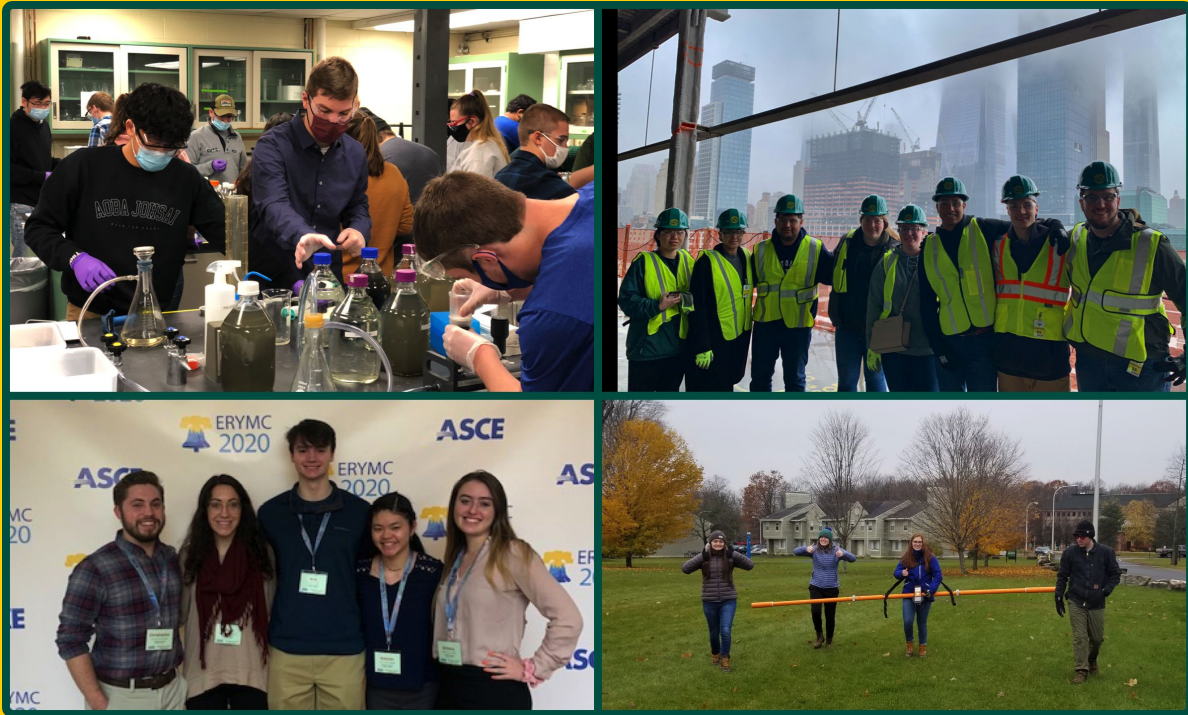


# Clarkson

## Department of Civil & Environmental Engineering Undergraduate Student Handbook Class of 2026



## Mission of the Department of Civil and Environmental Engineering

The mission of the Civil and Environmental Engineering Department is to educate talented and motivated people to become successful professionals through quality undergraduate, graduate, and professional continuing education programs that place a high priority on student access and interaction with faculty.

### *Objectives and Outcomes to Support the Department Mission*

Objective 1: Graduates will become civil (environmental) engineering professionals who apply knowledge to meet the challenges of their field.

Outcomes to Ensure Achievement of Objective:

Civil Engineering	Environmental Engineering
1a) Students will have the ability to identify, formulate, and solve complex engineering problems through application of the principles of mathematics (including differential equations), calculus-based physics, chemistry, geospatial representation, applied statistics, and principles of civil engineering.	1a) Students will have the ability to apply knowledge of mathematics through differential equations, probability and statistics, calculus-based physics, chemistry (including stoichiometry, equilibrium, and kinetics), earth science, biological science, and fluid mechanics, formulate material and energy balances, and analyze the fate and transport of substances in and between air, water, and soil phases.
1b) Students will be experienced in, and have the ability to develop and conduct appropriate experimentation, including laboratory experimentation, to measure multiple phenomena, analyze and interpret data, and use engineering judgment to draw conclusions.	
1c) Students will have the ability to apply engineering design to produce solutions that meet specified needs for the public good. <sup>1</sup>	
1d) Students will have the ability to apply appropriate learning strategies and modern engineering tools, to identify, formulate, and design solutions for complex engineering problems.	
1e) Students will have basic proficiency in at least four of the recognized civil focus areas.	1e) Students will have basic proficiency in more than one environmental engineering focus area (e.g., air, water, land, or environmental health).
1f) Students will have an ability to think creatively, consider risks, make trade-offs, and use informed judgment for the public good while functioning as an individual or on a team to solve complex engineering problems and produce engineering designs.	

<sup>1</sup> where the "public good" is defined through consideration of public health, safety, and welfare, as well as global, national, cultural, social, civil, and economic factors.

Objective 2: Graduates will become civil (environmental) engineering professionals who exhibit effective communication, teamwork, and leadership.

Outcomes to Ensure Achievement of Objective:

2a) Students will have the ability to organize effective and concise engineering reports and memos for a range of audiences.

2b) Students will have the ability to organize and deliver engineering work in formal oral presentations to a range of audiences.

2c) Students will have the ability to function effectively on diverse, multi-disciplinary teams, whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives towards engineering design solutions that meet specified needs with consideration of the public good.

Objective 3: Graduates will become well-rounded citizens who utilize their education to serve the public good, with an understanding of their professional and ethical responsibilities.<sup>2</sup>

Outcomes to Ensure Achievement of Objective:

3a) Students will have the ability to recognize and practice ethical, professional, and environmental responsibility in engineering problem solving, evaluation, and design based upon knowledge of the humanities and exposure to, and understanding of, environmental quality as well as the NSPE Code of Ethics for Professional Engineers.

3b) Students will have the ability to understand the impact of engineering solutions on and make informed judgments that consider the public good.

Objective 4: Graduates will become civil (environmental) engineering professionals who exhibit intellectual growth, continued innovation, and a commitment to lifelong learning.

Outcomes to Ensure Achievement of Objective:

4a) Students will have an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

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<sup>2</sup> Ibid.

## Table of Contents

Mission of the Department of Civil and Environmental Engineering	2
Objectives and Outcomes to Support the Department Mission	2
Table of Contents	4
Welcome from the Chair	7
Orientation to the Civil and Environmental Engineering Department at Clarkson University	7
Being a Student at Clarkson and the CEE Department	8
Self-reliance	8
Professionalism	8
Code of Ethics	8
Advisors and Advising	9
Advisor - Student Relationship	9
What is the Advisor's Responsibility?	9
What is the Student's Responsibility?	9
<b>Rules, Regulations, and Important Information for all CEE Students</b>	<b>10</b>
Clarkson Catalog	10
University Regulations	10
Courses and Course Descriptions	10
Minors and Concentrations	10
Fundamentals of Engineering and Professional Engineering Exam	10
<b>Civil and Environmental Engineering Undergraduate Core Curricula</b>	<b>11</b>
Introduction	11
Curricular Objectives and Requirements - Civil Engineering and Environmental Engineering Majors	11
Bachelor of Science in Civil Engineering Curriculum	11
Bachelor of Science in Environmental Engineering Curriculum	12
Clarkson Common Experience Curriculum (CCEC)	12
Written and Oral Communications in the Curriculum	12
Exceptions to Required Courses	13
Professional Electives	13
Design Credits from Required Courses and Professional Electives	13
Capstone Design Experience (Senior Design)	14
MP (Multidisciplinary Project) Courses	14
ROTC or AFROTC Professional Electives	14
Pass/No Credit Courses	15
Professional Experience	15
Completing the Paperwork	16
Handshake	16
ES499 Enrollment	16

