses with grade of D-, D, or D+.

STA 130: EGR 238L, MATH 230, 231, 238L, 340, STA 111L, 130, or ECON 104D.

Physics: At least 1 physics course must be taken post-matriculation. If AP credit for both 25 & 26, then one of 153L, 264, 361, 362, or 363) must be taken post-matriculation. Alternatively, AP credit for 26 can be waived by taking 152L. Cannot take 151 and use AP for 26--unless the only physics AP credit you have is for 26.

Intro: May be replaced with CEE 205 (0.5 unit) **AND** an upper-level CEE course (1.0 unit). CEE 132L may only be taken in 1st or 2nd year.

NS: BIOLOGY 20, 201L, 215, 275A, 311, EOS 101, 102, 201L, 202, or 370A.

E&AS: BME 253L, 307, 461L, 462L, 463L., 560, 581, COMPSCI 201, ECE 110L, 311, EGR 224L, ME 221L, 331L, or PHYSICS 271L.

SS/H: 5 courses from approved departments or programs (see Handbook); limit of 2 APs. 1 SS; 2 of the 3 areas: ALP, CZ, FL; 2 from the same department or program where 1 (cannot be AP) is upper-level. Only 1 AoK code can be applied per course.

Upper-level: Engineering courses = 300-level or higher. SS/H courses = 200-level or higher.

Free: The only courses of the 34 that may be taken Satisfactory/Unsatisfactory (S/U) are free electives. Minimal limitations apply, see Handbook.

EI: 1 of the 34 courses must have an ethical inquiry (EI) code. EI is a Mode of Inquiry (MoI).

Matriculation: F21, F22, F23

Name:_____

	Pratt's General Education Courses (w/ some CE restrictions)	**Semester**	**Grade**	**Notes**
1.	WRITING 101 ……..….			
2.	MATH 111L or 21 ……....			
3.	MATH 112L or 22 or 122L ……..……..….			
4.	MATH 218-2 ……...			
5.	MATH 219 ……..….			
6.	MATH 353 ……...			
7.	STA 130 ……..			See **STA 130**
8.	CHEM 101DL or 20 or 21 ……			
9.	PHYSICS 151L or 25 ……			See **Physics**
10.	PHYSICS 152L or 26 ……..			See **Physics**
11.	EGR 101L ……			
12.	EGR 103L ……			E&AS: Digital systems
13.	EGR 201L ……			E&AS: Mechanics-solids
14	EGR 305/CEE 351 ……..			E&AS: Systems analysis
15.	CEE 132L ……			See **Intro**
	Science and Free Electives			
16.	NS Elective _____ ……....			See **NS**
17.	E&AS Elective _____ ……..MoI			See **E&AS**
18.	_____[1/0.5] _____[-/0.5] EI			See **Free, EI**
19.	_____[1/0.5] _____[-/0.5] EI			See **Free, EI**
	SS/H Electives ____ AoK ____ Depth			
20.	_____ SS ALP CZ FL ○ EI			See **SS/H, EI**
21.	_____ SS ALP CZ FL ○ EI			See **SS/H, EI**
22.	_____ SS ALP CZ FL ○ EI			See **SS/H, EI**
23.	_____ SS ALP CZ FL ○ EI			See **SS/H, EI**
24.	_____ SS ALP CZ FL ○ EI			See **SS/H, EI**
	CE Major Courses			
25	EGR 244L ……			
26	CEE 201L/CEE 251L ……			
27.	CEE 301L ……			
28.	CEE 302L ……			
29.	CEE 461L ……			
30.	CEE 462L ……			
31.	CEE 463L ……			
32.	CEE 469 ……..			
33.	CEE Elective _____ ……			**Upper-level** CEE course
34.	CEE Elective _____ ……			**Upper-level** CEE course

GENERAL NOTES: (1) This check sheet is terse; see Handbook for all details. (2) All courses are [1] unit, unless noted otherwise; (3) Highlighted items are unique to the E/W track. (4) All courses must be successfully completed; no more than 2 courses with grade of D-, D, or D+.

STA 130: EGR 238L, MATH 230, 231, 238L, 340, STA 111L, 130, or ECON 104D.)

Physics: At least 1 physics course must be taken post-matriculation. If AP credit for both 25 & 26, then one of 153L, 264, 361, 362, or 363) must be taken post-matriculation. Alternatively, AP credit for 26 can be waived by taking 152L. Cannot take 151 and use AP for 26--unless the only physics AP credit you have is for 26.

Intro: May be replaced with CEE 205 (0.5 unit) **AND** an upper-level CEE course (1.0 unit). CEE 132L may only be taken in 1st or 2nd year.

NS: BIOLOGY 20, 201L, 215, 275A, 311, EOS 101, 102, 201L, 202, or 370A.

E&AS: BME 253L, 307, 421L, 422L, 423L., 560, 581, COMPSCI 201, ECE 110L, 311, EGR 224L, ME 221L, 331L, or PHYSICS 271L.

SS/H: 5 courses from approved departments or programs (see Handbook); limit of 2 APs. 1 SS; 2 of the 3 areas: ALP, CZ, FL; 2 from the same department or program where 1 (cannot be AP) is upper-level. Only 1 AoK code can be applied per course.

Upper-level: Engineering courses = 300-level or higher. SS/H courses = 200-level or higher.

Free: The only courses of the 34 that may be taken Satisfactory/Unsatisfactory (S/U) are free electives. Minimal limitations apply, see Handbook.

EI: 1 of the 34 courses must have an ethical inquiry (EI) code. EI is a Mode of Inquiry (MoI).

Matriculation: F21, F22, F23

Name:_____

	Pratt's General Education Courses (w/ some EnvE restrictions)					**Semester**	**Grade**	**Notes**
1.	WRITING 101							
2.	MATH 111L or 21							
3.	MATH 112L or 22 or 122L							
4.	MATH 218-2							
5.	MATH 219							
6.	MATH 353							
7.	STA 130							See **STA 130**
8.	CHEM 101DL or 20 or 21							
9.	PHYSICS 151L or 25							See **Physics**
10.	PHYSICS 152L or 26							See **Physics**
11.	BIOLOGY 201DL							See **Biology**
12.	EGR 101L							
13.	EGR 103L							E&AS: Digital systems
14.	EGR 201L							E&AS: Mechanics-solids
15.	(EGR 305/CEE 351) **or** (CEE 201L/CEE 251L)…							E&AS: Systems analysis
16.	ME 331L or approved thermo course							E&AS: Therma/Transfer
17.	CEE 132L							See **Intro**
	Free Elective				MoI			
18.	_____[1/0.5]	_____[-/0.5]			EI			See **Free, EI**
19.	_____[1/0.5]	_____[-/0.5]			EI			See **Free, EI**
	SS/H Electives	____ AoK	____	Depth				
20.	_____	SS ALP CZ FL		○	EI			See **SS/H, EI**
21.	_____	SS ALP CZ FL		○	EI			See **SS/H, EI**
22.	_____	SS ALP CZ FL		○	EI			See **SS/H, EI**
23.	_____	SS ALP CZ FL		○	EI			See **SS/H, EI**
24.	_____	SS ALP CZ FL		○	EI			See **SS/H, EI**
	EnvE Major Courses							
25	EGR 244L							
26.	CEE 301L							
27.	CEE 461L							
28.	CEE 462L							
29.	CEE 463L							
30.	CEE 469							
31.	CEE 560							
32.	Earth Science Elective _____							See **EarthSci**
33.	Upper-level Environ Elective _____							See **UpEnvIron**
34.	Upper-level Environ Elective _____							See **UpEnvIron**

GENERAL NOTES: (1) This check sheet is terse; see Handbook for all details. (2) All courses are [1] unit, unless noted otherwise; (3) All courses must be successfully completed; no more than 2 courses with grade of D-, D, or D+.

STA 130: EGR 238L, MATH 230, 231, 238L, 340, STA 111L, 130, or ECON 104D.

Physics: At least 1 physics course must be taken post-matriculation. If AP credit for both 25 & 26, then one of 153L, 264, 361, 362, or 363) must be taken post-matriculation. Alternatively, AP credit for 26 can be waived by taking 152L. Cannot take 151 and use AP for 26--unless the only physics AP credit you have is for 26.

Intro: May be replaced with CEE 205 (0.5 unit) **AND** an upper-level CEE course (1.0 unit). CEE 132L may only be taken in 1st or 2nd year.

Biology: This is the NS elective for EnvE majors. May be replaced with an approved biology course.

EarthSci: CEE 666, EOS 101, 102, 201L, 202, 315, or 323.

UpEnviron: See list of pre-approved upper-level environmental courses on page 26.

SS/H: 5 courses from approved departments or programs (see Handbook); limit of 2 APs. 1 SS; 2 of the 3 areas: ALP, CZ, FL; 2 from the same department or program where 1 (cannot be AP) is upper-level. Only 1 AoK code can be applied per course.

Upper-level: Engineering courses = 300-level or higher (100- or 200-level). SS/H courses = 200-level or higher (100- or 200-level).

Free: The only courses of the 34 that may be taken Satisfactory/Unsatisfactory (S/U) are free electives. Minimal limitations apply, see Handbook.

EI: 1 of the 34 courses must have an ethical inquiry (EI) code. EI is a Mode of Inquiry (MoI).

Matriculation: F18, F19, F20

The degree check sheets on the following pages are applicable to students who matriculated in fall 2018, fall 2019, or fall 2020.

As a suggestion in how one might complete the SS/H elective section of the check sheet please consider the following example. This is *not* a proposed plan of courses but rather an illustration of crossing out AoK codes that do not apply for courses taken and circling the codes that will be applied in order to satisfy the SS/H requirements in regards to having an SS course and completing two of the three areas: ALP, CZ, and FL. The depth requirement is indicated by filling the circles corresponding to the two courses from the same approved department or program where at least of the two is at the upper-level (200-level, or higher). CE and EnvE students matriculating in fall 2014, or later, are required to possess an EI code among the 34 units required for the degree. This student studied abroad, which is the reason for the two transfer (TR) grades.

SS/H Electives		____ AoK ____	Depth				
15.	POLSCI 90B_____	SS ~~ALP CZ FL~~	●	~~EI~~	2010 Fall	AP	See **SS/H, EI**
16.	MUSIC 161-1_____	~~SS~~ ALP ~~CZ FL~~	○	~~EI~~	2011 Spring	[redacted]	See **SS/H, EI**
17.	CULANTH 207_____	SS ~~ALP~~ CZ ~~FL~~	○	~~EI~~	2012 Fall	TR	See **SS/H, EI**
18.	MMS 220_____	SS ~~ALP CZ FL~~	○	~~EI~~	2012 Fall	TR	See **SS/H, EI**
19.	POLSCI 344_____	SS ~~ALP CZ FL~~	●	EI	2013 Spring	[redacted]	See **SS/H, EI**

Matriculation: F18, F19, F20

Name:_____

	Pratt's General Education Courses (w/ some CE restrictions)	**Semester**	**Grade**	**Notes**
1.	WRITING 101 ……..……..			
2.	MATH 111L or 21 ……..			
3.	MATH 112L or 22 or 122L ……..……			
4.	MATH 212 ……..			
5.	MATH 216 ……..……			
6.	MATH 353 ……..……			
7.	STA 130 ……..			See **STA 130**
8.	CHEM 101DL or 20 or 21 ……			
9.	PHYSICS 151L or 25 ……..…….			See **Physics**
10.	PHYSICS 152L or 26 ……..…….			See **Physics**
11.	EGR 101L ……			
12.	EGR 103L ……..……..			E&AS: Digital systems
13.	EGR 201L ……..……..			E&AS: Mechanics-solids
14	EGR 305 ……..…….			E&AS: Systems analysis
15.	CEE 132L, ……..…….			See **Intro**
	Science and Free Electives			
16.	NS Elective _____ ……..			See **NS**
17.	E&AS Elective _____ ……..MoI			See **E&AS**
18.	_____[1/0.5] _____[-/0.5] EI			See **Free, EI**
19.	_____[1/0.5] _____[-/0.5] EI			See **Free, EI**
	SS/H Electives ____ AoK ____ Depth			
20.	_____ SS ALP CZ FL ○ EI			See **SS/H, EI**
21.	_____ SS ALP CZ FL ○ EI			See **SS/H, EI**
22.	_____ SS ALP CZ FL ○ EI			See **SS/H, EI**
23.	_____ SS ALP CZ FL ○ EI			See **SS/H, EI**
24.	_____ SS ALP CZ FL ○ EI			See **SS/H, EI**
	CE Major Courses			
25	EGR 244L ……			
26	CEE 201L ……			
27.	CEE 301L ……..……			
28.	CEE 302L ……..……			
29.	CEE 421L ……..……			
30.	CEE 422L ……..……			
31.	CEE 423L ……..……			
32.	CEE 429 ……			
33.	CEE Elective _____ ……			**Upper-level** CEE course
34.	CEE Elective _____ ……			**Upper-level** CEE course

GENERAL NOTES: (1) This check sheet is terse; see Handbook for all details. (2) All courses are [1] unit, unless noted otherwise; (3) Highlighted items are unique to the S/M track. (4) All courses must be successfully completed; no more than 2 courses with grade of D-, D, or D+.

STA 130: STA 130, EGR 238L/MATH 238L, or (MATH 230/STA 230 and MATH 342)

Physics: At least 1 physics course must be taken post-matriculation. If AP credit for both 25 & 26, then one of 153L, 264, 361, 362, or 363) must be taken post-matriculation. Alternatively, AP credit for 26 can be waived by taking 152L. Cannot take 151 and use AP for 26--unless the only physics AP credit you have is for 26.

Intro: May be replaced with CEE 205 (0.5 unit) **AND** an upper-level CEE course (1.0 unit). CEE 132L may only be taken in 1st or 2nd year.

NS: BIOLOGY 20, 201L, 215, 275A, 311, EOS 101, 102, 201L, 202, or 370A.

E&AS: BME 253L, 307, 461L, 462L, 463L., 560, 581, COMPSCI 201, ECE 110L, 311, EGR 224L, ME 221L, 331L, or PHYSICS 271L.

SS/H: 5 courses from approved departments or programs (see Handbook); limit of 2 APs. 1 SS; 2 of the 3 areas: ALP, CZ, FL; 2 from the same department or program where 1 (cannot be AP) is upper-level. Only 1 AoK code can be applied per course.

Upper-level: Engineering courses = 300-level or higher. SS/H courses = 200-level or higher.

Free: The only courses of the 34 that may be taken Satisfactory/Unsatisfactory (S/U) are free electives. Minimal limitations apply, see Handbook.

EI: 1 of the 34 courses must have an ethical inquiry (EI) code. EI is a Mode of Inquiry (MoI).