Civil and Environmental Engineering Transfer Students	17
Curriculum Requirements	17
Course Evaluations	17
Clarkson Common Curriculum (KA/UC)	17
KA/UC Course Options	17
Economics Requirement	17
Coulter School of Engineering Requirements	18
ES100 Introduction to the Engineering Use of the Computer	18
ES110 Engineering and Society	18
Professional Experience	18
Department of Civil & Environmental Engineering Requirements	18
CE212 Introduction to Engineering Design	18
Advisement and Coordination	19
Minors and Professional Concentrations for CEE Majors	20
Professional Concentration in Construction Engineering Management	21
Professional Concentration in Structural Engineering	22
Professional Concentration in Water Resources Engineering	23
Minor in Architectural and Facilities Engineering	24
Minor in Environmental Engineering	26
<b>Curricular Opportunities and Information for CEE Majors</b>	<b>28</b>
Adirondack Semester	28
Double Majors	28
Dual Degree	28
Second Degree	29
Undergraduate Students in Graduate Courses	29
Engineering MBA-MS 4 + 1 Program	29
Other Curricular Matters	30
Student Academic Records	30
Changing Majors	30
Non-Transfer Student, Transfer Credit	30
Advanced Placement Credit	30
Cross-Registration within the Associated Colleges of the St. Lawrence Valley	30
Off-Campus Course Permission	30
Special Interests	31
Research Experience for Undergraduates (REU) Programs	31
Commencement	31
Graduate School	31
Cooperative Education Program	31
Semester Abroad	31
Summer Employment (Internships)	32

CEE Department Co-Curricular and Extra-Curricular Activities	<b>33</b>
Societies and Activities	33
Professional Societies in CEE	33
Honor Societies	33
CEE Department Student Awards	34
Civil and Environmental Engineering SPEED Teams	34
Construction Engineering and Management Team	34
Concrete Canoe Team	35
Steel Bridge Team	35
Timber Bridge Team	35
Other Extracurricular Activities	35
Phalanx: Clarkson's Highest Honor Society	35
 Clarkson University Support Services	 <b>36</b>
English as a Second Language Test	36
Career Center	36
Student Achievement Services (SAS)	36
Student Success Center	36
Accessibility Services	36
The Student Health and Counseling Center (SHAC)	36
International Student Advising	36
The Writing Center	37
 Appendices	 <b>38</b>
Appendix A: Faculty of the Department of Civil and Environmental Engineering	39
Appendix B: Listing of Clarkson Internet/Intranet Sites Referenced in Handbook	42
Appendix C: Civil Engineering Curriculum Worksheet (Class of 2025 and after)	43
Appendix D: Civil Engineering Curriculum Worksheet (Class of 2021-2024)	44
Appendix E: Environmental Engineering Curriculum Worksheet (Class of 2025 and after)	45
Appendix F: Environmental Engineering Curriculum Worksheet (Class of 2021-2024)	46
Appendix G: Double Major Civil & Environmental Engineering Curriculum Worksheet (Class of 2025 and after)	47
Appendix H: Double Major Civil & Environmental Engineering Curriculum Worksheet (Class of 2021-2024)	48
Appendix I: Civil Engineering Curriculum Flowchart	49
Appendix J: Environmental Engineering Curriculum Flowchart	50
Appendix K: Civil & Environmental Engineering Hosted Minors	51
Appendix L: Professional Elective Approval Form	52
Appendix M: Design Credits Course Listing	53

## Welcome from the Chair

I am pleased to welcome you to the Department of Civil and Environmental Engineering (CEE) at Clarkson (<https://www.clarkson.edu/cee>). The Department of Civil and Environmental Engineering focuses on providing students with hands-on research experiences that help transform our understanding of and interaction with the natural and built environments.

As you read this handbook, I encourage you to consider the possibilities offered by the Civil Engineering (CivE) and Environmental Engineering (EnvE) curricula. The CivE major generally encompasses many different specialty areas, including architectural and facilities, construction, environmental, geotechnical, structural, transportation, and water resources engineering. The EnvE major focuses on environmental engineering through an exploration of specialty areas in air, water, and wastewater.

Being a student in the Civil and Environmental Engineering department at Clarkson is about more than just attending classes to satisfy a curriculum. A large number of CEE students choose to participate in one or more of several design competitions during their time at Clarkson. I encourage you to get involved in any of the SPEED teams (including Concrete Canoe, Steel Bridge, Timber Bridge, Construction Management, Engineers for International Sustainability) to work collaboratively to analyze a problem and design/build a solution. Many of the design teams travel to a regional or even national site for their competitions. It can be hard work, but it is always a lot of fun, too!

CEE faculty members also serve as mentors to undergraduate research assistants during the academic year and/or summer months. A program currently funded by the National Science Foundation provides special opportunities for undergraduate students from Clarkson and other universities to gain experience in research that is relevant to Civil and Environmental Engineering. Much more information about these opportunities and how you can become involved may be found at <https://www.nsf.gov/crssprgm/reu>.

Finally, I encourage you to contact me directly with any comments or questions while you are a student in the Department of Civil and Environmental Engineering at Clarkson. My telephone is 315-268-7741 (on campus x7741) and my email address is [swojtkie@clarkson.edu](mailto:swojtkie@clarkson.edu) and my office is located in Rowley 140. I'd be pleased to hear from you anytime.

Sincerely yours,



Steven Wojtkiewicz  
Professor and Chair  
Department of Civil and Environmental Engineering

## Orientation to the Civil and Environmental Engineering Department at Clarkson University

### *Being a Student at Clarkson and the CEE Department*

You may have already heard from friends, family members, or guidance counselors that you will experience a different form of education when you enter college; it is not like high school. That does not imply that you should be apprehensive about college, but it does imply that you should keep your eyes open to the new environment and learn to adjust.

#### Self-reliance

During the next four years you should find yourself gaining more self-reliance. However, self-reliance does not mean you have to do everything yourself; it does mean that you ask for help when you need it and stand on your own two feet when you do not. Developing self-reliance should be one of your goals in college.

#### Professionalism

One adjustment to college is to think of yourself as a student-professional. Like any professional position, there are certain expectations that you must fulfill. The best way to meet these expectations is to keep on ahead of things. Attend classes, participate in the discussions, practice the assigned problems, and push yourself to do your best. Make the best of every opportunity presented to you. You are building the foundation for your professional career; build a strong one.

The professors may not always cover everything you need to know in class, so study beyond the lecture. You will find that the professors are more like guides, and you will have to take a more active role in your education than you had to in high school. This is to prepare you for the professional world where there are no obvious teachers.

For you to become successful once you enter the workforce, you need to achieve a basic level of competence in many areas. Many courses build upon other courses to achieve this basic level. While you may feel some courses tax your abilities, the faculty are striving to give you the best opportunities for your careers.

Near the end of each semester, you will be asked to complete an online evaluation for each course and instructor. Your constructive comments regarding the course and the professor are taken seriously. In addition to your evaluations, there is a regular peer review of untenured faculty in our department. The review consists of evaluations by other faculty members who observe a class and meet with students to discuss the teaching abilities of the faculty members under review. Reports from these reviews are used as a basis to improve teaching performance.

#### Code of Ethics

Clarkson values personal integrity. Matriculation at Clarkson carries with it the obligation that a student will not claim as their own the work of another or any work that has not been honestly performed, will not take any examination by improper means, and will not aid and abet another in any dishonesty.

Violations of the Code of Ethics are regarded as most serious offenses and render the offenders liable to severe disciplinary action. Alleged violations of the Code of Ethics are dealt with according to the section on the Academic Integrity Committee found in the "Clarkson Undergraduate Regulations", online at <https://www.clarkson.edu/student-achievement-services-sas/clarkson-regulations>. The Code of Ethics of the American Society of Civil Engineers may be found at <https://www.asce.org/career-growth/ethics/code-of-ethics>.



## *Advisors and Advising*

Each student is assigned a faculty member of the CEE Department to serve as their academic advisor. You may wish to change your advisor (e.g., to align with your areas of interest, etc.). To make a change, go to the CEE Department Office in Rowley 140 and make an appointment with the CEE Department Chair or Executive Officer. Changing an advisor is not difficult; however, the department would like to be aware of any potential conflicts or problems that may have occurred.

### Advisor - Student Relationship

You are required to meet with your advisor once per semester, ahead of course enrollment. However, meeting with your advisor more frequently will help you to develop a more meaningful relationship with them. This will make the advising process simpler, more effective, and more productive. Please contact your advisor to make an appointment to discuss your questions or concerns.