Matriculation: F18, F19, F20

Name:_____

	Pratt's General Education Courses (w/ some CE restrictions)	**Semester**	**Grade**	**Notes**
1.	WRITING 101 ……..….			
2.	MATH 111L or 21 ……....			
3.	MATH 112L or 22 or 122L ……..……..….			
4.	MATH 212 ……...			
5.	MATH 216 ……..….			
6.	MATH 353 ……...			
7.	STA 130 ……..			See **STA 130**
8.	CHEM 101DL or 20 or 21 ……			
9.	PHYSICS 151L or 25 ……			See **Physics**
10.	PHYSICS 152L or 26 ……..			See **Physics**
11.	EGR 101L ……			
12.	EGR 103L ……			E&AS: Digital systems
13.	EGR 201L ……			E&AS: Mechanics-solids
14	EGR 305 ……..			E&AS: Systems analysis
15.	CEE 132L ……			See **Intro**
	Science and Free Electives			
16.	NS Elective _____ ……...			See **NS**
17.	E&AS Elective _____ ……..MoI			See **E&AS**
18.	_____[1/0.5] _____[-/0.5] EI			See **Free, EI**
19.	_____[1/0.5] _____[-/0.5] EI			See **Free, EI**
	SS/H Electives ____ AoK ____ Depth			
20.	_____ SS ALP CZ FL ○ EI			See **SS/H, EI**
21.	_____ SS ALP CZ FL ○ EI			See **SS/H, EI**
22.	_____ SS ALP CZ FL ○ EI			See **SS/H, EI**
23.	_____ SS ALP CZ FL ○ EI			See **SS/H, EI**
24.	_____ SS ALP CZ FL ○ EI			See **SS/H, EI**
	CE Major Courses			
25	EGR 244L ……			
26	CEE 201L ……			
27.	CEE 301L ……			
28.	CEE 302L ……			
29.	CEE 461L ……			
30.	CEE 462L ……			
31.	CEE 463L ……			
32.	CEE 469 ……..			
33.	CEE Elective _____ ……			**Upper-level** CEE course
34.	CEE Elective _____ ……			**Upper-level** CEE course

GENERAL NOTES: (1) This check sheet is terse; see Handbook for all details. (2) All courses are [1] unit, unless noted otherwise; (3) Highlighted items are unique to the E/W track. (4) All courses must be successfully completed; no more than 2 courses with grade of D-, D, or D+.

STA 130: STA 130, EGR 238L/MATH 238L, or (MATH 230/STA 230 and MATH 342)

Physics: At least 1 physics course must be taken post-matriculation. If AP credit for both 25 & 26, then one of 153L, 264, 361, 362, or 363) must be taken post-matriculation. Alternatively, AP credit for 26 can be waived by taking 152L. Cannot take 151 and use AP for 26--unless the only physics AP credit you have is for 26.

Intro: May be replaced with CEE 205 (0.5 unit) **AND** an upper-level CEE course (1.0 unit). CEE 132L may only be taken in 1st or 2nd year.

NS: BIOLOGY 20, 201L, 215, 275A, 311, EOS 101, 102, 201L, 202, or 370A.

E&AS: BME 253L, 307, 421L, 422L, 423L, 560, 581, COMPSCI 201, ECE 110L, 311, EGR 224L, ME 221L, 331L, or PHYSICS 271L.

SS/H: 5 courses from approved departments or programs (see Handbook); limit of 2 APs. 1 SS; 2 of the 3 areas: ALP, CZ, FL; 2 from the same department or program where 1 (cannot be AP) is upper-level. Only 1 AoK code can be applied per course.

Upper-level: Engineering courses = 300-level or higher. SS/H courses = 200-level or higher.

Free: The only courses of the 34 that may be taken Satisfactory/Unsatisfactory (S/U) are free electives. Minimal limitations apply, see Handbook.

EI: 1 of the 34 courses must have an ethical inquiry (EI) code. EI is a Mode of Inquiry (MoI).

Matriculation: F18, F19, F20

Name:_____

	Pratt's General Education Courses (w/ some EnvE restrictions)				**Semester**	**Grade**	**Notes**
1.	WRITING 101						
2.	MATH 111L or 21						
3.	MATH 112L or 22 or 122L						
4.	MATH 212						
5.	MATH 216						
6.	MATH 353						
7.	STA 130						See **STA 130**
8.	CHEM 101DL or 20 or 21						
9.	PHYSICS 151L or 25						See **Physics**
10.	PHYSICS 152L or 26						See **Physics**
11.	BIOLOGY 201DL						See **Biology**
12.	EGR 101L						
13.	EGR 103L						E&AS: Digital systems
14.	EGR 201L						E&AS: Mechanics-solids
15.	EGR 305 **or** CEE 201L						E&AS: Systems analysis
16.	ME 331L or approved thermo course						E&AS: Therma/Transfer
17.	CEE 132L						See **Intro**
	Free Elective			MoI			
18.	_____[1/0.5]	_____[-/0.5]		EI			See **Free, EI**
19.	_____[1/0.5]	_____[-/0.5]		EI			See **Free, EI**
	SS/H Electives	____ AoK ____	Depth				
20.	_____	SS ALP CZ FL	O	EI			See **SS/H, EI**
21.	_____	SS ALP CZ FL	O	EI			See **SS/H, EI**
22.	_____	SS ALP CZ FL	O	EI			See **SS/H, EI**
23.	_____	SS ALP CZ FL	O	EI			See **SS/H, EI**
24.	_____	SS ALP CZ FL	O	EI			See **SS/H, EI**
	EnvE Major Courses						
25	EGR 244L						
26.	CEE 301L						
27.	CEE 461L						
28.	CEE 462L						
29.	CEE 463L						
30.	CEE 469						
31.	CEE 560						
32.	Earth Science Elective _____						See **EarthSci**
33.	Upper-level Environ Elective _____						See **UpEnvIron**
34.	Upper-level Environ Elective _____						See **UpEnvIron**

GENERAL NOTES: (1) This check sheet is terse; see Handbook for all details. (2) All courses are [1] unit, unless noted otherwise; (3) All courses must be successfully completed; no more than 2 courses with grade of D-, D, or D+.

STA 130: STA 130, EGR 238L/MATH 238L, or (MATH 230/STA 230 and MATH 342)

Physics: At least 1 physics course must be taken post-matriculation. If AP credit for both 25 & 26, then one of 153L, 264, 361, 362, or 363) must be taken post-matriculation. Alternatively, AP credit for 26 can be waived by taking 152L. Cannot take 151 and use AP for 26--unless the only physics AP credit you have is for 26.

Intro: May be replaced with CEE 205 (0.5 unit) **AND** an upper-level CEE course (1.0 unit). CEE 132L may only be taken in 1st or 2nd year.

Biology: This is the NS elective for EnvE majors. May be replaced with an approved biology course.

EarthSci: CEE 666, EOS 101, 102, 201L, 202, 315, or 323.

UpEnviron: See list of pre-approved upper-level environmental courses on page 26.

SS/H: 5 courses from approved departments or programs (see Handbook); limit of 2 APs. 1 SS; 2 of the 3 areas: ALP, CZ, FL; 2 from the same department or program where 1 (cannot be AP) is upper-level. Only 1 AoK code can be applied per course.

Upper-level: Engineering courses = 300-level or higher (100- or 200-level). SS/H courses = 200-level or higher (100- or 200-level).

Free: The only courses of the 34 that may be taken Satisfactory/Unsatisfactory (S/U) are free electives. Minimal limitations apply, see Handbook.

EI: 1 of the 34 courses must have an ethical inquiry (EI) code. EI is a Mode of Inquiry (MoI).

Appendix C: Sample Schedules

A sample schedule is a semester-by-semester plan of courses that meet the program requirements while being consistent with the prerequisite structure of the program courses and not exceeding five courses in a semester. Sample schedules are typically presented below in tabular format.

Also presented below are pre-requisite flowcharts. A prerequisite flowchart is a graphical illustration of a sample schedule while also depicting the prerequisite structure among the courses. The pre-requisite and co-requisite structure of the courses are illustrated by solid and dotted arrows, respectively. A course is depicted by a box. The perimeter of the box is a solid or dashed line. A bold, colored, solid outline indicates that the course is generally only offered once a year; A solid orange line indicates a fall only course and a solid green outline indicates a spring only course. A bold dashed gray line indicates that the course is generally offered during both the fall and spring semesters. A narrow, light-gray outline is used for elective courses because when those courses are offered varies depending on the selected elective.

This Appendix is organized by matriculation date and then by program.

Matriculation: F24

Below are sample schedules for students who matriculated in fall 2024.

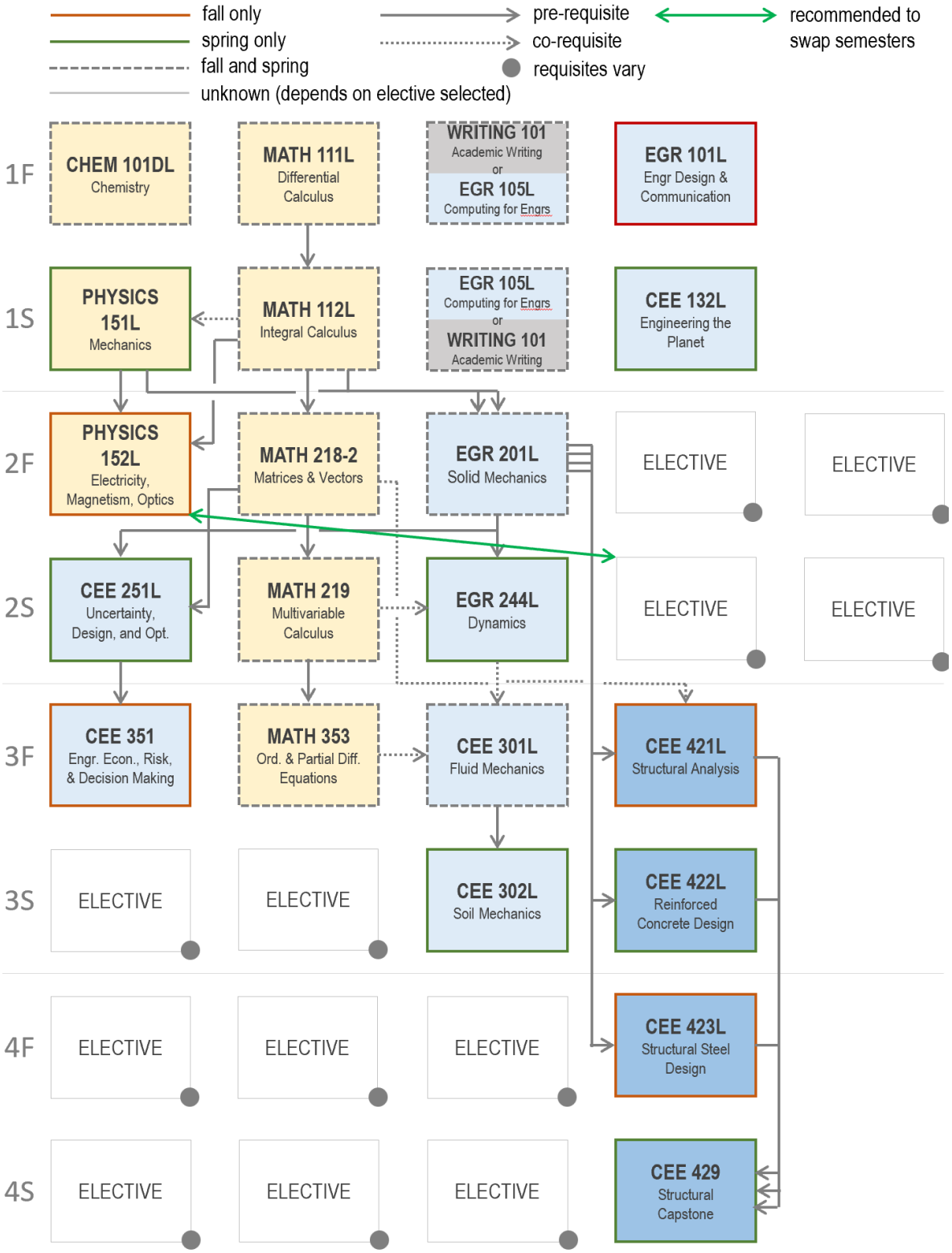
CE-S/M

The following sample schedules are provided:

- CE-S/M (Prerequisite Flowchart)
- CE-S/M
- CE-S/M + AE Certificate
- CE-S/M + ENRENV Certificate

CE-S/M (Prerequisite Flowchart)

Matriculation: F24



CE-S/M

Matriculation: F24

Fall Semester	Spring Semester
First Year	
MATH 111L Differential Calculus	MATH 112L Integral Calculus
CHEM 101DL Core Concepts in Chemistry	**PHYSICS 151L** Mechanics
WRITING 101 or EGR 105L	EGR 105L or WRITING 101
EGR 101L, Engr Design & Communication	**CEE 132L** Engineering the Planet
Sophomore Year	
MATH 218-2 Matrices and Vectors	MATH 219 Multivariable Calculus
PHYSICS 152L Electricity, Magnetism, & Optics	**EGR 244L** Dynamics
EGR 201L Mechanics of Solids	**CEE 251L** Uncertainty, Design & Optimization
Elective	Elective
Elective	Elective
Junior Year	
MATH 353 Ordinary and Partial Differential Eqns	**CEE 302L** Soil Mechanics
CEE 301L Fluid Mechanics	**CEE 422L** Reinforced Concrete Design
CEE 421L Structural Analysis	Elective
CEE 351 Engr Economics, Risk, and Decision-Making	Elective
Senior Year	
CEE 423L Structural Steel Design	**CEE 429** Integrated Structural Design
Elective	Elective
Elective	Elective
Elective	Elective

NOTES

(1) Schedule, consisting of 34 units, assumes no AP credit

(2) Course subject codes and numbers in **bold font** are typically only offered once a year—during the semester indicated.

(3) Electives are (a) 5 SS/H, (b) 1 NS, (c) 1 E&AS, (d) 3 Upper-level CEE, and (e) 2 Free.

(4) Advisable to move PHYSICS 152L such that it is taken concurrently, or after, MATH 219.

CE-S/M + AE Certificate

Matriculation: F24

Fall Semester	Spring Semester
First Year	
MATH 111L Differential Calculus	MATH 112L Integral Calculus
CHEM 101DL Core Concepts in Chemistry	**PHYSICS 151L** Mechanics
WRITING 101 or EGR 105L	EGR 105L or WRITING 101
EGR 101L, Engr Design & Communication	**CEE 132L** Engineering the Planet
Sophomore Year	
MATH 218-2 Matrices and Vectors	MATH 219 Multivariable Calculus
PHYSICS 152L Electricity, Magnetism, & Optics	**EGR 244L** Dynamics
EGR 201L Mechanics of Solids	**CEE 251L** Uncertainty, Design & Optimization
ARTHIST 285/285D/286D Modern Arch. (CZ,ALP)	Elective
Elective	Elective
Junior Year	
MATH 353 Ordinary and Partial Differential Eqns	**CEE 302L** Soil Mechanics
CEE 301L Fluid Mechanics	**CEE 422L** Reinforced Concrete Design
CEE 421L Structural Analysis	Elective
CEE 351 Engr Economics, Risk, and Decision-Making	Elective
Senior Year	
CEE 423L Structural Steel Design	**CEE 429** Integrated Structural Design
CEE 311 Architectural Engineering I	**CEE 411** Architectural Engineering II
Elective	Elective
Elective	Elective

NOTES

(1) Schedule, consisting of 34 units, assumes no AP credit
(2) Course subject codes and numbers in **bold font** are typically only offered once a year—during the semester indicated.
(3) Electives are (a) 4 SS/H, (b) 1 NS, (c) 1 E&AS, (d) 1 AE certificate elective, and (d) 1 upper-level CEE (e) 1 Free.
(4) CEE 311 and CEE 411 are 2 upper-level CEE electives; ARTHIST 285/285D/286D counts as a SS/H course and possesses ALP and CZ codes.
(5) Double counted courses: CEE 422L and CEE 423L
(6) Advisable to move PHYSICS 152L such that it is taken concurrently, or after, MATH 219.