### What is the Advisor's Responsibility?

The advisor is there to help you (e.g., with career advice, in choosing courses, etc.). Each advisor will meet with each advisee during course selection week. The advisor will typically schedule appointments with you during the advising period through an online scheduling tool (typically, Google Calendar). The advisor prepares for these meetings by knowing the curriculum well (e.g., substitute courses, course options available, courses related to a certain area of interest, etc.). After discussing your curriculum, the advisor will electronically acknowledge that the advising meeting has taken place, authorizing you to self-enroll in the selected courses.

### What is the Student's Responsibility?

**The student, not the advisor, is responsible for meeting Clarkson's graduation requirements.** Therefore, begin to plan your Clarkson career now, so you can enter the course selection meetings with your choices for classes pre-identified. Start a dialog with your advisor as soon as you have questions or concerns, so any issues can be addressed promptly - you do not have to wait for course selection week. Course selection for the fall term is held in March and for the spring term in October. Consult the CEE curriculum sheet relevant to your graduation year (located in the appendices).

## Rules, Regulations, and Important Information for all CEE Students

### *Clarkson Catalog*

The University Catalog is the "rule book" for your curriculum and the "contract" between you and the university with respect to your degree requirements. The Catalog that is applicable to you is the one that is in place during the academic year at the time of your entry at Clarkson as an Undergraduate student. This document is available on line at <https://www.clarkson.edu/clarkson-catalog>.

### *University Regulations*

The regulations that you are expected to follow are in a publication of the College Regulations that you received electronically upon entering the University. Additional copies may be obtained from the Dean of Students Office, Price Hall or online at <https://www.clarkson.edu/student-achievement-services-sas/clarkson-regulations>.

### *Courses and Course Descriptions*

The most current listing of courses offered at Clarkson can be found online at <https://intranet.clarkson.edu/student-life/sas/classes-schedules>.

### *Minors and Concentrations*

Students may register across schools to obtain a minor or concentration. Interested students should consult with their academic advisors regarding requirements. A list of minors and concentrations available can be found online (<https://www.clarkson.edu/academics/undergraduate-programs>).

### *Fundamentals of Engineering and Professional Engineering Exam*

Professional registration is a very important step for many who wish to pursue a career in the field of Civil and Environmental Engineering. To obtain registration as a Professional Engineer (PE), you must successfully complete a two-part examination procedure. The first part, called the Fundamentals of Engineering (FE) Examination, is typically taken in the Spring of the senior year. The second part, called the Professional Engineering (PE) Exam, is taken after completing at least four years of work experience satisfactory to the State Licensing Board.

The FE exam is administered by computer and is offered on campus each spring (in the months of April through early May). To help you prepare for the exam, Clarkson offers weekly review sessions over the months prior to the exam (CE499 is a 0 credit hour course you can take your senior year for this purpose). **You must be within 20 credit hours of completing your graduation requirements before you will be permitted to attempt the exam.** Registration for the FE Exam occurs at least 6 months in advance (typically in October/November for the April/May exam) through the National Council of Examiners for Engineering and Surveying (NCEES); If you have any further questions, please go to the following link

<https://intranet.clarkson.edu/academic/school-of-engineering/fundamentals-of-engineering-examination-f-e>.

## Civil and Environmental Engineering Undergraduate Core Curricula

### *Introduction*

Included in this section are the CEE curricular objectives and the requirements for degree completion as well as notes related to those particular degree programs, including information concerning elective options, professional concentrations, and the Clarkson Common Experience Curriculum. Additional information about other curricular options beyond the Civil Engineering (CivE) and/or Environmental Engineering (EnvE) majors such as dual degrees, a second degree, and double majors are also discussed in this section.

### *Curricular Objectives and Requirements - Civil Engineering and Environmental Engineering Majors*

A common objective of both the Civil Engineering (CivE) and Environmental Engineering (EnvE) undergraduate programs is to provide graduates with engineering knowledge that can meet the challenges of a successful professional career. Fundamental science and engineering science courses form the majority of both the CivE and also the EnvE curricula in the first two years. These courses provide the base for the major-oriented courses in the junior and senior years.

The graduation requirements of the Civil and Environmental Engineering Department are shown, by semester, on the curriculum sheets (see the appendices). In order to graduate, the student must have passed a minimum of **120 credit hours of appropriate coursework and have a minimum cumulative total grade point average of 2.000 and a 2.000 GPA in courses with a CE designator**. Courses cannot, in general, be taken on Pass/No Credit basis to satisfy graduation requirements (see exceptions in subsequent section on Pass/No Credit Courses). Upon graduation, you will receive a Bachelor of Science degree. The Department of Civil and Environmental Engineering is registered with the NY State Education Department as having a program in Civil Engineering and a program in Environmental Engineering. The Department's CivE and EnvE programs are accredited by The Accreditation Board for Engineering and Technology (ABET). Graduation from the accredited CivE and EnvE programs enables you to take the Fundamentals of Engineering (FE) and Professional Engineering (PE) examinations, leading to a license to practice engineering, which is critical for your career in Civil or Environmental Engineering.

### *Bachelor of Science in Civil Engineering Curriculum*

Civil engineering is the oldest and most diverse field of engineering with numerous specialty areas including construction, environmental, geotechnical, structural, transportation, and water resources. Civil engineers design and build public infrastructure projects - airports, bridges, buildings, canals, dams, landfills, levees, pipelines, roads, sewers, subways, tunnels, and water supply systems.

The Civil Engineering curriculum is designed to provide all graduates with a theoretical foundation as well as design experience in the areas of geotechnical, structural, water resources, and environmental engineering. This foundation is typically achieved in the junior year and enables students to use the senior year to select elective courses in areas where their particular interests have developed. In the senior year, a capstone design course culminates in the development of design skills that were first introduced in the first semester of the sophomore year.

Through the selection of professional electives, students can take additional courses in the required areas of civil engineering and/or take courses that are not covered by the required courses, such as architectural and facilities or transportation engineering. The CivE curriculum provides for seven (7) professional electives (see section "Professional Electives" for more details). These elective courses enable students to create programs of study unique to each individual's interests, as well as provide both depth and breadth in the student's preparation for professional practice. No single approach is recommended for the selection of professional electives, rather the student (and faculty advisor) should create a program of study that best satisfies their career objectives.

## ***Bachelor of Science in Environmental Engineering Curriculum***

Environmental engineering is a specialized discipline that grew out of civil engineering. Today, environmental engineers provide the knowledge, leadership, and guidance needed to improve the quality and insure the sustainability of our natural world – from the water we drink, to the air we breathe, to the soil that produces our life-sustaining vegetation. Environmental engineers play a major –and increasingly proactive – role in prevention and control of pollution of all kinds and in efforts to deal with global warming.

The EnvE Curriculum is designed for a career in environmental research, system modeling, or process design. All EnvE majors are provided with a theoretical foundation, as well as design experience in the area of water resources, environmental quality, systems, hazards, and treatment processes. This foundation is typically achieved in the junior year and enables students to use the senior year to select elective courses in areas where their particular interests have developed. In the senior year, a capstone design course culminates in the development of design skills.

The EnvE curriculum also provides for six (6) professional electives and three (3) core professional electives. These elective courses enable students to create programs of study unique to each individual, as well as provide both depth and breadth in the student's preparation for professional practice. Courses acceptable as professional electives are listed in the section "Professional Electives". No single approach is recommended for the selection of professional electives, rather the student (and faculty advisor) should create a program of study that best satisfies their career objectives.

### ***Clarkson Common Experience Curriculum (CCEC)***

Each student must complete six (6) courses (18 hours) with a knowledge area (KA) designator . The six knowledge areas are cultures and societies (CSO), contemporary global issues (CGI), economic concepts (EC), imaginative arts (IA), individual and group behavior (IG), and science, technology, and society (STS). A list of courses with KA attributes can be found at <https://intranet.clarkson.edu/academic/common-experience/ce-knowledge-area-communication-point-and-technology-courses>.

Three (3) of these courses are required by the CivE/EnvE degree programs, including UNIV190 Clarkson Seminar, ES110 Engineering & Society (STS), and EC350 Economic Principles and Engineering Economics (EC). Of the three additional courses required to satisfy the Common Experience Curriculum, one must be an "University Course" (defined as any course with two KA designators). Additionally, across all six courses, at least four of the six Knowledge Areas must be covered.