CE-S/M + ENRENV Certificate

Matriculation: F24

Fall Semester	Spring Semester
First Year	
MATH 111L Differential Calculus	MATH 112L Integral Calculus
CHEM 101DL Core Concepts in Chemistry	**PHYSICS 151L** Mechanics
WRITING 101 or EGR 105L	EGR 105L or WRITING 101
EGR 101L, Engr Design & Communication	**CEE 132L** Engineering the Planet
Sophomore Year	
MATH 218-2 Matrices and Vectors	MATH 219 Multivariable Calculus
PHYSICS 152L Electricity, Magnetism, & Optics	**EGR 244L** Dynamics
EGR 201L Mechanics of Solids	**CEE 251L** Uncertainty, Design & Optimization
ENVIRON 231 Energy and the Environment	Elective
Elective	Elective
Junior Year	
MATH 353 Ordinary and Partial Differential Eqns	**CEE 302L** Soil Mechanics
CEE 301L Fluid Mechanics	**CEE 422L** Reinforced Concrete Design
CEE 421L Structural Analysis	ME 331L Thermodynamics
CEE 351 Engr Economics, Risk, and Decision-Making	Elective
Senior Year	
CEE 423L Structural Steel Design	**CEE 429** Integrated Structural Design
ME 461 Energy Engr and the Environment	**EGR 424L** Energy & Environment Design
ENERGY 395-1 Conn in Energy [0.5 unit]	Elective
Elective	Elective
Elective	

NOTES

(1) Schedule, consisting of 35.5 units, assumes no AP credit
(2) Course subject codes and numbers in **bold font** are typically only offered once a year—during the semester indicated.
(3) Electives are (a) 5 SS/H (see notes 4 & 5, below), (b) 1 NS, (c) 3 Upper-level CEE (see notes 5 & 6, below)
(4) ENRENV: Utilize 1 SS/H elective to satisfy the "Markets and Policy" elective; Most likely an SS course.
(5) ENRENV: Need the "additional elective course" for ENRENV. Options include (a) use an additional SS/H course for a second "Markets and Policy" course, (b) take CEE 315 which satisfies a upper-level CEE elective for CE, or (c) utilize an additional (36th) course.
(6) ENRENV: Environment elective = CEE 461L or CEE 462L which satisfies an upper-level CEE elective for CE; Energy Science and Technology elective = ME 461L.
(7) CE: E&AS elective = ME 331L
(8) Double counted courses: One of the Upper-level CEE courses (i.e., CEE 315 or (CEE 461L or CEE 462L))
(9) Advisable to move PHYSICS 152L such that it is taken concurrently, or after, MATH 219.

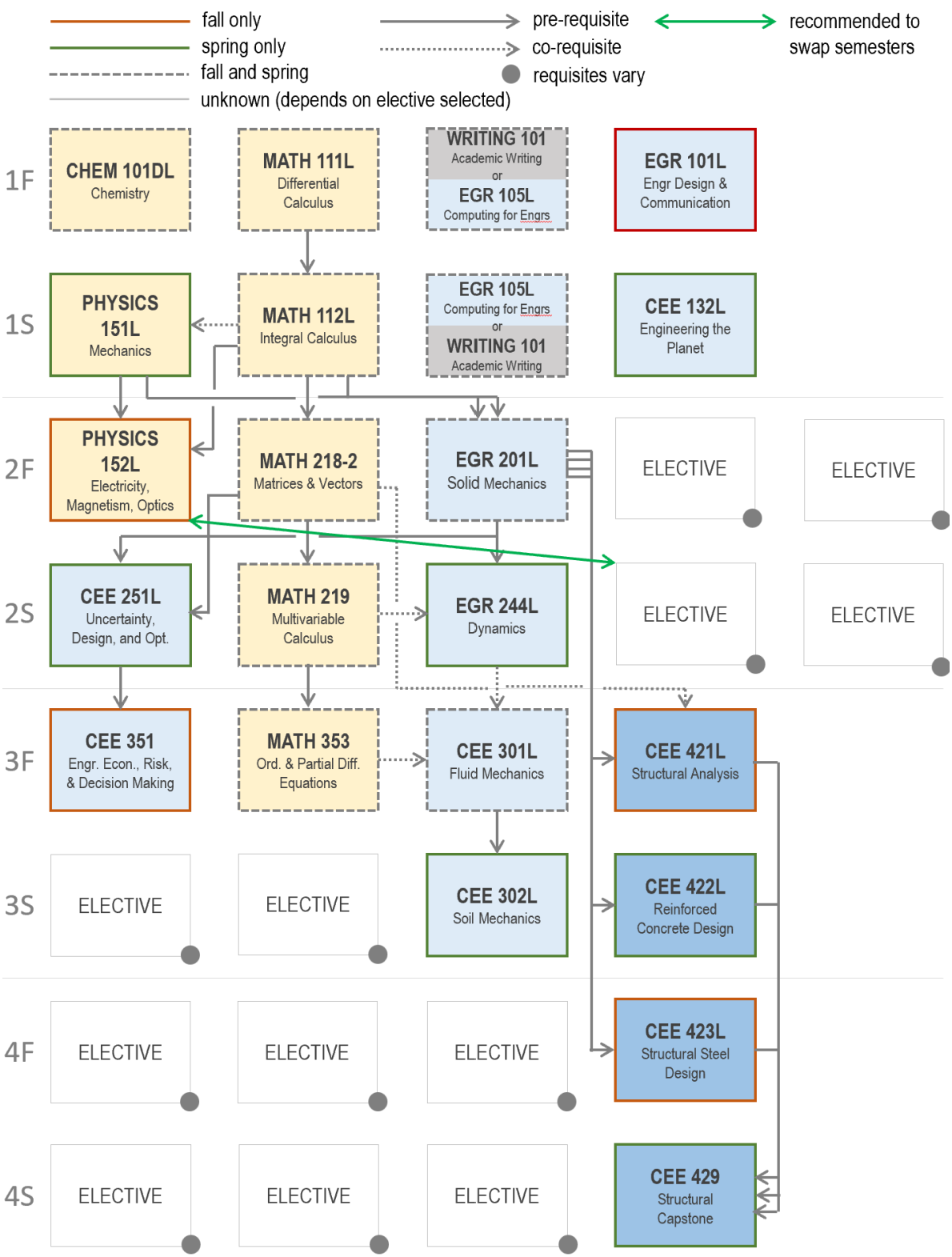
CE-E/W

The following sample schedules are provided:

- CE-E/W (Prerequisite Flowchart)
- CE-E/W
- CE-E/W + BME Major
- CE-E/W + ENRENV Certificate

CE-E/W (Prerequisite Flowchart)

Matriculation: F24



CE-E/W

Matriculation: F24

Fall Semester	Spring Semester
First Year	
MATH 111L Differential Calculus	MATH 112L Integral Calculus
CHEM 101DL Core Concepts in Chemistry	**PHYSICS 151L** Mechanics
WRITING 101 or EGR 105L	EGR 105L or WRITING 101
EGR 101L, Engr Design & Communication	**CEE 132L** Engineering the Planet
Sophomore Year	
MATH 218-2 Matrices and Vectors	MATH 219 Multivariable Calculus
PHYSICS 152L Electricity, Magnetism, & Optics	**EGR 244L** Dynamics
EGR 201L Mechanics of Solids	**CEE 251L** Uncertainty, Design & Optimization
Elective	Elective
Elective	Elective
Junior Year	
MATH 353 Ordinary and Partial Differential Eqns	**CEE 302L** Soil Mechanics
CEE 301L Fluid Mechanics	**CEE 462L** Biological Principles
CEE 461L Aquatic Chemistry	Elective
CEE 351 Engr Economics, Risk, and Decision-Making	Elective
Senior Year	
CEE 463L Water Resources	**CEE 469** Integrated Environmental Design
Elective	Elective
Elective	Elective
Elective	Elective

NOTES
(1) Schedule, consisting of 34 units, assumes no AP credit
(2) Course subject codes and numbers in **bold font** are typically only offered once a year—during the semester indicated.
(3) Electives are (a) 5 SS/H, (b) 1 NS, (c) 1 E&AS, (d) 3 Upper-level CEE, and (e) 2 Free.
(4) Advisable to move PHYSICS 152L such that it is taken concurrently, or after, MATH 219.

CE-E/W + BME Major

Matriculation: F24

Fall Semester	Spring Semester
First Year	
MATH 111L Differential Calculus	MATH 112L Integral Calculus
CHEM 101DL Core Concepts in Chemistry	**PHYSICS 151L** Mechanics
WRITING 101 or EGR 105L	EGR 105L or WRITING 101
EGR 101L, Engr Design & Communication	BIOLOGY 201L Molecular Biology
Sophomore Year	
MATH 218-2 Matrices and Vectors	MATH 219 Multivariable Calculus
PHYSICS 152L Electricity, Magnetism, & Optics	**EGR 244L** Dynamics
EGR 201L Mechanics of Solids	ECE 110L Fund. of Elect. & Comp. Engr.
BME 244L Quantitative Physiology	ME 221L Structure & Properties of Solids
CHEM 201DL Organic Chemistry, or CHEM 210DL Chemical Principles	Elective
Junior Year	
MATH 353 Ordinary and Partial Differential Eqns	**CEE 462L** Biological Principles
CEE 301L Fluid Mechanics	**CEE 251L** Uncertainty, Design & Optimization
CEE 461L Aquatic Chemistry	BME 302L Biomaterials & Biomechanics, or BME 307 Transport Phenomena in Bio Systems
BME 271 Signals & Systems, or ECE 280L Signals & Systems	BME 354L Medical Instrumentation
BME 260L Cellular and Molecular Systems	Elective
Senior Year	
CEE 463L Water Resources	**CEE 469** Integrated Environmental Design
CEE 351 Engr Economics, Risk, and Decision-Making	Elective
Elective	Elective
Elective	Elective
Elective	Elective

NOTES

(1) Schedule, consisting of 38 units, assumes no AP credit; CHECK if BME will count EGR 101L as Life Sci elect
(2) Course subject codes and numbers in **bold font** are typ. only offered once a year—during indicated semester.
(3) Electives are (a) 5 SS/H, (b) 2 CEE electives (see note 4), (c) 1 BME area elective (see note 5), and (d) 1 Life Science elective (see BME Handbook).
(4) 1 CEE elective = CEE 561, 562, 563, 564, 571, 575, 581, 661L, 671, 672, or 685.
(5) If BME 302L is taken then the BME area elective must come from the biomaterials/biomechanics area. If BME 307 is taken then the BME area elective must come from the Molecular, Cellular, and Tissue Engineering area. See the BME Handbook for area elective options.
(4) Advisable to move PHYSICS 152L such that it is taken concurrently, or after, MATH 219.

CE-E/W + ENRENV Certificate

Matriculation: F24

Fall Semester	Spring Semester
First Year	
MATH 111L Differential Calculus	MATH 112L Integral Calculus
CHEM 101DL Core Concepts in Chemistry	**PHYSICS 151L** Mechanics
WRITING 101 or EGR 105L	EGR 105L or WRITING 101
EGR 101L, Engr Design & Communication	**CEE 132L** Engineering the Planet
Sophomore Year	
MATH 218-2 Matrices and Vectors	MATH 219 Multivariable Calculus
PHYSICS 152L Electricity, Magnetism, & Optics	**EGR 244L** Dynamics
EGR 201L Mechanics of Solids	**CEE 251L** Uncertainty, Design & Optimization
ENVIRON 231 Energy and the Environment	Elective
Elective	Elective
Junior Year	
MATH 353 Ordinary and Partial Differential Eqns	**CEE 302L** Soil Mechanics
CEE 301L Fluid Mechanics	**CEE 462L** Biological Principles
CEE 461L Aquatic Chemistry	ME 331L Thermodynamics
CEE 351 Engr Economics, Risk, and Decision-Making	Elective
Elective	
Senior Year	
CEE 463L Water Resources	**CEE 469** Integrated Environmental Design
ME 461 Energy Engr and the Environment	**EGR 424L** Energy & Environment Design
ENERGY 395-1 Conn in Energy [0.5 unit]	Elective
Elective	Elective
Elective	

NOTES

(1) Schedule, consisting of 35.5 units, assumes no AP credit
(2) Course subject codes and numbers in **bold font** are typically only offered once a year—during the semester indicated.
(3) Electives are (a) 5 SS/H (see note 4, below), (b) 1 NS, (c) 3 Upper-level CEE
(4) ENRENV: Utilize a SS/H elective to satisfy the "Markets and Policy" elective; Most likely an SS course.
(5) ENRENV: Environment elective = CEE 461L; Energy Science and Technology elective = ME 461L; Additional elective course = CEE 462L.
(6) CE: E&AS elective = ME 331L
(7) Double counted courses: CEE 461L and CEE 462L.
(8) Advisable to move PHYSICS 152L such that it is taken concurrently, or after, MATH 219.

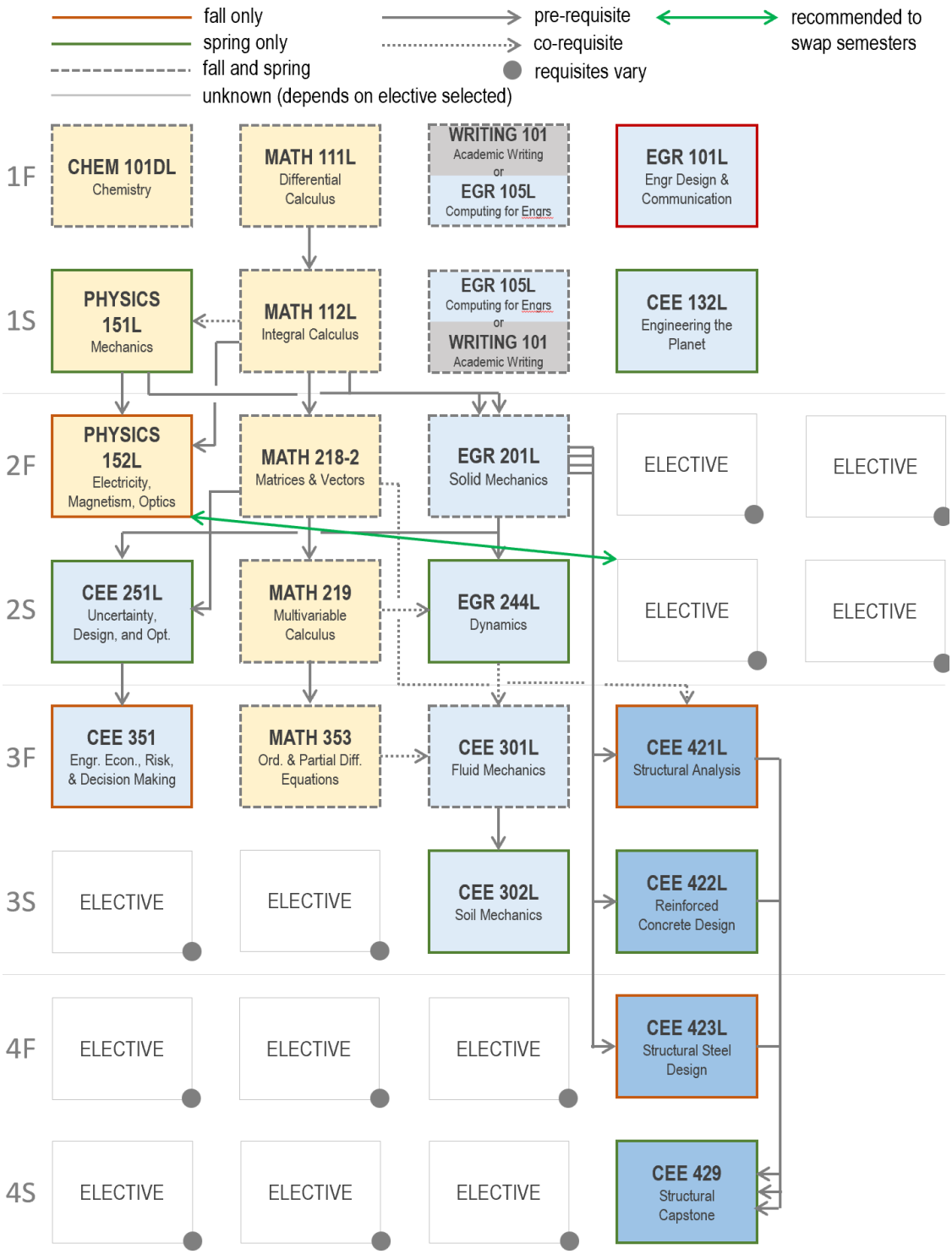
EnvE

The following sample schedules are provided:

- EnvE (Prerequisite Flowchart)
- EnvE
- EnvE + ENRENV Certificate

EnvE (Prerequisite Flowchart)

Matriculation: F24



EnvE

Matriculation: F24

Fall Semester	Spring Semester
First Year	
MATH 111L Differential Calculus	MATH 112L Integral Calculus
CHEM 101DL Core Concepts in Chemistry	**PHYSICS 151L** Mechanics
WRITING 101 or EGR 105L	EGR 105L or WRITING 101
EGR 101L, Engr Design & Communication	**CEE 132L** Engineering the Planet
Sophomore Year	
MATH 218-2 Matrices and Vectors	MATH 219 Multivariable Calculus
PHYSICS 152L Electricity, Magnetism, & Optics	**EGR 244L** Dynamics
EGR 201L Mechanics of Solids	**CEE 251L** Uncertainty, Design & Optimization
BIOLOGY 201L Molecular Biology	Elective
Elective	
Junior Year	
MATH 353 Ordinary and Partial Differential Eqns	**CEE 462L** Biological Principles
CEE 301L Fluid Mechanics	ME 331L Thermodynamics
CEE 461L Aquatic Chemistry	**CEE 560** Environmental Transport Phenomena
CEE 351 Engr Economics, Risk, and Decision-Making	Elective
Elective	
Senior Year	
CEE 463L Water Resources	**CEE 469** Integrated Environmental Design
Elective	Elective
Elective	Elective
Elective	Elective

NOTES
(1) Schedule, consisting of 34 units, assumes no AP credit
(2) Course subject codes and numbers in **bold font** are typically only offered once a year—during the semester indicated.
(3) Electives are (a) 5 SS/H, (b) 1 Earth Science, (c) 2 Upper-level Environmental, (d) 2 Free.
(4) Advisable to move PHYSICS 152L such that it is taken concurrently, or after, MATH 219.

EnvE + ENRENV Certificate

Matriculation: F24

Fall Semester	Spring Semester
First Year	
MATH 111L Differential Calculus	MATH 112L Integral Calculus
CHEM 101DL Core Concepts in Chemistry	**PHYSICS 151L** Mechanics
WRITING 101 or EGR 105L	EGR 105L or WRITING 101
EGR 101L, Engr Design & Communication	**CEE 132L** Engineering the Planet
Sophomore Year	
MATH 218-2 Matrices and Vectors	MATH 219 Multivariable Calculus
PHYSICS 152L Electricity, Magnetism, & Optics	**EGR 244L** Dynamics
EGR 201L Mechanics of Solids	**CEE 251L** Uncertainty, Design & Optimization
BIOLOGY 201L Molecular Biology	Elective
ENVIRON 231 Energy and the Environment	Elective
Junior Year	
MATH 353 Ordinary and Partial Differential Eqns	**CEE 462L** Biological Principles
CEE 301L Fluid Mechanics	ME 331L Thermodynamics
CEE 461L Aquatic Chemistry	**CEE 560** Environmental Transport Phenomena
CEE 351 Engr Economics, Risk, and Decision-Making	Elective
Elective	
Senior Year	
CEE 463L Water Resources	**CEE 469** Integrated Environmental Design
ME 461 Energy Engr and the Environment	**EGR 424L** Energy & Environment Design
ENERGY 395-1 Conn in Energy [0.5 unit]	Elective
Elective	Elective
Elective	

NOTES

(1) Schedule, consisting of 35.5 units, assumes no AP credit
(2) Course subject codes and numbers in **bold font** are typically only offered once a year—during the semester indicated.
(3) Electives are (a) 5 SS/H (see note 4, below), (b) 1 Earth Science, (c) 2 Upper-level Environmental
(4) ENRENV: Utilize a SS/H elective to satisfy the "Markets and Policy" elective; Most likely an SS course.
(5) ENRENV: Environment elective = CEE 461L; Energy Science and Technology elective = ME 461L; Additional elective course = CEE 462L.
(6) Double counted courses: CEE 461L, CEE 462L.
(4) Advisable to move PHYSICS 152L such that it is taken concurrently, or after, MATH 219.

Matriculation: F21, F22, F23

Below are sample schedules for students who matriculated in fall 2021, fall 2022, or fall 2023.

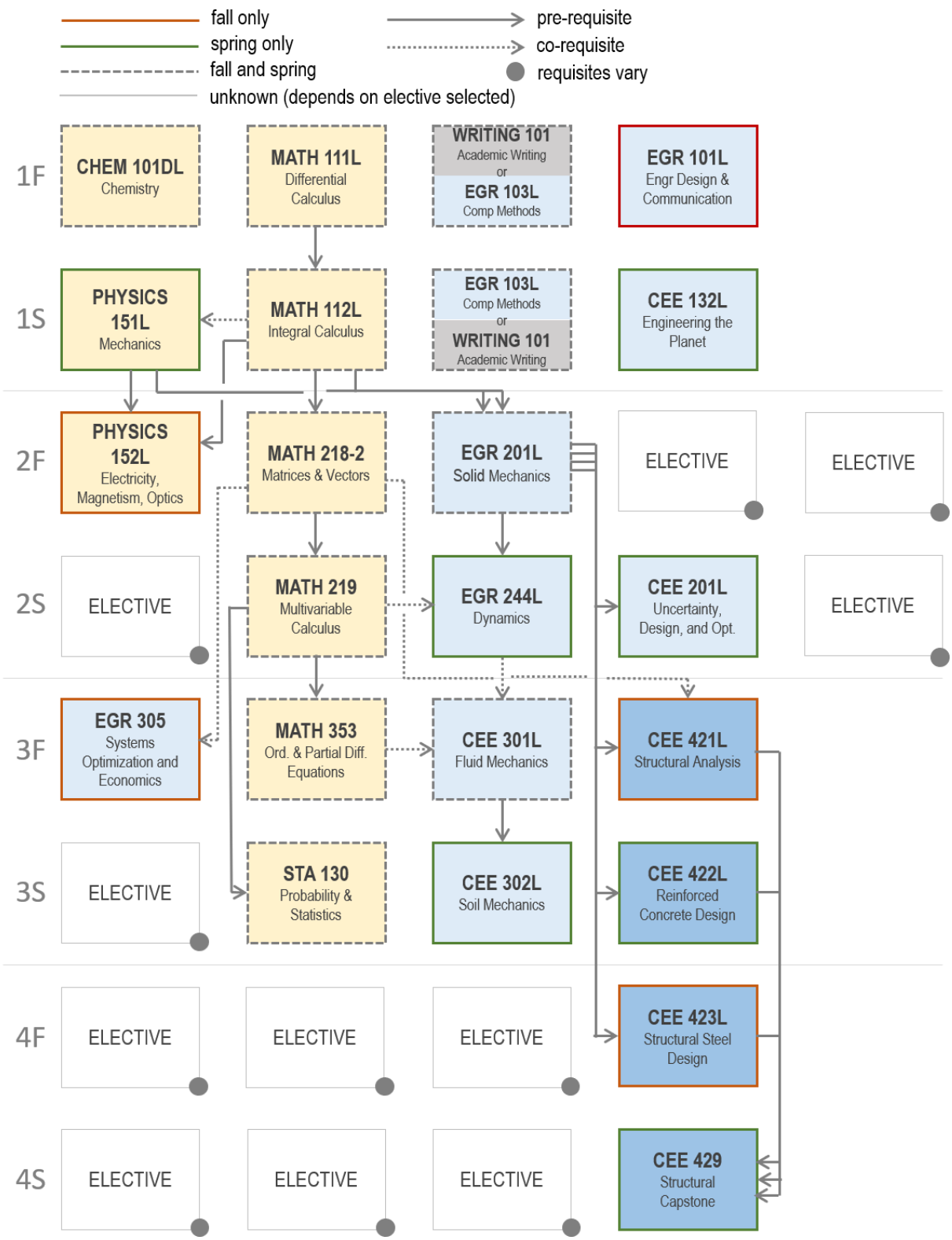
CE-S/M

The following sample schedules are provided:

- CE-S/M (Prerequisite Flowchart)
- CE-S/M
- CE-S/M + AE Certificate
- CE-S/M + ENRENV Certificate

CE-S/M (Prerequisite Flowchart)

Matriculation: F21, F22, F23



CE-S/M

Matriculation: F21, F22, F23

Fall Semester	Spring Semester
First Year	
MATH 111L Differential Calculus	MATH 112L Integral Calculus
CHEM 101DL Core Concepts in Chemistry	**PHYSICS 151L** Mechanics
WRITING 101 or EGR 103L	EGR 103L or WRITING 101
EGR 101L, Engr Design & Communication	**CEE 132L** Engineering the Planet
Sophomore Year	
MATH 218-2 Matrices and Vectors	MATH 219 Multivariable Calculus
PHYSICS 152L Electricity, Magnetism, & Optics	**EGR 244L** Dynamics
EGR 201L Mechanics of Solids	**CEE 201L** Uncertainty, Design & Optimization (or **CEE 251L**)
Elective	Elective
Elective	Elective
Junior Year	
MATH 353 Ordinary and Partial Differential Eqns	**CEE 302L** Soil Mechanics
CEE 301L Fluid Mechanics	**CEE 422L** Reinforced Concrete Design
CEE 421L Structural Analysis	**STA 130** Probability & Statistics
EGR 305 Systems Optimization & Economics (or **CEE 351**)	Elective
Senior Year	
CEE 423L Structural Steel Design	**CEE 429** Integrated Structural Design
Elective	Elective
Elective	Elective
Elective	Elective

NOTES

(1) Schedule, consisting of 34 units, assumes no AP credit

(2) Course subject codes and numbers in **bold font** are typically only offered once a year—during the semester indicated.

(3) Electives are (a) 5 SS/H, (b) 1 NS, (c) 1 E&AS, (d) 2 Upper-level CEE, and (e) 2 Free.

CE-S/M + AE Certificate

Matriculation: F21, F22, F23

Fall Semester	Spring Semester
First Year	
MATH 111L Differential Calculus	MATH 112L Integral Calculus
CHEM 101DL Core Concepts in Chemistry	**PHYSICS 151L** Mechanics
WRITING 101 or EGR 103L	EGR 103L or WRITING 101
EGR 101L, Engr Design & Communication	**CEE 132L** Engineering the Planet
Sophomore Year	
MATH 218-2 Matrices and Vectors	MATH 219 Multivariable Calculus
PHYSICS 152L Electricity, Magnetism, & Optics	**EGR 244L** Dynamics
EGR 201L Mechanics of Solids	**CEE 201L** Uncertainty, Design & Optimization (or **CEE 251L**)
ARTHIST 285/285D/286D Modern Arch. (CZ,ALP)	Elective
Elective	Elective
Junior Year	
MATH 353 Ordinary and Partial Differential Eqns	**CEE 302L** Soil Mechanics
CEE 301L Fluid Mechanics	**CEE 422L** Reinforced Concrete Design
CEE 421L Structural Analysis	**STA 130** Probability & Statistics
EGR 305 Systems Optimization & Economics (or **CEE 351**)	Elective
Senior Year	
CEE 423L Structural Steel Design	**CEE 429** Integrated Structural Design
CEE 311 Architectural Engineering I	**CEE 411** Architectural Engineering II
Elective	Elective
Elective	Elective

NOTES

(1) Schedule, consisting of 34 units, assumes no AP credit
(2) Course subject codes and numbers in **bold font** are typically only offered once a year—during the semester indicated.
(3) Electives are (a) 4 SS/H, (b) 1 NS, (c) 1 E&AS, (d) 1 AE certificate elective, and (d) 1 Free.
(4) CEE 311 and CEE 411 are the 2 upper-level CEE electives; ARTHIST 285/285D/286D counts as a SS/H course and possesses ALP and CZ codes.
(5) Double counted courses: CEE 422L and CEE 423L