Neither EC150 Microeconomics nor EC151 Macroeconomics should be taken as a KA elective by CivE or EnvE majors as it duplicates most of the material covered in EC350 Economic Principles/Engineering Economics. Students who have transfer credit for EC150, EC151, or a similar introductory course (e.g., by changing majors to CivE or EnvE or transferring from another institution), may satisfy the EC350 graduation requirement by taking EC200 (a one-credit course) to complete their education in Economic Principles and the Engineering Economics portion of EC350 (typically the last one-third of the semester). For more information please contact the CEE Executive Officer in Rowley 140A or by email at [cee@clarkson.edu](mailto:cee@clarkson.edu).

### ***Written and Oral Communications in the Curriculum***

In addition to the knowledge area requirements, the Clarkson Common Experience curriculum requires a minimum of six (6) communication points to be accumulated before graduation. Several of the Civil and Environmental Engineering courses integrate written and oral communication as a part of the teaching process. Fulfilling the CivE degree program requirements (ES110, CE212, CE310, CE320, CE330, CE490/1) or the EnvE degree program requirements (ES110, CE212, CE330, CE380, CE479, CE491) results in the required six communication points. Students with transfer credits or substitutions for the required courses may need to obtain additional communication points from knowledge area electives

to complete the minimum six communication points before graduation. Use of the Writing Center (<https://www.clarkson.edu/writing-center>) is strongly encouraged to improve written communications.

### *Exceptions to Required Courses*

The Academic Standards Committee has granted the following blanket exceptions for required courses:

- |                             |  |
|-----------------------------|--|
| a. Replace ES223 with EE324 | e. Replace CE301 with SC301                  |
| b. Replace ES340 with CH271 | f. Replace CH220 with CE380 (and vice versa) |
| c. Replace ES100 with CS141 | g. Replace CM241 with CM221                  |
| d. Replace CH210 with CM371 | h. Replace CH480 with CH220                  |

### *Professional Electives*

Professional elective courses enable a student to create a program of study that satisfies their particular interests. These courses are also intended to provide both depth and breadth in the student's preparation for professional practice. Acceptable Professional Elective courses must be 3 credit hours each and include:

- (a) Any ES 2xx course.
- (b) Any three (3) credit (or greater) 3xx, 4xx, or 5xx course with a designator held within the Coulter School of Engineering, the Institute for a Sustainable Environment, the Honors Program (must complete the Honors Program), and/or the Departments of Mathematics, Physics, Biology, Chemistry, and Computer Science.
- (c) Select lower division courses from the above departments as indicated in this list or as indicated by the Department Chair: BY222/224, CM221, CM223, CM241, CM242, CS141, EE261, MA200, MA211, PH230.
- (d) Any course that is distinctly named as required, without option, in either the Bachelor of Science in Civil or Environmental Engineering, as well as any similarly named course (optional or required) in any minor or professional concentration hosted in the CEE department.
- (e) A maximum of any three (3), three (3) credit hour (or greater) courses from the Reh School of Business.
- (f) Any one, three (3) credit (or greater) COMM course with communication points (C1 or C2).
- (g) Any one, three (3) credit (or greater), MP 3xx or 4xx course or a total of three (3) credits from the list of courses that are determined to be credit-bearing MP courses.
- (h) Any two 4xx courses from one of the ROTC programs, for a maximum total of six (6) credit hours, if the student completes the ROTC program.
- (i) Any 4xx or higher Political Science course.
- (j) Any ES 2 (4, 6, ...) or CE 2 (4, 6, ...) course as designated during the transfer evaluation process.

Any other course can be considered on a case-by-case basis with Department Chair approval. The "Professional Elective Approval Form" (in the appendices) needs to be processed and filed in the student's departmental file, as well as with SAS with a Request for Exception form to document that the student has satisfied the graduation requirements. An accompanying justification statement, explaining the reasons why the course that is not listed as a normally acceptable professional elective is required to satisfy specific career objectives, is also needed.

### *Design Credits from Required Courses and Professional Electives*

The CEE department requires that a total of 16.5 credit hours of design be taken through the CivE or EnvE curricula. For the CivE degree, through required courses (CE212; CE305; CE310; CE320; CE330; CE340; CE441 or CE442; and CE490 or CE491) you will have accumulated 12.5 design credits. Therefore, CivE majors will need to obtain the remaining 4 design credits from the professional elective courses (see special notes section). For the EnvE degree, through required courses (CE212; CE330; CE340; CE380; CE479; and CE491) you will have accumulated 10.5 design credits. Therefore, EnvE majors will need to obtain the remaining 6 design credits from the Core Professional Courses and Professional Electives. Students

with substitutions for the above listed, required courses may have differing numbers of design credits. A list of courses that carry design credits is provided in Appendix M.

### *Capstone Design Experience (Senior Design)*

All CEE majors must complete a capstone design experience, typically during their last Spring semester in their program. The two courses typically taken are CE490 (CivE) and CE491 (EnvE), with water resources focused students taking one or the other, so long as it has the requisite water resources related content. The capstone/senior design experience is one in which students execute a multi-disciplinary project, as a team based on their previous coursework, often for actual/"real world" customers that are depending on the deliverables for the success of their endeavor. During the Fall semester, prior to the enrollment period, the CEE department will announce the particular projects that will be executed during the following Spring semester such that students can select the appropriate course and/or section of CE490/1 that they desire.

**For those that end up with an expected graduation in August or December, it is critical that you plan to take your capstone course in the Spring prior to that final semester.** Students, on a case-by-case and well-justified basis, may elect to take capstone/senior design courses that are in other departments or in combination with those offered by other departments. Such alternatives must meet the full requirements of the CEE department course offerings as well as be evaluated and approved by the CEE department prior to enrollment.

### *MP (Multidisciplinary Project) Courses*

In order for a MP course to be considered as a Professional Elective, the course instructor must present justification to the CEE Undergraduate Committee. Course justification should demonstrate the content and its relation to the applicable degree program (CivE or EnvE) and confirm students will be evaluated by letter grade. The Undergraduate Committee decision is effective for three (3) years. After three years, the justification would need to be updated and the Undergraduate Committee would revisit eligibility as a Professional Elective. MP courses that are not approved can only be taken as Pass/No Credit and cannot be used to satisfy professional elective requirements.

In order to be considered equivalent to a Senior/Capstone Design course, the instructor must show that the course contains application of math and science, that it includes experiments and data interpretation, that it includes design, incorporates teamwork, identifies, formulates and solves an engineering problem, includes ethical and professional responsibility, etc. and the course addresses the applicable ABET criteria as contained in CE490 or CE491. Those wishing to consider taking an alternate senior/capstone course should coordinate this with the Department Executive Officer who can provide the needed information about the ABET criteria.

In case of questions regarding the appropriateness of a course as a professional elective, you should contact your advisor, or, alternatively, the CEE Department Executive Officer in Rowley 140A or by email at [cee@clarkson.edu](mailto:cee@clarkson.edu).

### *ROTC or AFROTC Professional Electives*

Students who complete the Army or Air Force advanced ROTC program may use, at their option, any two 4xx courses with the designator MS or AS for a maximum total of six (6) credit hours (provided the student completes the ROTC program). Participants in Army or Air Force ROTC Programs may wish to discuss how best to coordinate their studies with their military requirements with CEE Professor Backus, a graduate of Clarkson CEE, Clarkson Army ROTC, and a retired US Army Lieutenant Colonel.

## *Pass/No Credit Courses*

In general, courses taken by CEE students to satisfy graduation requirements may not be taken on a pass/no credit basis, including MS or AS courses (Army and Air Force ROTC). Three exceptions to this rule exist:

1. Zero credit courses used to track degree requirements (e.g., FY100 and ES499).
2. Honors Thesis (HP390/HP490) work normally is graded Pass/No Credit, and up to six (6) credits earned for Honors Thesis are eligible to be counted in the CEE curriculum as Professional Electives if the student successfully defends the thesis.
3. Those students taking the Pass/No Credit option during the Spring 2020 semester as a result of the university policy in reaction to the sudden change to online learning during the COVID-19 pandemic.