CE-S/M + ENRENV Certificate

Matriculation: F21, F22, F23

Fall Semester	Spring Semester
First Year	
MATH 111L Differential Calculus	MATH 112L Integral Calculus
CHEM 101DL Core Concepts in Chemistry	**PHYSICS 151L** Mechanics
WRITING 101 or EGR 103L	EGR 103L or WRITING 101
EGR 101L, Engr Design & Communication	**CEE 132L** Engineering the Planet
Sophomore Year	
MATH 218-2 Matrices and Vectors	MATH 219 Multivariable Calculus
PHYSICS 152L Electricity, Magnetism, & Optics	**EGR 244L** Dynamics
EGR 201L Mechanics of Solids	**CEE 201L** Uncertainty, Design & Optimization (or **CEE 251L**)
ENVIRON 231 Energy and the Environment	Elective
Elective	Elective
Junior Year	
MATH 353 Ordinary and Partial Differential Eqns	**CEE 302L** Soil Mechanics
CEE 301L Fluid Mechanics	**CEE 422L** Reinforced Concrete Design
CEE 421L Structural Analysis	**STA 130** Probability & Statistics
EGR 305 Systems Optimization & Economics (or **CEE 351**)	ME 331L Thermodynamics
Senior Year	
CEE 423L Structural Steel Design	**CEE 429** Integrated Structural Design
ME 461 Energy Engr and the Environment	**EGR 424L** Energy & Environment Design
ENERGY 395-1 Conn in Energy [0.5 unit]	Elective
Elective	Elective
Elective	

NOTES

(1) Schedule, consisting of 35.5 units, assumes no AP credit
(2) Course subject codes and numbers in **bold font** are typically only offered once a year—during the semester indicated.
(3) Electives are (a) 5 SS/H (see notes 4 & 5, below), (b) 1 NS, (c) 2 Upper-level CEE (see notes 5 & 6, below)
(4) ENRENV: Utilize 1 SS/H elective to satisfy the "Markets and Policy" elective; Most likely an SS course.
(5) ENRENV: Need the "additional elective course" for ENRENV. Options include (a) use an additional SS/H course for a second "Markets and Policy" course, (b) take CEE 315 which satisfies a upper-level CEE elective for CE, or (c) utilize an additional (36th) course.
(6) ENRENV: Environment elective = CEE 461L or CEE 462L which satisfies an upper-level CEE elective for CE; Energy Science and Technology elective = ME 461L.
(7) CE: E&AS elective = ME 331L
(8) Double counted courses: One of the Upper-level CEE courses (i.e., CEE 315 or (CEE 461L or CEE 462L))

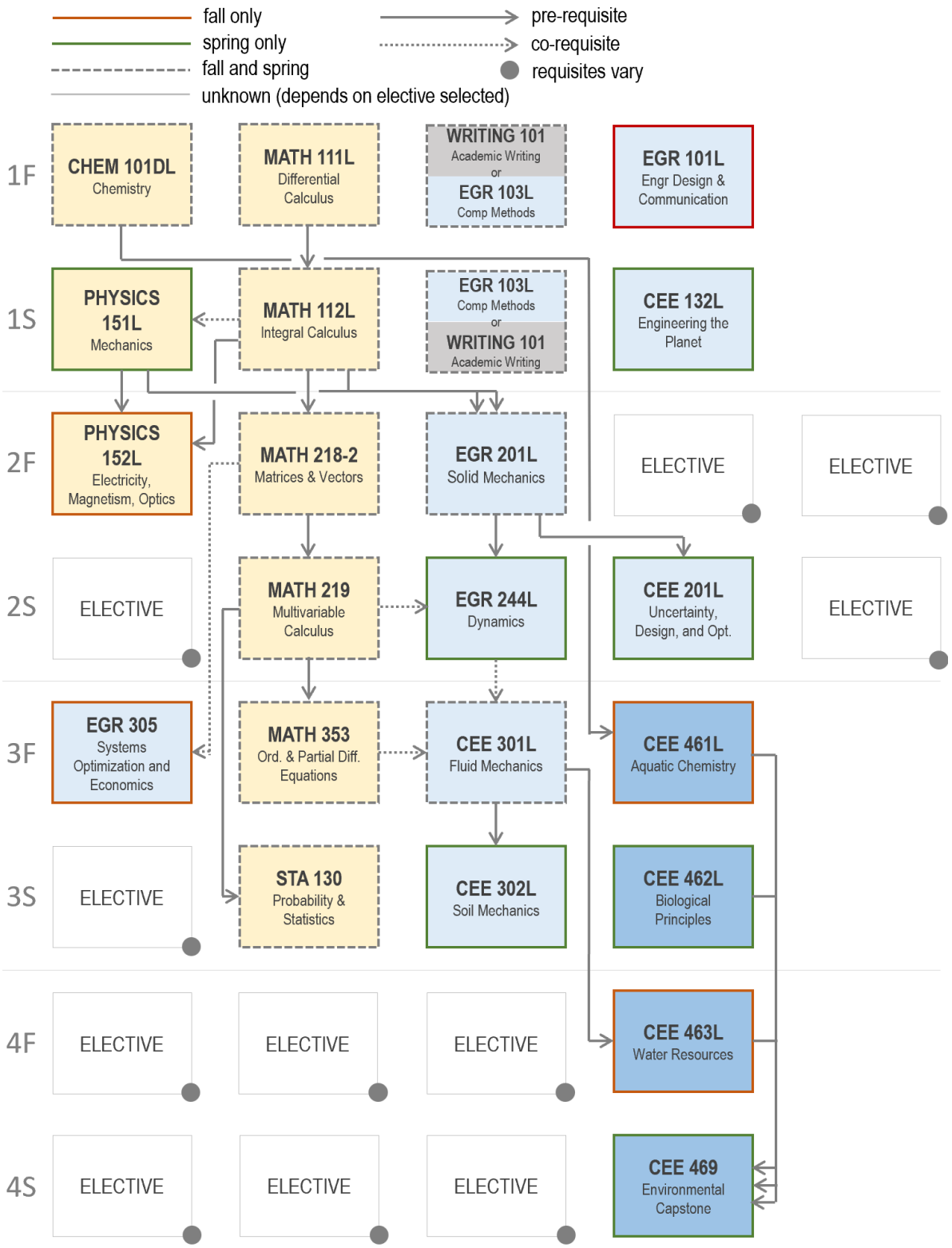
CE-E/W

The following sample schedules are provided:

- CE-E/W (Prerequisite Flowchart)
- CE-E/W
- CE-E/W + BME Major
- CE-E/W + ENRENV Certificate

CE-E/W (Prerequisite Flowchart)

Matriculation: F21, F22, F23



CE-E/W

Matriculation: F21, F22, F23

Fall Semester	Spring Semester
First Year	
MATH 111L Differential Calculus	MATH 112L Integral Calculus
CHEM 101DL Core Concepts in Chemistry	**PHYSICS 151L** Mechanics
WRITING 101 or EGR 103L	EGR 103L or WRITING 101
EGR 101L, Engr Design & Communication	**CEE 132L** Engineering the Planet
Sophomore Year	
MATH 218-2 Matrices and Vectors	MATH 219 Multivariable Calculus
PHYSICS 152L Electricity, Magnetism, & Optics	**EGR 244L** Dynamics
EGR 201L Mechanics of Solids	**CEE 201L** Uncertainty, Design & Optimization (or **CEE 251L**)
Elective	Elective
Elective	Elective
Junior Year	
MATH 353 Ordinary and Partial Differential Eqns	**CEE 302L** Soil Mechanics
CEE 301L Fluid Mechanics	**CEE 462L** Biological Principles
CEE 461L Aquatic Chemistry	**STA 130** Probability & Statistics
EGR 305 Systems Optimization & Economics (or **CEE 351**)	Elective
Senior Year	
CEE 463L Water Resources	**CEE 469** Integrated Environmental Design
Elective	Elective
Elective	Elective
Elective	Elective

NOTES
(1) Schedule, consisting of 34 units, assumes no AP credit
(2) Course subject codes and numbers in **bold font** are typically only offered once a year—during the semester indicated.
(3) Electives are (a) 5 SS/H, (b) 1 NS, (c) 1 E&AS, (d) 2 Upper-level CEE, and (e) 2 Free.

CE-E/W + BME Major

Matriculation: F21, F22, F23

Fall Semester	Spring Semester
First Year	
MATH 111L Differential Calculus	MATH 112L Integral Calculus
CHEM 101DL Core Concepts in Chemistry	**PHYSICS 151L** Mechanics
WRITING 101 or EGR 103L	EGR 103L or WRITING 101
EGR 101L, Engr Design & Communication	BIOLOGY 201L Molecular Biology
Sophomore Year	
MATH 218-2 Matrices and Vectors	MATH 219 Multivariable Calculus
PHYSICS 152L Electricity, Magnetism, & Optics	**EGR 244L** Dynamics
EGR 201L Mechanics of Solids	ECE 110L Fund. of Elect. & Comp. Engr.
BME 244L Quantitative Physiology	ME 221L Structure & Properties of Solids
CHEM 201DL Organic Chemistry, or CHEM 210DL Chemical Principles	Elective
Junior Year	
MATH 353 Ordinary and Partial Differential Eqns	**STA 130** Probability & Statistics
CEE 301L Fluid Mechanics	**CEE 462L** Biological Principles
CEE 461L Aquatic Chemistry	**CEE 201L** Uncertainty, Design & Optimization (or **CEE 251L**)
BME 271 Signals & Systems, or ECE 280L Signals & Systems	BME 302L Biomaterials & Biomechanics, or BME 307 Transport Phenomena in Bio Systems
BME 260L Cellular and Molecular Systems	BME 354L Medical Instrumentation
Senior Year	
CEE 463L Water Resources	**CEE 469** Integrated Environmental Design
EGR 305 Systems Optimization & Economics (or **CEE 351**)	Elective
Elective	Elective
Elective	Elective
Elective	Elective

NOTES

(1) Schedule, consisting of 38 units, assumes no AP credit; CHECK if BME will count EGR 101L as Life Sci elect

(2) Course subject codes and numbers in **bold font** are typically only offered once a year—during the semester indicated.

(3) Electives are (a) 5 SS/H, (b) 1 CEE elective (see note 4), (c) 1 BME area elective (see note 5), and (d) 1 Life Science elective (see BME Handbook).

(4) CEE elective = CEE 561, 562, 563, 564, 571, 575, 581, 661L, 671, 672, or 685.

(5) If BME 302L is taken then the BME area elective must come from the biomaterials/biomechanics area. If BME 307 is taken then the BME area elective must come from the Molecular, Cellular, and Tissue Engineering area. See the BME Handbook for area elective options.

CE-E/W + ENRENV Certificate

Matriculation: F21, F22, F23

Fall Semester	Spring Semester
First Year	
MATH 111L Differential Calculus	MATH 112L Integral Calculus
CHEM 101DL Core Concepts in Chemistry	**PHYSICS 151L** Mechanics
WRITING 101 or EGR 103L	EGR 103L or WRITING 101
EGR 101L, Engr Design & Communication	**CEE 132L** Engineering the Planet
Sophomore Year	
MATH 218-2 Matrices and Vectors	MATH 219 Multivariable Calculus
PHYSICS 152L Electricity, Magnetism, & Optics	**EGR 244L** Dynamics
EGR 201L Mechanics of Solids	**CEE 201L** Uncertainty, Design & Optimization (or **CEE 251L**)
ENVIRON 231 Energy and the Environment	Elective
Elective	Elective
Junior Year	
MATH 353 Ordinary and Partial Differential Eqns	**CEE 302L** Soil Mechanics
CEE 301L Fluid Mechanics	**CEE 462L** Biological Principles
CEE 461L Aquatic Chemistry	**STA 130** Probability & Statistics
EGR 305 Systems Optimization & Economics (or **CEE 351**)	ME 331L Thermodynamics
Elective	
Senior Year	
CEE 463L Water Resources	**CEE 469** Integrated Environmental Design
ME 461 Energy Engr and the Environment	**EGR 424L** Energy & Environment Design
ENERGY 395-1 Conn in Energy [0.5 unit]	Elective
Elective	Elective
Elective	

NOTES

(1) Schedule, consisting of 35.5 units, assumes no AP credit
(2) Course subject codes and numbers in **bold font** are typically only offered once a year—during the semester indicated.
(3) Electives are (a) 5 SS/H (see note 4, below), (b) 1 NS, (c) 2 Upper-level CEE
(4) ENRENV: Utilize a SS/H elective to satisfy the "Markets and Policy" elective; Most likely an SS course.
(5) ENRENV: Environment elective = CEE 461L; Energy Science and Technology elective = ME 461L; Additional elective course = CEE 462L.
(6) CE: E&AS elective = ME 331L
(7) Double counted courses: CEE 461L and CEE 462L.

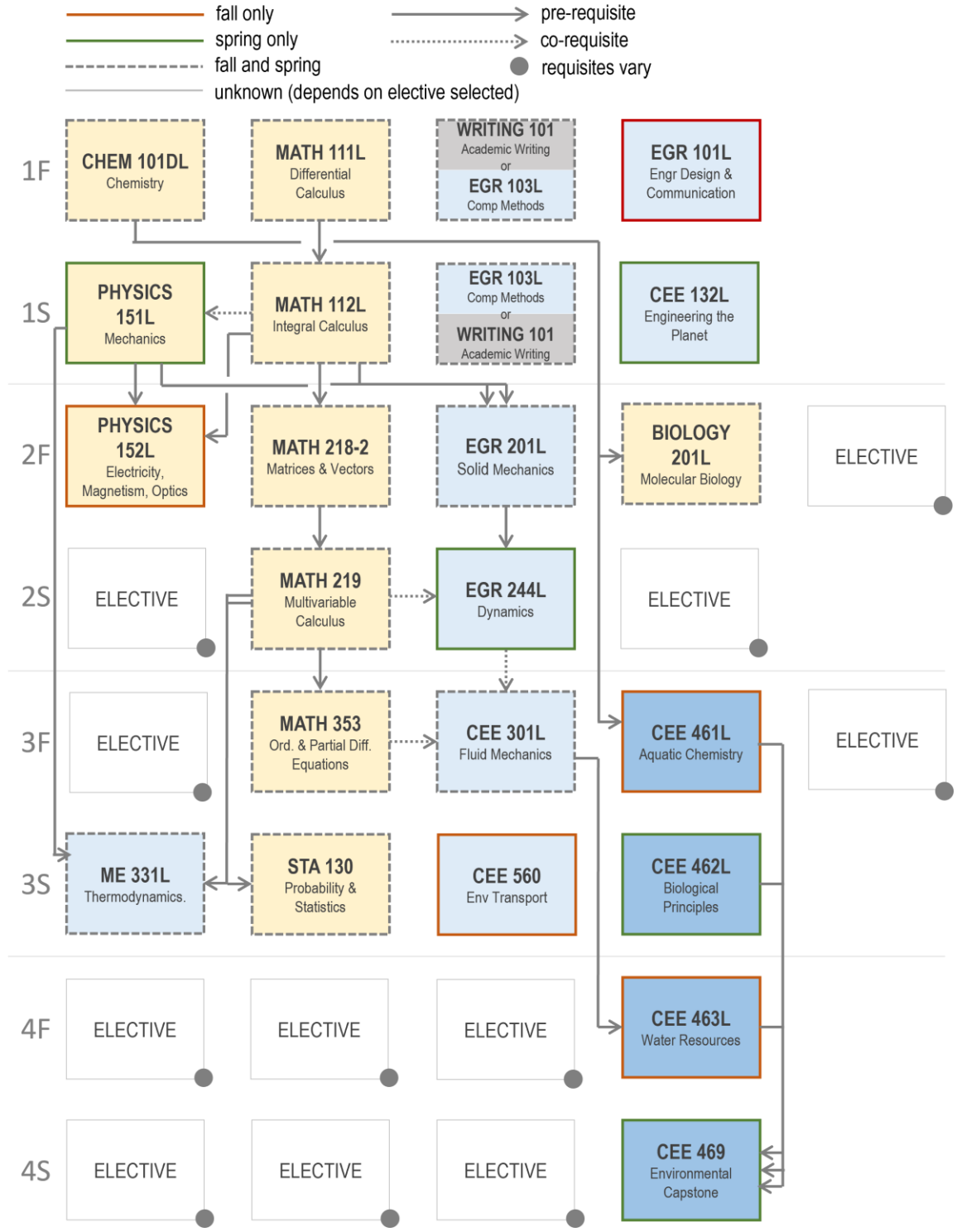
EnvE

The following sample schedules are provided:

- EnvE (Prerequisite Flowchart)
- EnvE
- EnvE + ENRENV Certificate

EnvE (Prerequisite Flowchart): F23

Matriculation: F23



EnvE: F23

Matriculation: F23

Fall Semester	Spring Semester
First Year	
MATH 111L Differential Calculus	MATH 112L Integral Calculus
CHEM 101DL Core Concepts in Chemistry	**PHYSICS 151L** Mechanics
WRITING 101 or EGR 103L	EGR 103L or WRITING 101
EGR 101L, Engr Design & Communication	**CEE 132L** Engineering the Planet
Sophomore Year	
MATH 218-2 Matrices and Vectors	MATH 219 Multivariable Calculus
PHYSICS 152L Electricity, Magnetism, & Optics	**EGR 244L** Dynamics
EGR 201L Mechanics of Solids	Elective
BIOLOGY 201L Molecular Biology	Elective
Elective	
Junior Year	
MATH 353 Ordinary and Partial Differential Eqns	**CEE 462L** Biological Principles
CEE 301L Fluid Mechanics	**STA 130** Probability & Statistics
CEE 461L Aquatic Chemistry	ME 331L Thermodynamics
Elective	**CEE 560** Environmental Transport Phenomena
Elective	
Senior Year	
CEE 463L Water Resources	**CEE 469** Integrated Environmental Design
Elective	Elective
Elective	Elective
Elective	Elective

NOTES
(1) Schedule, consisting of 34 units, assumes no AP credit
(2) Course subject codes and numbers in **bold font** are typically only offered once a year—during the semester indicated.
(3) Electives are (a) 5 SS/H, (b) EGR 305 or CEE 201L (c) 1 Earth Science, (d) 2 Upper-level Environmental, (e) 2 Free.

EnvE + ENRENV Certificate: F23

Matriculation: F23

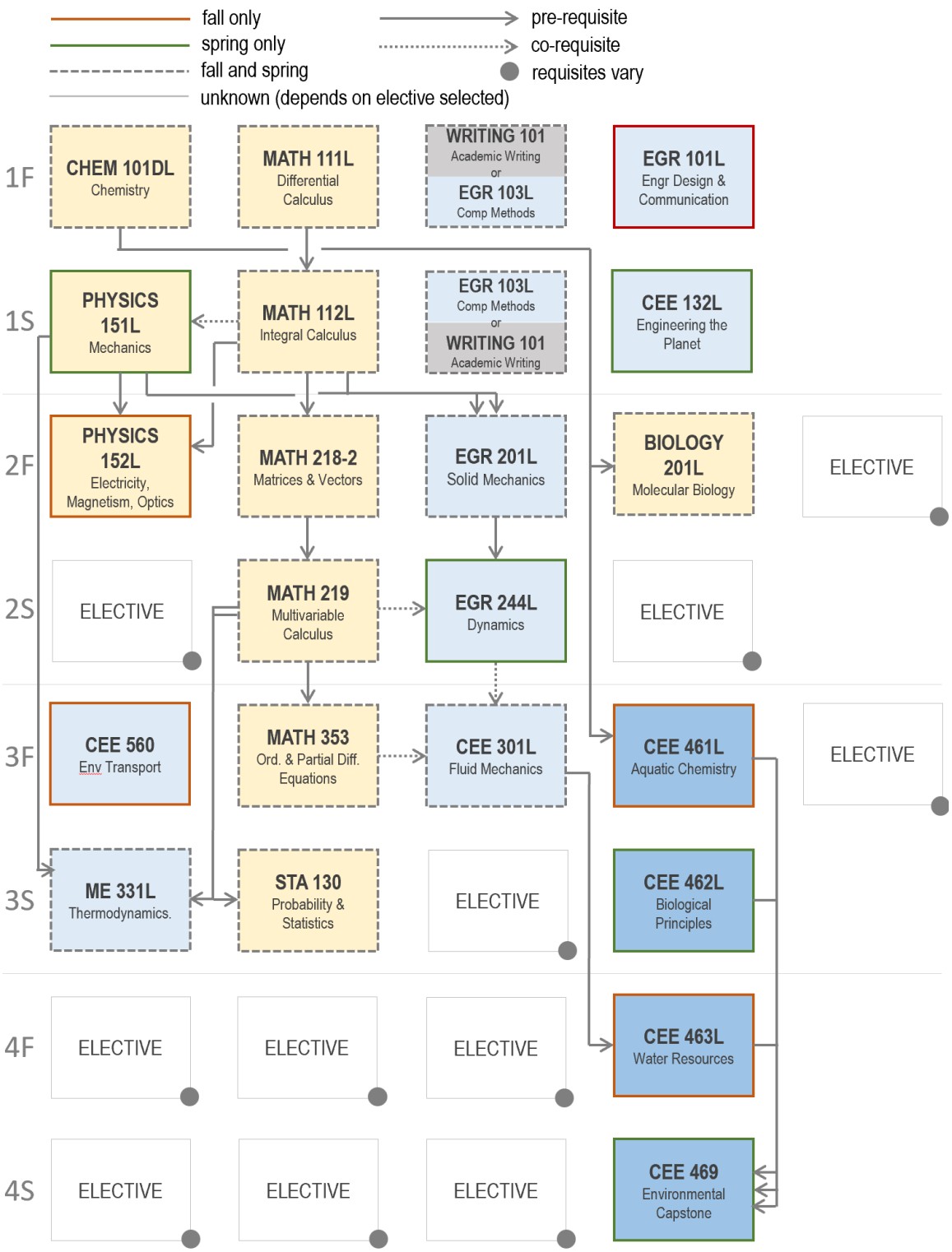
Fall Semester	Spring Semester
First Year	
MATH 111L Differential Calculus	MATH 112L Integral Calculus
CHEM 101DL Core Concepts in Chemistry	**PHYSICS 151L** Mechanics
WRITING 101 or EGR 103L	EGR 103L or WRITING 101
EGR 101L, Engr Design & Communication	**CEE 132L** Engineering the Planet
Sophomore Year	
MATH 218-2 Matrices and Vectors	MATH 219 Multivariable Calculus
PHYSICS 152L Electricity, Magnetism, & Optics	**EGR 244L** Dynamics
EGR 201L Mechanics of Solids	Elective
BIOLOGY 201L Molecular Biology	Elective
ENVIRON 231 Energy and the Environment	Elective
Junior Year	
MATH 353 Ordinary and Partial Differential Eqns	**CEE 462L** Biological Principles
CEE 301L Fluid Mechanics	**STA 130** Probability & Statistics
CEE 461L Aquatic Chemistry	ME 331L Thermodynamics
Elective	**CEE 560** Environmental Transport Phenomena
Elective	
Senior Year	
CEE 463L Water Resources	**CEE 469** Integrated Environmental Design
ME 461 Energy Engr and the Environment	**EGR 424L** Energy & Environment Design
ENERGY 395-1 Conn in Energy [0.5 unit]	Elective
Elective	Elective
Elective	

NOTES

(1) Schedule, consisting of 35.5 units, assumes no AP credit
(2) Course subject codes and numbers in **bold font** are typically only offered once a year—during the semester indicated.
(3) Electives are (a) 5 SS/H (see note 4, below), (b) EGR 305 or CEE 201L (c) 1 Earth Science, (d) 2 Upper-level Environmental
(4) ENRENV: Utilize a SS/H elective to satisfy the "Markets and Policy" elective; Most likely an SS course.
(5) ENRENV: Environment elective = CEE 461L; Energy Science and Technology elective = ME 461L; Additional elective course = CEE 462L.
(6) Double counted courses: CEE 461L, CEE 462L.

EnvE (Prerequisite Flowchart): F21, F22

Matriculation: F21, F22



EnvE: F21, F22

Matriculation: F21, F22

Fall Semester	Spring Semester
First Year	
MATH 111L Differential Calculus	MATH 112L Integral Calculus
CHEM 101DL Core Concepts in Chemistry	**PHYSICS 151L** Mechanics
WRITING 101 or EGR 103L	EGR 103L or WRITING 101
EGR 101L, Engr Design & Communication	**CEE 132L** Engineering the Planet
Sophomore Year	
MATH 218-2 Matrices and Vectors	MATH 219 Multivariable Calculus
PHYSICS 152L Electricity, Magnetism, & Optics	**EGR 244L** Dynamics
EGR 201L Mechanics of Solids	Elective
BIOLOGY 201L Molecular Biology	Elective
Elective	
Junior Year	
MATH 353 Ordinary and Partial Differential Eqns	**CEE 462L** Biological Principles
CEE 301L Fluid Mechanics	**STA 130** Probability & Statistics
CEE 461L Aquatic Chemistry	ME 331L Thermodynamics
CEE 560 Environmental Transport Phenomena	Elective
Elective	
Senior Year	
CEE 463L Water Resources	**CEE 469** Integrated Environmental Design
Elective	Elective
Elective	Elective
Elective	Elective

NOTES

(1) Schedule, consisting of 34 units, assumes no AP credit

(2) Course subject codes and numbers in **bold font** are typically only offered once a year—during the semester indicated.

(3) Electives are (a) 5 SS/H, (b) EGR 305 or CEE 201L (c) 1 Earth Science, (d) 2 Upper-level Environmental, (e) 2 Free.

EnvE + ENRENV Certificate: F21, F22

Matriculation: F21, F22

Fall Semester	Spring Semester
First Year	
MATH 111L Differential Calculus	MATH 112L Integral Calculus
CHEM 101DL Core Concepts in Chemistry	**PHYSICS 151L** Mechanics
WRITING 101 or EGR 103L	EGR 103L or WRITING 101
EGR 101L, Engr Design & Communication	**CEE 132L** Engineering the Planet
Sophomore Year	
MATH 218-2 Matrices and Vectors	MATH 219 Multivariable Calculus
PHYSICS 152L Electricity, Magnetism, & Optics	**EGR 244L** Dynamics
EGR 201L Mechanics of Solids	Elective
BIOLOGY 201L Molecular Biology	Elective
ENVIRON 231 Energy and the Environment	Elective
Junior Year	
MATH 353 Ordinary and Partial Differential Eqns	**CEE 462L** Biological Principles
CEE 301L Fluid Mechanics	**STA 130** Probability & Statistics
CEE 461L Aquatic Chemistry	ME 331L Thermodynamics
CEE 560 Environmental Transport Phenomena	Elective
Elective	
Senior Year	
CEE 463L Water Resources	**CEE 469** Integrated Environmental Design
ME 461 Energy Engr and the Environment	**EGR 424L** Energy & Environment Design
ENERGY 395-1 Conn in Energy [0.5 unit]	Elective
Elective	Elective
Elective	

NOTES

(1) Schedule, consisting of 35.5 units, assumes no AP credit
(2) Course subject codes and numbers in **bold font** are typically only offered once a year—during the semester indicated.
(3) Electives are (a) 5 SS/H (see note 4, below), (b) EGR 305 or CEE 201L (c) 1 Earth Science, (d) 2 Upper-level Environmental
(4) ENRENV: Utilize a SS/H elective to satisfy the "Markets and Policy" elective; Most likely an SS course.
(5) ENRENV: Environment elective = CEE 461L; Energy Science and Technology elective = ME 461L; Additional elective course = CEE 462L.
(6) Double counted courses: CEE 461L, CEE 462L.

Matriculation: F18, F19, F20

Below are sample schedules for students who matriculated in fall 2018, fall 2019, or fall 2020.

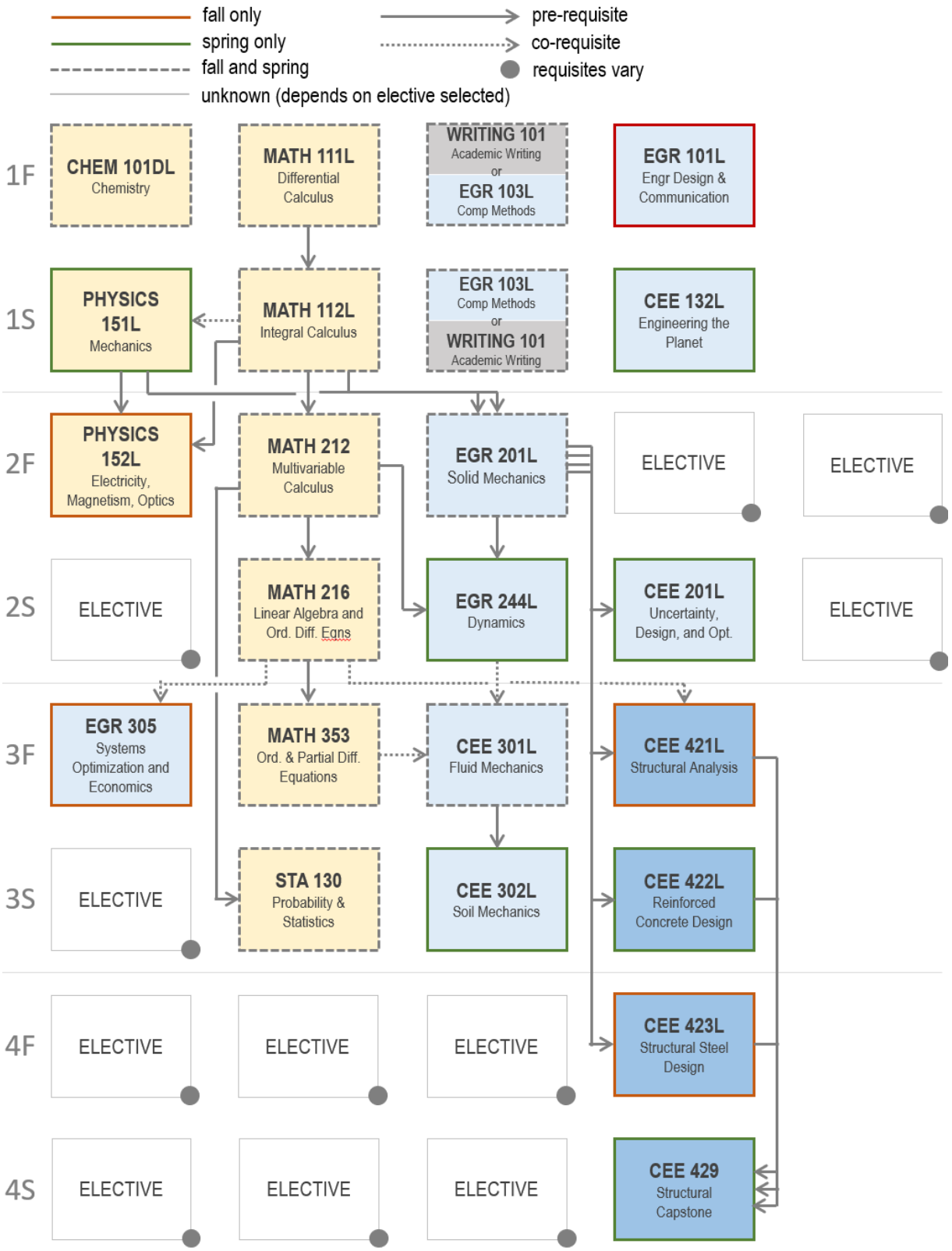
CE-S/M

The following sample schedules are provided:

- CE-S/M (Prerequisite Flowchart)
- CE-S/M
- CE-S/M + AE Certificate
- CE-S/M + ENRENV Certificate

CE-S/M (Prerequisite Flowchart)

Matriculation: F18, F19, F20



CE-S/M

Matriculation: F18, F19, F20

Fall Semester	Spring Semester
First Year	
MATH 111L Differential Calculus	MATH 112L Integral Calculus
CHEM 101DL Core Concepts in Chemistry	**PHYSICS 151L** Mechanics
WRITING 101 or EGR 103L	EGR 103L or WRITING 101
EGR 101L, Engr Design & Communication	**CEE 132L** Engineering the Planet
Sophomore Year	
MATH 212 Multivariable Calculus	MATH 216 Linear Algebra and Differential Eqns
PHYSICS 152L Electricity, Magnetism, & Optics	**EGR 244L** Dynamics
EGR 201L Mechanics of Solids	**CEE 201L** Uncertainty, Design & Optimization
Elective	Elective
Elective	Elective
Junior Year	
MATH 353 Ordinary and Partial Differential Eqns	**CEE 302L** Soil Mechanics
CEE 301L Fluid Mechanics	**CEE 422L** Reinforced Concrete Design
CEE 421L Structural Analysis	STA 130 Probability & Statistics
EGR 305 Systems Optimization & Economics	Elective
Senior Year	
CEE 423L Structural Steel Design	**CEE 429** Integrated Structural Design
Elective	Elective
Elective	Elective
Elective	Elective

NOTES

(1) Schedule, consisting of 34 units, assumes no AP credit

(2) Course subject codes and numbers in **bold font** are typically only offered once a year—during the semester indicated.

(3) Electives are (a) 5 SS/H, (b) 1 NS, (c) 1 E&AS, (d) 2 Upper-level CEE, and (e) 2 Free.

CE-S/M + AE Certificate

Matriculation: F19, F20

Fall Semester	Spring Semester
First Year	
MATH 111L Differential Calculus	MATH 112L Integral Calculus
CHEM 101DL Core Concepts in Chemistry	**PHYSICS 151L** Mechanics
WRITING 101 or EGR 103L	EGR 103L or WRITING 101
EGR 101L, Engr Design & Communication	**CEE 132L** Engineering the Planet
Sophomore Year	
MATH 212 Multivariable Calculus	MATH 216 Linear Algebra and Differential Eqns
PHYSICS 152L Electricity, Magnetism, & Optics	**EGR 244L** Dynamics
EGR 201L Mechanics of Solids	**CEE 201L** Uncertainty, Design & Optimization
ARTHIST 285/285D/286D Modern Arch. (CZ,ALP)	Elective
Elective	Elective
Junior Year	
MATH 353 Ordinary and Partial Differential Eqns	**CEE 302L** Soil Mechanics
CEE 301L Fluid Mechanics	**CEE 422L** Reinforced Concrete Design
CEE 421L Structural Analysis	STA 130 Probability & Statistics
EGR 305 Systems Optimization & Economics	Elective
Senior Year	
CEE 423L Structural Steel Design	**CEE 429** Integrated Structural Design
CEE 311 Architectural Engineering I	**CEE 411** Architectural Engineering II
Elective	Elective
Elective	Elective

NOTES

(1) Schedule, consisting of 34 units, assumes no AP credit
(2) Course subject codes and numbers in **bold font** are typically only offered once a year—during the semester indicated.
(3) Electives are (a) 4 SS/H, (b) 1 NS, (c) 1 E&AS, (d) 1 AE certificate elective, and (d) 1 Free.
(4) CEE 311 and CEE 411 are the 2 upper-level CEE electives; ARTHIST 285/285D/286D counts as a SS/H course and possesses ALP and CZ codes.
(5) Double counted courses: CEE 422L and CEE 423L

CE-S/M + AE Certificate

Matriculation: F18

Fall Semester	Spring Semester
First Year	
MATH 111L Differential Calculus	MATH 112L Integral Calculus
CHEM 101DL Core Concepts in Chemistry	**PHYSICS 151L** Mechanics
WRITING 101 or EGR 103L	EGR 103L or WRITING 101
EGR 101L, Engr Design & Communication	**CEE 132L** Engineering the Planet
Sophomore Year	
MATH 212 Multivariable Calculus	MATH 216 Linear Algebra and Differential Eqns
PHYSICS 152L Electricity, Magnetism, & Optics	**EGR 244L** Dynamics
EGR 201L Mechanics of Solids	**CEE 201L** Uncertainty, Design & Optimization
ARTHIST 285/285D/286D Modern Arch. (CZ,ALP)	Elective
Elective	Elective
Junior Year	
MATH 353 Ordinary and Partial Differential Eqns	**CEE 302L** Soil Mechanics
CEE 301L Fluid Mechanics	**CEE 422L** Reinforced Concrete Design
CEE 421L Structural Analysis	STA 130 Probability & Statistics
EGR 305 Systems Optimization & Economics	Elective
Senior Year	
CEE 423L Structural Steel Design	**CEE 429** Integrated Structural Design
CEE 311 Architectural Engineering I	**CEE 411** Architectural Engineering II
Elective	Elective
Elective	Elective

NOTES

(1) Schedule, consisting of 34 units, assumes no AP credit
(2) Course subject codes and numbers in **bold font** are typically only offered once a year—during the semester indicated.
(3) Electives are (a) 4 SS/H, (b) 1 NS, (c) 1 E&AS, and (d) 2 Free.
(4) CEE 311 and CEE 411 are the 2 upper-level CEE electives; ARTHIST 285/285D/286D counts as a SS/H course and possesses ALP and CZ codes.
(5) Double counted courses: Not applicable.

CE-S/M + ENRENV Certificate

Matriculation: F18, F19, F20

Fall Semester	Spring Semester
First Year	
MATH 111L Differential Calculus	MATH 112L Integral Calculus
CHEM 101DL Core Concepts in Chemistry	**PHYSICS 151L** Mechanics
WRITING 101 or EGR 103L	EGR 103L or WRITING 101
EGR 101L, Engr Design & Communication	**CEE 132L** Engineering the Planet
Sophomore Year	
MATH 212 Multivariable Calculus	MATH 216 Linear Algebra and Differential Eqns
PHYSICS 152L Electricity, Magnetism, & Optics	**EGR 244L** Dynamics
EGR 201L Mechanics of Solids	**CEE 201L** Uncertainty, Design & Optimization
ENVIRON 231 Energy and the Environment	Elective
Elective	Elective
Junior Year	
MATH 353 Ordinary and Partial Differential Eqns	**CEE 302L** Soil Mechanics
CEE 301L Fluid Mechanics	**CEE 422L** Reinforced Concrete Design
CEE 421L Structural Analysis	STA 130 Probability & Statistics
EGR 305 Systems Optimization & Economics	ME 331L Thermodynamics
Senior Year	
CEE 423L Structural Steel Design	**CEE 429** Integrated Structural Design
ME 461 Energy Engr and the Environment	**EGR 424L** Energy & Environment Design
ENERGY 395-1 Conn in Energy [0.5 unit]	Elective
Elective	Elective
Elective	

NOTES

(1) Schedule, consisting of 35.5 units, assumes no AP credit
(2) Course subject codes and numbers in **bold font** are typically only offered once a year—during the semester indicated.
(3) Electives are (a) 5 SS/H (see notes 4 & 5, below), (b) 1 NS, (c) 2 Upper-level CEE (see notes 5 & 6, below)
(4) ENRENV: Utilize 1 SS/H elective to satisfy the "Markets and Policy" elective; Most likely an SS course.
(5) ENRENV: Need the "additional elective course" for ENRENV. Options include (a) use an additional SS/H course for a second "Markets and Policy" course, (b) take CEE 315 which satisfies a upper-level CEE elective for CE, or (c) utilize an additional (36th) course.
(6) ENRENV: Environment elective = CEE 461L or CEE 462L which satisfies an upper-level CEE elective for CE; Energy Science and Technology elective = ME 461L.
(7) CE: E&AS elective = ME 331L
(8) Double counted courses: One of the Upper-level CEE courses (i.e., CEE 315 or (CEE 461L or CEE 462L))

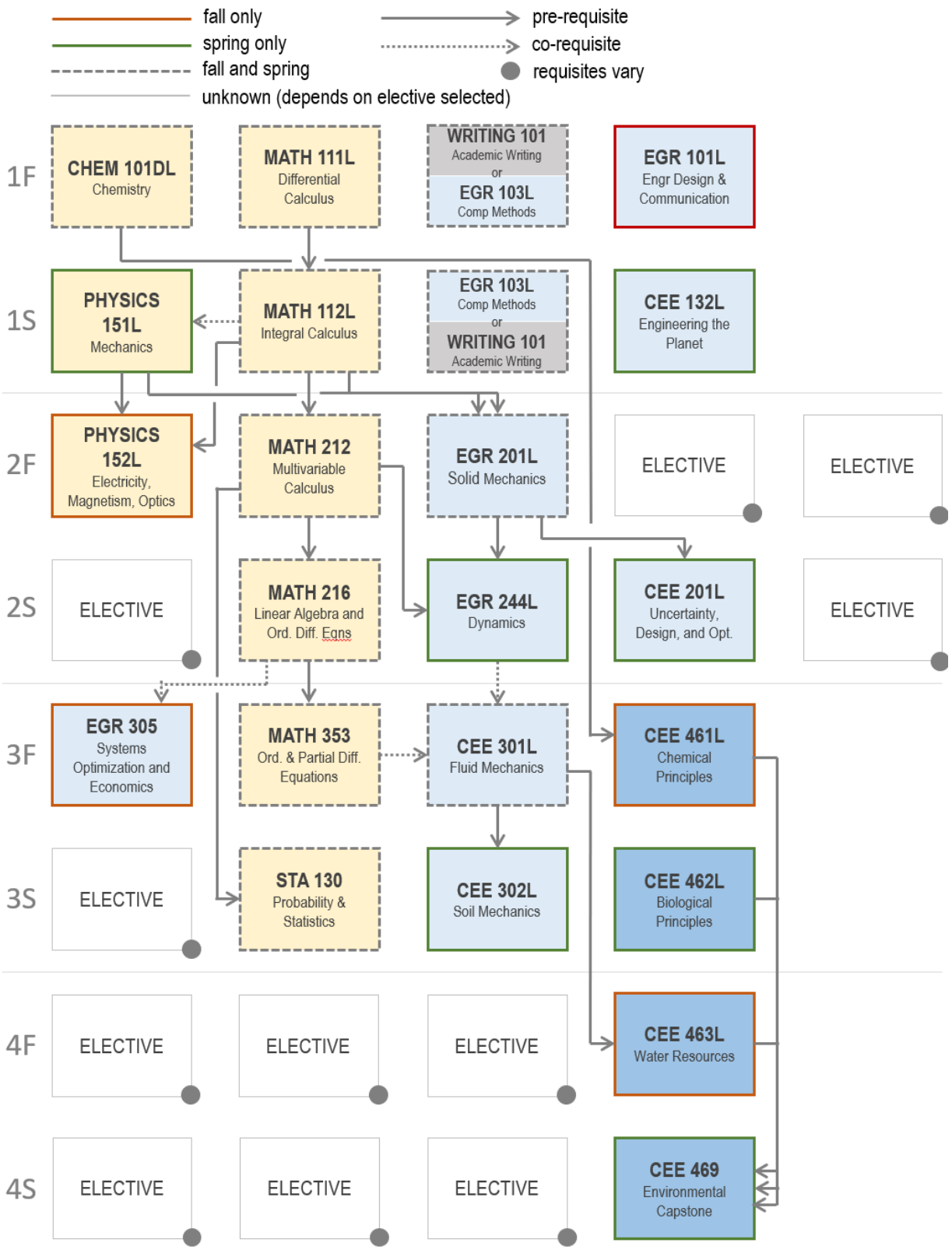
CE-E/W

The following sample schedules are provided:

- CE-E/W (Prerequisite Flowchart)
- CE-E/W
- CE-E/W + BME Major
- CE-E/W + ENRENV Certificate

CE-E/W (Prerequisite Flowchart)

Matriculation: F18, F19, F20



CE-E/W

Matriculation: F18, F19, F20

Fall Semester	Spring Semester
First Year	
MATH 111L Differential Calculus	MATH 112L Integral Calculus
CHEM 101DL Core Concepts in Chemistry	**PHYSICS 151L** Mechanics
WRITING 101 or EGR 103L	EGR 103L or WRITING 101
EGR 101L, Engr Design & Communication	**CEE 132L** Engineering the Planet
Sophomore Year	
MATH 212 Multivariable Calculus	MATH 216 Linear Algebra and Differential Eqns
PHYSICS 152L Electricity, Magnetism, & Optics	**EGR 244L** Dynamics
EGR 201L Mechanics of Solids	**CEE 201L** Uncertainty, Design & Optimization
Elective	Elective
Elective	Elective
Junior Year	
MATH 353 Ordinary and Partial Differential Eqns	**CEE 302L** Soil Mechanics
CEE 301L Fluid Mechanics	**CEE 462L** Biological Principles
CEE 461L Chemical Principles	STA 130 Probability & Statistics
EGR 305 Systems Optimization & Economics	Elective
Senior Year	
CEE 463L Water Resources	**CEE 469** Integrated Environmental Design
Elective	Elective
Elective	Elective
Elective	Elective

NOTES

(1) Schedule, consisting of 34 units, assumes no AP credit

(2) Course subject codes and numbers in **bold font** are typically only offered once a year—during the semester indicated.

(3) Electives are (a) 5 SS/H, (b) 1 NS, (c) 1 E&AS, (d) 2 Upper-level CEE, and (e) 2 Free.

CE-E/W + BME Major

Matriculation: F18, F19, F20

Fall Semester	Spring Semester
First Year	
MATH 111L Differential Calculus	MATH 112L Integral Calculus
CHEM 101DL Core Concepts in Chemistry	**PHYSICS 151L** Mechanics
WRITING 101 or EGR 103L	EGR 103L or WRITING 101
EGR 101L, Engr Design & Communication	BIOLOGY 201L Molecular Biology
Sophomore Year	
MATH 212 Multivariable Calculus	MATH 216 Linear Algebra and Differential Eqns
PHYSICS 152L Electricity, Magnetism, & Optics	**EGR 244L** Dynamics
EGR 201L Mechanics of Solids	ECE 110L Fund. of Elect. & Comp. Engr.
BME 244L Quantitative Physiology	ME 221L Structure & Properties of Solids
CHEM 201DL Organic Chemistry, or CHEM 210DL Chemical Principles	Elective
Junior Year	
MATH 353 Ordinary and Partial Differential Eqns	STA 130 Probability & Statistics
CEE 301L Fluid Mechanics	**CEE 462L** Biological Principles
CEE 461L Chemical Principles	**CEE 201L** Uncert., Design, and Optimization
BME 271 Signals & Systems, or ECE 280L Signals & Systems	BME 302L Biomaterials & Biomechanics, or BME 307 Transport Phenomena in Bio Systems
BME 260L Cellular and Molecular Systems	BME 354L Medical Instrumentation
Senior Year	
CEE 463L Water Resources	**CEE 469** Integrated Environmental Design
EGR 305 Systems Optimization & Economics	Elective
Elective	Elective
Elective	Elective
Elective	Elective

NOTES

(1) Schedule, consisting of 38 units, assumes no AP credit; CHECK if BME will count EGR 101L as Life Sci elect

(2) Course subject codes and numbers in **bold font** are typically only offered once a year—during the semester indicated.

(3) Electives are (a) 5 SS/H, (b) 1 CEE elective (see note 4), (c) 1 BME area elective (see note 5), and (d) 1 Life Science elective (see BME Handbook).

(4) CEE elective = CEE 561, 562, 563, 564, 571, 575, 581, 661L, 671, 672, or 685.

(5) If BME 302L is taken then the BME area elective must come from the biomaterials/biomechanics area. If BME 307 is taken then the BME area elective must come from the Molecular, Cellular, and Tissue Engineering area. See the BME Handbook for area elective options.

CE-E/W + ENRENV Certificate

Matriculation: F18, F19, F20

Fall Semester	Spring Semester
First Year	
MATH 111L Differential Calculus	MATH 112L Integral Calculus
CHEM 101DL Core Concepts in Chemistry	**PHYSICS 151L** Mechanics
WRITING 101 or EGR 103L	EGR 103L or WRITING 101
EGR 101L, Engr Design & Communication	**CEE 132L** Engineering the Planet
Sophomore Year	
MATH 212 Multivariable Calculus	MATH 216 Linear Algebra and Differential Eqns
PHYSICS 152L Electricity, Magnetism, & Optics	**EGR 244L** Dynamics
EGR 201L Mechanics of Solids	**CEE 201L** Uncertainty, Design & Optimization
ENVIRON 231 Energy and the Environment	Elective
Elective	Elective
Junior Year	
MATH 353 Ordinary and Partial Differential Eqns	**CEE 302L** Soil Mechanics
CEE 301L Fluid Mechanics	**CEE 462L** Biological Principles
CEE 461L Chemical Principles	STA 130 Probability & Statistics
EGR 305 Systems Optimization & Economics	ME 331L Thermodynamics
Elective	
Senior Year	
CEE 463L Water Resources	**CEE 469** Integrated Environmental Design
ME 461 Energy Engr and the Environment	**EGR 424L** Energy & Environment Design
ENERGY 395-1 Conn in Energy [0.5 unit]	Elective
Elective	Elective
Elective	

NOTES

(1) Schedule, consisting of 35.5 units, assumes no AP credit
(2) Course subject codes and numbers in **bold font** are typically only offered once a year—during the semester indicated.
(3) Electives are (a) 5 SS/H (see note 4, below), (b) 1 NS, (c) 2 Upper-level CEE
(4) ENRENV: Utilize a SS/H elective to satisfy the "Markets and Policy" elective; Most likely an SS course.
(5) ENRENV: Environment elective = CEE 461L; Energy Science and Technology elective = ME 461L; Additional elective course = CEE 462L.
(6) CE: E&AS elective = ME 331L
(7) Double counted courses: CEE 461L and CEE 462L.

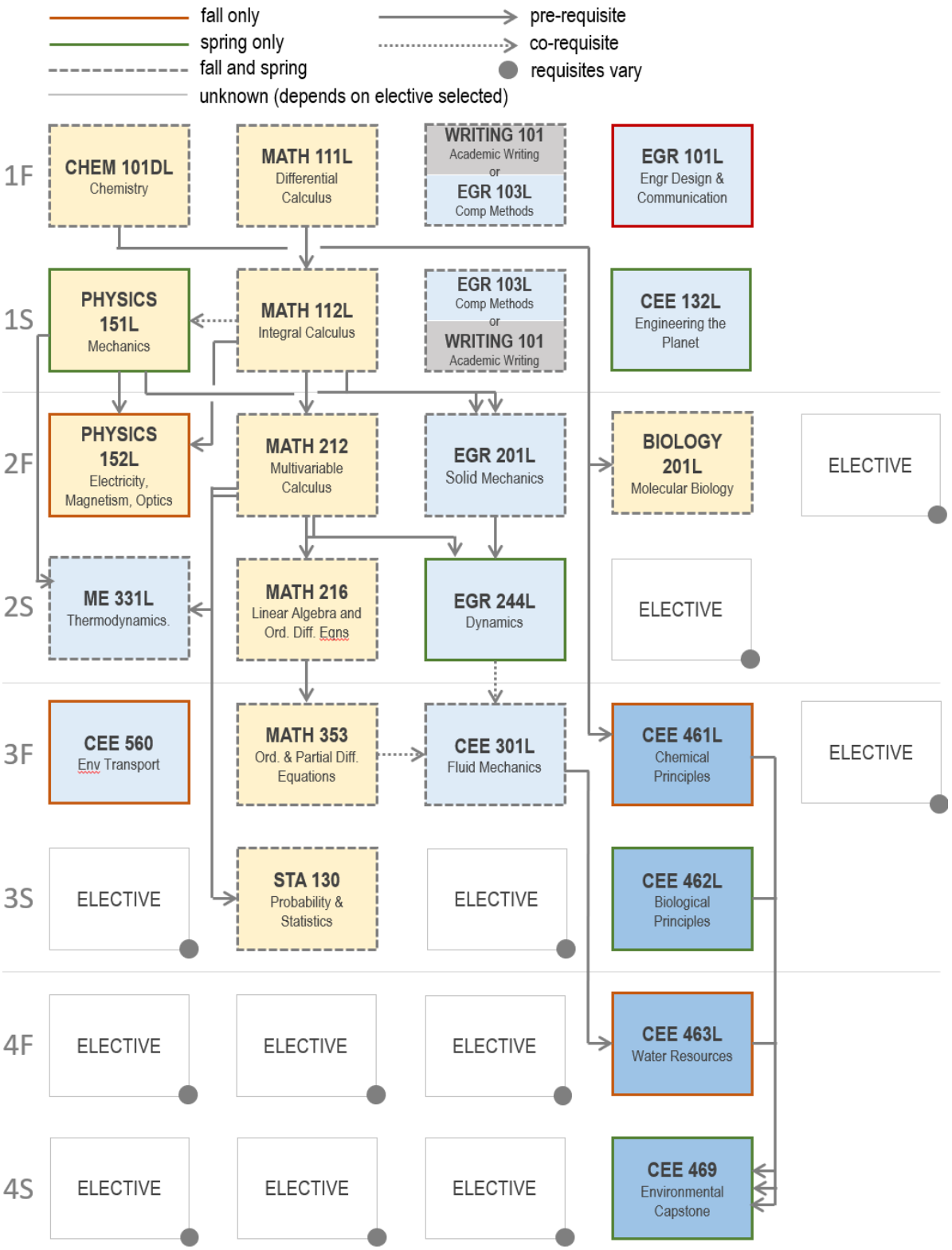
EnvE

The following sample schedules are provided:

- EnvE (Prerequisite Flowchart)
- EnvE
- EnvE + ENRENV Certificate

EnvE (Prerequisite Flowchart)

Matriculation: F18, F19, F20



EnvE

Matriculation: F18, F19, F20

Fall Semester	Spring Semester
First Year	
MATH 111L Differential Calculus	MATH 112L Integral Calculus
CHEM 101DL Core Concepts in Chemistry	**PHYSICS 151L** Mechanics
WRITING 101 or EGR 103L	EGR 103L or WRITING 101
EGR 101L, Engr Design & Communication	**CEE 132L** Engineering the Planet
Sophomore Year	
MATH 212 Multivariable Calculus	MATH 216 Linear Algebra and Differential Eqns
PHYSICS 152L Electricity, Magnetism, & Optics	**EGR 244L** Dynamics
EGR 201L Mechanics of Solids	ME 331L Thermodynamics
BIOLOGY 201L Molecular Biology	Elective
Elective	
Junior Year	
MATH 353 Ordinary and Partial Differential Eqns	**CEE 462L** Biological Principles
CEE 301L Fluid Mechanics	STA 130 Probability & Statistics
CEE 461L Chemical Principles	Elective
CEE 560 Environmental Transport Phenomena	Elective
Elective	
Senior Year	
CEE 463L Water Resources	**CEE 469** Integrated Environmental Design
Elective	Elective
Elective	Elective
Elective	Elective

NOTES

(1) Schedule, consisting of 34 units, assumes no AP credit

(2) Course subject codes and numbers in **bold font** are typically only offered once a year—during the semester indicated.

(3) Electives are (a) 5 SS/H, (b) EGR 305 or CEE 201L (c) 1 Earth Science, (d) 2 Upper-level Environmental, (e) 2 Free.

EnvE + ENRENV Certificate

Matriculation: F18, F19, F20

Fall Semester	Spring Semester
First Year	
MATH 111L Differential Calculus	MATH 112L Integral Calculus
CHEM 101DL Core Concepts in Chemistry	**PHYSICS 151L** Mechanics
WRITING 101 or EGR 103L	EGR 103L or WRITING 101
EGR 101L, Engr Design & Communication	**CEE 132L** Engineering the Planet
Sophomore Year	
MATH 212 Multivariable Calculus	MATH 216 Linear Algebra and Differential Eqns
PHYSICS 152L Electricity, Magnetism, & Optics	**EGR 244L** Dynamics
EGR 201L Mechanics of Solids	ME 331L Thermodynamics
BIOLOGY 201L Molecular Biology	Elective
ENVIRON 231 Energy and the Environment	Elective
Junior Year	
MATH 353 Ordinary and Partial Differential Eqns	**CEE 462L** Biological Principles
CEE 301L Fluid Mechanics	STA 130 Probability & Statistics
CEE 461L Chemical Principles	Elective
CEE 560 Environmental Transport Phenomena	Elective
Elective	
Senior Year	
CEE 463L Water Resources	**CEE 469** Integrated Environmental Design
ME 461 Energy Engr and the Environment	**EGR 424L** Energy & Environment Design
ENERGY 395-1 Conn in Energy [0.5 unit]	Elective
Elective	Elective
Elective	

NOTES

(1) Schedule, consisting of 35.5 units, assumes no AP credit
(2) Course subject codes and numbers in **bold font** are typically only offered once a year—during the semester indicated.
(3) Electives are (a) 5 SS/H (see note 4, below), (b) EGR 305 or CEE 201L (c) 1 Earth Science, (d) 2 Upper-level Environmental
(4) ENRENV: Utilize a SS/H elective to satisfy the "Markets and Policy" elective; Most likely an SS course.
(5) ENRENV: Environment elective = CEE 461L; Energy Science and Technology elective = ME 461L; Additional elective course = CEE 462L.
(6) Double counted courses: CEE 461L, CEE 462L.

Appendix D: Upper-Level Discipline Courses for CE Majors

These are typical courses that are utilized in these areas and for which the prerequisites are satisfied by program requirements.

Upper-Level Structural Courses

CEE 393/394	*Research Independent Study*	fall, spring
CEE 493/494	*Research Independent Study*	fall, spring
CEE 311	Architectural Engineering I	fall
CEE 421L	Matrix Structural Analysis	fall
CEE 423L	Metallic Structures	fall
CEE 511	Construction Management	even falls (e.g., Fall 2024)
CEE 530	Introduction to the Finite Element Method	fall
CEE 551	Risk and Resilience Engineering	spring
CEE 315-20	Engr. Sustainable Design and the Global Comm.: Structural Focus	spring
CEE 411	Architectural Engineering II	spring
CEE 422L	Concrete and Composite Structures	spring
CEE 520	Continuum Mechanics	occasionally
CEE 525	Wave Propagation in Elastic and Poroelastic Media	occasionally
CEE 541	Structural Dynamics	occasionally

Upper-Level Environmental Courses

CEE 393/394	*Research Independent Study*	fall, spring
CEE 493/494	*Research Independent Study*	fall, spring
CEE 461L	Environmental Aquatic Chemistry	fall
CEE 463L	Water Resources Engineering	fall
CEE 506	Environmental Spatial Data Analysis	fall
CEE 566	Environmental Microbiology	fall
CEE 683	Groundwater Hydrology and Contaminant Transport	fall
CEE 315-60	Engr. Sustainable Design and the Global Comm.: Environmental Focus	spring
CEE 462L	Biological Principles in Environmental Engineering	spring
CEE 551	Risk and Resilience Engineering	spring
CEE 560	Environmental Transport Phenomena	spring
CEE 564	Physical Chemical Processes in Environmental Engineering	spring
CEE 661L	Environmental Molecular Biotechnology	spring
CEE 666	Aquatic Geochemistry	spring
CEE 575	Air Pollution Engineering	occasionally
CEE 688	Turbulence 1	occasionally

Appendix E: Helpful Links

Bulletin of Undergraduate Instruction
https://registrar.bulletins.duke.edu/

Duke Community Standard
https://students.duke.edu/get-assistance/community-standard/

Pratt Policies and Procedures
https://pratt.duke.edu/life/resources/policies/#policies

Pratt's Declaration of Major Form
https://pratt.duke.edu/life/resources/policies/#policies (see "Declaring a Major,...)

Registrar's Office
https://registrar.duke.edu/

Academic Calendars
https://registrar.duke.edu/about-academic-calendar/

Duke's Interinstitutional Registration Program
https://registrar.duke.edu/registration/special-registrations

Global Education Office
https://globaled.duke.edu/

Global Education's Approved Course Database
https://courses.globaled.duke.edu/

Career Hub
https://careerhub.students.duke.edu/

DukeReach
https://students.duke.edu/wellness/dukereach/

CEE's Independent Study Approval Form
http://cee.duke.edu/sites/cee.duke.edu/files/IndStudyForm_updated2017.doc