## *Professional Experience*

All students must participate in a project-based professional experience such as co-op, internship, directed research, or community project clearly related to the student's professional goals. ES499 Professional Experience for Engineering Majors, a 0 credit pass/no entry course, is used to matriculate the Professional Experience requirement. Students will typically enroll in ES499 during the junior or senior years. There are three ways you may complete this requirement<sup>3</sup>:

1. Execute a research endeavor with a faculty member that spans at least a semester or a summer (not for credit),
2. Execute an internship or co-op experience, or
3. Be a leader of a SPEED Team.

Leadership in a SPEED team means that you are an officer or captain of the SPEED team, not merely a member of the team. Research experiences may span more than a summer or semester, however, for it to count towards this requirement, it cannot also be taken as part of a course (e.g., CE495/496, ES443/444, HP390/490, etc.). Thus, for at least one summer/semester, research has to be conducted without course credit to count as your professional experience.

Internship and co-op experiences must provide a professional experience that relates to the practice of engineering. The specifics of the experiences that are permitted vary widely and generally seek to advance, in a practical and professional manner, your studies in your major. Certain activities, such as jobs in retail sales or food service, do not meet this intent. Internship and co-op experiences should generally be paid or unpaid full-time efforts (meaning a typical 40 hour work week) lasting at least 8 to 12 weeks in duration (note, in New York State, engineering related internships are required by law to be paid positions). Normally this is a contiguous experience, not split into shorter duration experiences.

For ROTC Cadets, required evaluation camps (e.g., Basic or Advanced Camp at Fort Knox, KY for Army ROTC and Field Training at Maxwell AFB, AL for Air Force ROTC) DO NOT count as professional experiences. However, your professional experience may include training and other experiences beyond your required evaluation camp (e.g., CULP, CTLT, LEDx, SOAR, etc.). ROTC Cadets should ensure they consider fulfilling their Professional Experience requirement during the other summers that are not required to attend their evaluation camp in the event that they do not qualify for follow-on training.

Prior to you participating in an internship or co-op experience, it is highly advantageous to have it approved through Handshake (see below). Questions on this should be addressed directly to the CEE Executive Officer who is the approval authority for the professional experience requirement and can adjudicate any exceptions or special circumstances on a case-by-case basis.

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<sup>3</sup> Please note that for some concentrations or minors, this list is narrowed to one or two choices, please check with the program director or your advisor to ensure you know those requirements.

## Completing the Paperwork

### *1. Handshake*

Reporting and approval of the professional experience is done through Handshake, following the steps below.

- a. Log in to Handshake (<https://clarkson.joinhandshake.com>) using your Clarkson credentials (single sign-on) that you would use for myCU or Moodle.
- b. Click "Career Center" in the top right corner, then "Experiences."
- c. Then, still in the top right corner, select "Request an Experience."
- d. Fill out the form completely.
- e. The CEE Executive Officer will receive the form to approve afterwards.

After submitting, you will receive an email confirming your submission and outlining the next steps.

Co-op Students Only: Your paperwork should include an Academic Plan form (located under the Career Center, Resources section, located at the bottom center of the page), which is completed through a meeting with your advisor. If you do not have all of this right away, you can always fill out as much information as possible, "save as draft", and then complete the paperwork at a later date. Your academic plan should be completed either prior to your going on co-op or, at the latest, just as you start your semester on co-op.

In regard to acceptance letters for internship or co-op experiences, an email is sufficient for this part of the requirement. Also, your internship or co-op experience should in some manner relate to the practice of Civil or Environmental Engineering. If you have questions about if that is the case, please contact your advisor or the Department office to ensure your experience will be acceptable.

### *2. ES499 Enrollment*

Once you have submitted the above, received departmental approval, and completed your experience, you must enroll in ES499, Section 2. To do this you will need to fill out the electronic Add/Drop Form on myCU to have ES499-02 added to your transcript. At the end of the semester, the Department Executive Officer will validate you have completed the requirement and give you a pass for this course. Failure to complete ES499 will prevent you from graduating, so make sure you get it completed well before your final semester.



## Civil and Environmental Engineering Transfer Students

### *Curriculum Requirements*

Transfer students must fulfill the same requirements as any other student in the Civil or Environmental Engineering programs. However, there are some unique factors that are involved for students that began their collegiate work at another institution. This section is intended to address those unique characteristics and may often supersede other information contained elsewhere in this handbook.

### Course Evaluations

Each transfer student to the University will receive a unique evaluation of their prior coursework at the post-secondary level. The Department Executive Officer or a senior faculty member in the CivE or EnvE programs that has strong familiarity with the program curricula will conduct these evaluations. Because each evaluation is unique, there are often differences between individual evaluations, even if they originate from the same source program.

Critical to evaluations for either the CivE or EnvE curriculum, is that the science and engineering science courses taken at the junior college level (or that are desired to be transferred in), must be calculus based. This is because Clarkson's degrees are accredited by ABET as Engineering programs (as opposed to Engineering Technology programs), requiring calculus based science and engineering courses. Those seeking to transfer into either program are highly advised to ensure they are in a calculus-based science curriculum.

### Clarkson Common Curriculum (KA/UC)

#### *KA/UC Course Options*

Typically, transfer students have fulfilled many, if not all, of their Knowledge Area/University course requirements. Credit, if at all possible, will be provided for UNIV190 Clarkson Seminar based upon coursework at the previous institution. In the event that this is not the case, transfer students that hold the academic standing of Sophomore or higher will be allowed to take another University (UNIV) designated course of their choosing in lieu of UNIV190 and SHOULD NOT be enrolled in UNIV190 under any circumstances. Transfer students should work with their advisor or the CEE Executive Officer in order to determine the right way to fulfill any remaining Knowledge Area/University course requirements.

#### *Economics Requirement*

Transfer students that come into the CivE or EnvE curriculum are encouraged to delay taking any Economics courses until they matriculate to Clarkson University. Clarkson's EC350 Economic Principles and Engineering Economics course is a combination of what is typically executed in three separate courses (microeconomics, macroeconomics, and engineering economics) at other institutions.

This course fulfills completely the ABET requirements for the study of economics in an engineering curriculum. Because one cannot receive credit for taking the same material twice, taking a portion of this course previously will require you to complete the rest of the course materials as an additional course at Clarkson.

Students, however, who do opt to transfer into the CivE or EnvE after taking what transfers in as EC150, EC151, or a similar introductory course (e.g., EC 2) may satisfy the EC350 graduation requirement by taking EC200 to complete their education in engineering economics (typically co-taught with the last one-third of EC350). EC200 is a one (1) credit course.<sup>4</sup> For more information, please contact the CEE Executive Officer in Rowley 140A or at [cee@clarkson.edu](mailto:cee@clarkson.edu).

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<sup>4</sup> CEE students who take EC151 as a Knowledge Area elective, still need to take the full EC350 to satisfy their graduation requirements, and as a result are encouraged to NOT take EC151 as a Knowledge Area elective.

## Coulter School of Engineering Requirements

### *ES100 Introduction to the Engineering Use of the Computer*

Often students transferring into the CivE or EnvE programs at Clarkson will have taken a course in the use of computers for the purpose of engineering or science. As long as that course provides some level of computer programming (regardless of programming language), it will be accepted as a replacement for ES100, which is a 2 credit hour course at Clarkson (even if the incoming course is 3 credit hours, only 2 credit hours will be granted). Clarkson currently uses MATLAB as the programming language for ES100 and transfer students are responsible for self-educating in the use of MATLAB (tutorials are available through the Clarkson University learning management system, Moodle, using self-registration) for use in further coursework at Clarkson. If students have not had a course that includes computer programming, then they will be required to take ES100 and should do so as soon as possible after arriving at Clarkson.

### *ES110 Engineering and Society*

The ES110 curriculum requirement in the Coulter School of Engineering provides students with an exploration of the role of the engineer in society, the differing kinds of engineering disciplines and subdisciplines, the ethical standards that engineers are expected to uphold, how both science and technology shape society and/or how society can shape science and technology, and an introduction to engineering design broadly. The course counts toward the Clarkson Common Experience Curriculum as a Knowledge Area elective (STS) and fulfills the TECH requirement (study of technologies impact on society).

This course is intended to be taken exclusively in the Freshman year and, therefore, is not appropriate for transfer students. Thus, transfer students that hold the academic rank of Sophomore or higher will be allowed to take another course in lieu of ES110 and generally SHOULD NOT be enrolled in ES110. Courses to be taken in lieu of ES110 should (at a minimum) include a Knowledge Area designation (unless the common curriculum Knowledge area/University course requirement is already met) and provides one communication point (unless the communication points requirement is already met). Some recommended courses for this purpose include ES238 Introduction to Energy Systems and BR200 Introduction to Biomedical & Rehabilitation Engineering, Science and Technology.

### *Professional Experience*

As indicated elsewhere in this handbook, as part of the CivE and EnvE curriculum, you must complete a professional experience. That experience can precede your enrollment at Clarkson, but must have occurred while you were a full time post-secondary student and relate to the practice of Civil or Environmental Engineering. Follow the instructions for recording your professional experience as indicated in that section of this handbook, but ensure you indicate this occurred while enrolled at your former institution.

## Department of Civil & Environmental Engineering Requirements

### *CE212 Introduction to Engineering Design*

Students who join the CivE or the EnvE major after the Fall semester of their Sophomore year by transferring to Clarkson, switching majors within Clarkson, or advancing past the sophomore year without taking CE212 (with an approved exception by the department chair) will be allowed to substitute a 400-level CE design course for CE212. The substitute course cannot be used to satisfy any other graduation requirement and it must have at least 1.5 design credits. Students who have taken a different/alternative Introduction to Design course (e.g., ME212) at Clarkson, prior to joining the CEE Department, will receive credit in place of CE212.

### *Advisement and Coordination*

Every student in the CEE Department receives a faculty advisor, this is no different for transfer students. Incoming transfer students will normally be assigned to the CEE Executive Officer (XO) and/or a senior faculty member (who is aligned with the cohort for the graduation class of the incoming transfer student), accounting for their unique course sequence requirements. Transfer students should plan to meet with their advisor before classes start as part of orientation activities.

## **Minors and Professional Concentrations for CEE Majors**

Clarkson students have the opportunity to supplement their studies with additional academic interests through the pursuit of minors and professional concentrations. The following pages describe the professional concentrations and minors hosted by the Department of Civil & Environmental Engineering at Clarkson.

Minors are programs where students take credits in a particular area of study that complements the major. Pursuing one or more minors allows students to add another area of specialization beyond the major. Clarkson offers 50 minors spanning all of our schools in engineering, arts, sciences, business, environmental studies and interdisciplinary programs. The CEE Department hosts minors in Architectural and Facilities Engineering and Environmental Engineering (described in more detail on the following pages).

Professional Concentrations are a way to build an area of specialized expertise within, or closely related to, their degree program major. By selection of a specific set of elective courses, CivE students can formally declare Professional Concentrations that provide both depth and breadth in the subdiscipline of choice and still meet the guidelines required by our ABET-accredited program. At least nine of the credit hours required in the concentration must be completed at Clarkson University. For CivE majors, the professional concentrations include Construction Engineering Management, Structural Engineering, and Water Resources Engineering. When the appropriate courses are completed, as described on the following pages, a transcript notation is granted indicating successful completion of the Professional Concentration.

It should be noted that various departments in the Coulter School of Engineering and others at Clarkson offer several concentrations and academic minors. For further information on concentrations and minors outside of the CEE Department, see the Clarkson University General Catalog, visit the University website, or contact the Dean of the School or the Chair of the Department offering the concentration or minor.

**To declare a minor or professional concentration, go to myCU and select Forms for Students. Then, select the applicable form listed on the left of that page (Undergraduate Concentration Declaration form or Undergraduate Minor Declaration form).** If this does not work, contact the CEE department at [cee@clarkson.edu](mailto:cee@clarkson.edu) for help.

## Professional Concentration in Construction Engineering Management

The professional concentration in Construction Engineering Management is available to CivE students to focus their electives on pertinent courses to the field of construction engineering management. Electives used to satisfy requirements of the concentration include a set of courses that reflect the sub-disciplines of Construction Engineering. Students receive a Bachelor of Science degree in CivE with a transcript notation indicating a Professional Concentration in Construction Engineering Management. Courses required for a concentration in Construction Engineering Management are listed below. The total number of credits required for the concentration is 21.

COURSES	CREDIT	CO/PREREQUISITE
<b>Required Courses</b>	<b>12</b>	
CE411 Construction Materials Engineering	3	At least Junior standing
CE415/515 Foundations, Stability and Retaining Structures	3	CE310
CE441 Reinforced Concrete Design	3	CE320
CE442 Steel Design	3	CE320
<b>Choose ONE of the following non-CE courses</b>	<b>3</b>	
OS286 Organizational Behavior	3	At least Sophomore standing
EHS330 Safety Analysis	3	
LW 270 Law & Society I	3	At least Sophomore standing
FN361 Financial Management	3	STAT383 or MA330, EC350, AC203 or AC/EM205, At least Sophomore standing
EM/OM380 Project Management**	3	STAT383 or MA232 or MA330
LW466 Law of the Workplace	3	LW270
EM/OM451 Quality Management & Lean Enterprise	3	STAT383 or MA330
COMM217 Introduction to Public Speaking	3	
<b>Completion of ONE of the following TRACKS by completing at least two courses in the track:</b>	<b>6</b>	
<b><u>Construction/Infrastructure Track:</u></b>		
CE302 Surveying, Geodetic Control, and Eng. Meas.	3	MA131
CE304 Introduction to Estimating and Scheduling	3	At least Junior standing
CE315 Geology for Engineers	3	CM131, PH131, CM132 (co-req)
CE404 Applications in Estimating and Scheduling	3	CE304
CE406 Construction Engineering	3	At least Junior standing
CE408 Building Info. Modeling & Integrated Proj. Deliv.	3	At least Junior standing
CE410/510 Sustainable Infrastructure and Building	3	At least Junior standing
CE453/553 Properties & Performance of Concrete Materials	3	ES260
CE461 Transportation Systems Design	3	At least Junior standing
<b><u>Architectural Engineering/Building Construction Track:</u></b>		
CE304 Introduction to Estimating and Scheduling	3	At least Junior standing
CE404 Applications in Estimating and Scheduling	3	CE304 or Consent of Instructor
CE408 Building Info. Modeling & Integrated Proj. Deliv.	3	At least Junior standing
CE409 Fundamentals of Building Systems	3	At least Junior standing
CE410/510 Sustainable Infrastructure and Building	3	At least Junior standing
CE448 Introduction to Architectural Engineering	3	ES220, CE212
Or other course(s) as designated by CEE Department Chair		
<b>TOTAL CREDITS FOR CONCENTRATION</b>	<b>21</b>	

### *Professional Concentration in Structural Engineering*

A professional concentration in Structural Engineering is available to undergraduate students who are planning a career in the design, mechanics, and/or engineering of structures. The professional concentration allows students to satisfy the accreditation requirements in civil engineering while pursuing a course of study in structural engineering and mechanics with the aim of developing the necessary analytical skills for the structural design of buildings, bridges, vehicle structures, etc. Students receive a Bachelor of Science degree in CivE with a transcript notation indicating a Professional Concentration in Structural Engineering. Courses required for a concentration in Structural Engineering are listed below. The total number of credits required for the concentration is 21.

<b>COURSES</b>	<b>CREDIT</b>	<b>PREREQUISITE</b>
<b><i>Required Courses</i></b>	<b>15</b>	
CE420/520 Computational Methods of Structural Analysis	3	CE320 with minimum grade of C
CE415/515 Foundations, Stability and Retaining Structures	3	CE310
CE441 Reinforced Concrete Design	3	CE320
CE442 Steel Design	3	CE320
CE490 Senior Design	3	CE310 & CE441 or CE442
<b><i>Choose at least TWO of the following courses:</i></b>	<b>6</b>	
CE408 BIM & IPD	3	At least Junior standing
CE411 Construction Materials Engineering	3	At least Junior standing
CE445 Timber Design	3	CE320, CE442 (co-req)
CE448 Introduction to Architectural Engineering	3	ES220, CE212
CE452/552 Advanced Strength of Materials	3	ES222
CE453/553 Properties & Performance of Concrete Materials	3	ES260
CE501 Fracture Mechanics of Concrete Structures	3	
CE512 Structural Dynamics	3	
CE521 Composite Mechanics and Design	3	ES222, & ES260
CE538 Finite Element Methods	3	
CE541 Bridge Engineering	3	CE320
CE549 Experimental Methods in Structures	3	
CE555 Structural Damage Assess., Rehab., and Repair	3	ES222
<i>Or other course as designated by CEE Department Chair</i>		
<b>TOTAL CREDITS FOR CONCENTRATION</b>	<b>21</b>	

## Professional Concentration in Water Resources Engineering

A professional concentration in Water Resources Engineering is available to undergraduate students who are planning a career in hydraulics, open channel flow, water treatment, or hydrology. The professional concentration allows students to satisfy the accreditation requirements in civil engineering while pursuing a course of study in water resources engineering. Students receive a Bachelor of Science degree in CivE with a transcript notation indicating a Professional Concentration in Water Resources Engineering. Courses required for a concentration in Water Resources Engineering are listed below. The total number of credits required for the concentration is 21.

COURSES	CREDIT	PREREQUISITE
<b>Required Courses</b>	<b>12</b>	
CE430 Water Resources Engineering II	3	CE330
CE470 Stream Riparian System and Fluvial Morphology	3	CE330 or CE340
CE479 Water and Wastewater Treatment Processes	3	ES330, CE340
CE490/1 Senior Design (Water Resources focus)	3	Senior standing
<b>Choose at least TWO of the following courses:</b>	<b>6</b>	
CE315 Geology for Engineers	3	CM131, PH131, CM132 (co-req)
CE340 Introduction to Environmental Engineering	3	MA131, CM132, MA232 (co-req)
CE380 Fundamentals of Environmental Engineering	3	CH210
CE434 Sustainable Development Engineering	3	CE340
CE435 Groundwater Hydrology & Geochemistry	3	CM132, MA131
CE478 Solid Waste Management & Landfill Design	3	At least Junior standing
CE481/581 Hazardous Waste Management	3	CE340 (co-req)
CE482/582 Environmental Systems Analysis & Design	3	CE340, EC350
<b>Choose at least ONE of the following courses:</b>	<b>3</b>	
BY/EV330 Great Lakes Water Protection	3	At least Sophomore standing
BY431 Limnology	3	BY222 or CM132, BY 432 (co-req)
COMM428 Environmental Communication	3	
ES436 Global Climate Change: Science, Eng. & Policy	3	
EV305 Sustainability & the Environment	3	At least Sophomore standing
PHIL370 Environmental Ethics	3	
POL374 Environmental Political Theory	3	
POL375 Environmental Law	3	
POL/SOC470 Environmental Policy	3	
Or other course as designated by CEE Department Chair		
<b>TOTAL CREDITS FOR CONCENTRATION</b>	<b>21</b>	

## Minor in Architectural and Facilities Engineering

A Minor in Architectural and Facilities Engineering is available to all Clarkson undergraduate students. The Architectural and Facilities Engineering Minor enables students to satisfy the accreditation requirements of their major while focusing their electives on pertinent courses for architectural and facilities engineering. Electives used to satisfy requirements of the minor reflect core areas within architectural and facilities engineering. Students receive a Bachelor of Science degree in their major with a Minor in Architectural and Facilities Engineering. A total of 30 credits are required for this minor, with at least one quarter of the total credit hours completed at Clarkson, as follows:

COURSES	CREDIT	PREREQUISITE
<b>Core required courses (4):</b>	<b>12</b>	
CE305 Construction Planning & Management	3	At least Sophomore standing
CE408 Building Info. Modeling & Integrated Proj. Deliv.	3	At least Junior standing
CE409 Fundamentals of Building Systems	3	At least Junior standing
CE448 Introduction to Architectural Engineering	3	ES220; CE212 or Instructor consent
<b>Complete TWO of the following courses<sup>1</sup>:</b>	<b>6</b>	
CE304 Introduction to Scheduling & Estimating	3	At least Sophomore standing
CE404 Applications in Scheduling & Estimating	3	CE304
CE410/510 Sustainable Infrastructure and Building	3	At least Junior standing
CE411 Construction Materials Engineering	3	At least Junior standing
CE415/515 Foundations and Retaining Structures	3	CE310
CE441 Reinforced Concrete Design	3	ES222 and CE320
CE442 Steel Design	3	CE320
ME310 Thermodynamic Systems Engineering	3	ES340 or CH260
ME411 Introduction to Heat Transfer	3	ES330 or CH301; ES340 or CH271; and MA232
ME444 Computer Aided Engineering	3	ES100 or EM121; and MA231
EE221 Linear Circuits	3	ES250
EE331 Energy Conversion	3	ES250
EE333 Power System Engineering	3	EE221
EE/ME450 Control Systems	3	AE/EE/ME324 or EE321 (co-req)
EHS330 Occupational Safety & Ergonomics	3	
ES238 Introduction to Energy Systems	3	ES110
EV305 Sustainability and the Environment	3	At least Sophomore standing
<sup>1</sup> Substitutions made upon approval of the department chair		
<b>Complete ONE math elective course:</b>	<b>3</b>	
DS/MA241 Introduction to Data Science	3	STAT282 or STAT383 or STAT318 or STAT389
MA330 Advanced Engineering Math	3	MA231 and MA232
STAT383 Probability and Statistics	3	MA132
STAT389 Prob. and Stat. with Multivariate Analysis	3	MA230 or MA231
<b>Complete ONE management elective course:</b>	<b>3</b>	
EM/OM380 Project Management (EC)	3	STAT383 (co-req)
FN361 Financial Management	3	STAT282, STAT383 or MA330; EC150 or EC350; AC203 or AC/EM205; At least Sophomore standing
OS286 Organizational Behavior I (IG)	3	At least Sophomore standing
LW270 Law and Society I	3	At least Sophomore standing



**Complete ONE art elective course<sup>2</sup>: 3**

DA110 Drawing (IA/C1) 3

DA200 3D Digital Modeling & Imagery (IA) 3

<sup>2</sup>Or other approved course in art history, architectural history, art appreciation, applied art, or related study

**Complete ONE capstone design course<sup>3</sup>: 3**

CE490/491 Senior Design 3 Senior standing; CE310; CE441 or CE442

ME446 Integrated Design II 3 ME445

EE412 Senior Design 3 EE311

EM456 Process Engineering & Design 3 Senior standing; ES220; two of ES250, ES330, or ES340; EM331 (co-req); EM333 (co-req); EM380 (co-req)

<sup>3</sup>Must have an Architectural and/or Facilities focus

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**TOTAL CREDITS FOR THE MINOR 30**

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## Minor in Environmental Engineering

A Minor in Environmental Engineering is available to all Clarkson undergraduate students. The Environmental Engineering Minor enables students to satisfy the accreditation requirements of their particular major while focusing their electives on pertinent courses for environmental engineering. Electives used to satisfy requirements of the minor reflect the subdisciplines of Environmental Engineering. Students receive a Bachelor of Science degree in their major with a Minor in Environmental Engineering. A total of 18-22 credits are required for this minor, with at least one quarter of the total credit hours completed at Clarkson. A minimum grade-point average of 2.0 is required in the courses taken for the minor. A student must complete the course requirements as follows:

COURSES	CREDIT	PREREQUISITE
<b>Core required courses (2):</b>	<b>6</b>	
<i>Complete ONE of:</i>		
CE340 Introduction to Environmental Engineering	3	CM132 (or CM104), MA232 (co-req)
CE380 Fundamentals of Environmental Engineering	3	CH210
CH220 Materials Balances	3	CM132 (or CM104), MA132, PH131 CH210 or CM371 (co-req)
<i>Complete ONE of:</i>		
Capstone Design with specific environmental focus (e.g., CE490/1, MP401, AE451, CH420, EE412, EM456, ME446)	3	Senior standing
Environmentally-related research (e.g., CE495, CE496, ES443/4/5/6/7)	3	Instructor consent
<b>Complete TWO of the following courses*:</b>	<b>6-8</b>	
<i>Note: at least ONE course must be a Core Professional Elective</i>		
<i>Core Professional Electives (minimum ONE required):</i>		
ES432 Risk Analysis	3	CM131 (or CM103)
CE479 Water and Wastewater Treatment Processes	3	CE340, ES330
CE481 Hazardous Waste Management Engineering	3	CE340 (co-req)
CE482 Environmental Systems Analysis and Design	3	CE340 or CE479, EC350
CE486 Industrial Ecology	3	One of the following: CE340, CH220, ES330, ES340, CH301, CH271
<i>Other Professional Electives:</i>		
BY314 Bioinformatics	3	BY160 and BY214
BY328 Conservation Biology	3	BY222
BY412 Molecular Biology Laboratory	3	BY214
BY425 Biological Systems & Environmental Change	3	BY222
BY431 Limnology & BY432 Limnology Laboratory	3/2	BY222 or CM132 ( <b>note:</b> BY431 and BY432 are co-req)
BY486 Molecular Biotechnology	3	BY160 and BY214
CE430 Water Resources Engineering II	3	CE330
CE434 Sustainable Development Engineering	3	CE340
CE435 Groundwater Hydrology & Geochemistry	3	CM132 (or CM104/106), MA131, CE340
CE477 Atmospheric Chemistry	3	CM370 or CM371 or ES340
CE478 Solid Waste Management and Landfill Design	3	At least Junior standing
ES436 Global Climate Change: Science, Eng. & Policy	3	Quantitative and modeling skills (MATLAB, Excel) are required, statistics is recommended
EHS406 Industrial Hygiene Control Methods	3	EHS309
EHS416 Principles of Occupational Health	3	EHS309
EV314 Adirondack Integrated Research Project	3	Instructor consent

<b>Complete ONE of these chemical principles courses:</b>	<b>3</b>	
CH210 Chemical Engineering Principles	3	CM132 (or CM104), MA132, PH131
CH221 Spectroscopy	3	CM132 (or CM104)
CM241 Organic Chemistry I	3	CM132 (or CM104)
CM371 Physical Chemistry I	3	CM132 (or CM104), MA132, PH132 (co-req)

<b>Complete ONE of these biological principles courses:</b>	<b>3-5</b>	
BY214 Genetics	3	BY160
BY222 Ecology & BY224 Ecology Laboratory	5	BY140
BY320 Microbiology	3	Waived for EnvE students
BY330/EV330 Great Lakes Water Protection	3	At least Sophomore standing

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<b>TOTAL CREDITS FOR THE MINOR</b>	<b>18-22</b>	
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\* Substitutions made upon approval of the department chair

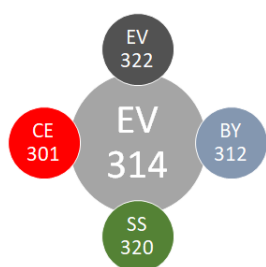
## Curricular Opportunities and Information for CEE Majors

### *Adirondack Semester*

The mission of the Adirondack Semester (typically offered during fall semesters) is to deliver a dynamic blend of traditional and experiential education in an intimate (up to 12 students) and community-based learning environment. Students strive to answer broad questions concerning the relationship of social, economic, and environmental impacts of the Adirondack Park and emerge with critical thinking and collaborative skills that prepare them to analyze and solve complex, interdisciplinary problems.

Faculty from Chemistry, Biology, Environmental Science, Engineering, Political Science, Philosophy, Literature, and Business use the Adirondack base and professional network to provide students a direct experience with the people and agencies that shape policy, conduct business, and lobby at local and state levels. Students are engaged in conversations in the classroom with their peers, professors, and guest lecturers, in the community with local citizens, and while conducting scientific research in the field.

The semester consists of five 3-credit courses providing the student with fifteen 300-level credits. One semester typically offers two University courses, four varied Knowledge Areas, four Communication Points, and one Design Credit for Civil and Environmental Engineering students. Presently, the semester includes the following courses, which relate to the Civil and Environmental Engineering Curriculums in the corresponding ways:



<i>ADK Semester Course</i>	<i>Civil Engineering</i>	<i>Environmental Engineering</i>
CE301 GIS	CE301 Requirement	CE301 Requirement
EV/BY312 ADK Ecology & Env. Science	Prof. Elective, C1	Prof. Elective or Earth Science Elective, C1
EV322 ADK Sense of Place	KA/UC: UNIV/CSO/IA, C1	KA/UC: UNIV/CSO/IA, C1
EV/SS320 Social and Political Issues in the ADK	KA/UC: UNIV/EC/CSO, C1	KA/UC: UNIV/EC/CSO, C1
EV314 Integrated Research Project	ADK as Soph: CE212 ADK as Jr/Sr: Prof. Elective Either case, 1 design credit, C1	ADK as Soph: CE212 ADK as Jr/Sr: Prof. Elective Either case, 1 design credit, C1

For more information on course contents and registering for the Adirondack Semester, visit the website at <https://www.clarkson.edu/adirondack-semester>.

### *Double Majors*

A double major is awarded for the completion of all requirements for two bachelor's degree programs but does not require a minimum number of credits unique to each program. For example, by selecting a strict set of courses, you can satisfy the requirements of both CivE and EnvE majors within 123 credits of coursework. Discuss any curriculum changes with your advisor. **To add a double major to your program of study, you must complete and submit the Undergraduate Double Major Degree form on myCU (available through the "Forms for Students" file).**

### *Dual Degree*

A dual degree is awarded for the simultaneous completion of two bachelor's degrees and requires a minimum of 150 credit hours with at least 30 credit hours unique to each program. For example, a Civil Engineering degree and an Environmental Engineering degree or a Civil Engineering degree and a Mechanical Engineering degree. Discuss any curriculum changes with your advisor. **To add a dual degree to your program of study, you must complete and submit the Undergraduate Second Degree form on myCU (available through the "Forms for Students" file).**

## *Second Degree*

A second degree is awarded for the non-simultaneous completion of two bachelor's degrees and requires a minimum of 150 credit hours with at least 30 credit hours unique to each program and at least 12 credit hours (6 credit hours of upper level courses) toward the second degree must be completed in residence after the awarding of the first degree. For example, a Civil Engineering degree and a History degree. Discuss any curriculum changes with your advisor. **To add a dual degree to your program of study, you must complete and submit the Undergraduate Second Degree form on myCU (available through the "Forms for Students" tile).**

## *Undergraduate Students in Graduate Courses*

Enrollment in 500- and 600-level courses is encouraged for qualified students. Frequently, these classes are smaller and filled with challenging material. Enrollment by a student in a 500-level course requires a current cumulative grade point average of at least 3.0, permission of the student's advisor, and permission of the student's department chair. Enrollment by an undergraduate student in a 600-level course requires a current cumulative grade point average of at least 3.5, permission of the student's advisor, permission of the student's department chair, and permission of the Dean of their School. Permission forms are available through Student Achievement Services (SAS).

## *Engineering MBA-MS 4 + 1 Program*

The Schools of Business and Engineering have an option to allow a freshman undergraduate engineer who wants an MBA or Master of Science in Management Systems to plan required courses so that the graduate degree can be completed at Clarkson in one year beyond the baccalaureate. Students in this option will be in a dual degree (engineering and either MBA or MS). They will be classified as engineering students with engineering advisors. Their admission to the MBA/MS program is conditional until they meet traditional School of Management admission requirements (GMAT, etc.). Interested students should contact the Director of Graduate Business Programs.

## Other Curricular Matters

### *Student Academic Records*

Your academic record is kept by your assigned advisor and also by the CEE Department office. This record will be used to determine if you have met Clarkson's graduation requirements. You are entitled to a copy of this record at any time you wish.

### *Changing Majors*

You may decide to change majors. This is accomplished by notifying the Department you wish to enter and submitting the Undergraduate Change of Major form on myCU (available through the "Forms for Students" tile). You are encouraged to communicate with the faculty of your new major prior to submitting the form. In order to be admitted to a program in the CEE department from another major, a student must be in good standing. Students who are not in good standing may be offered advice by the CEE faculty with regard to their academic curricula until they achieve good standing and become eligible to join a CEE program.

### *Non-Transfer Student, Transfer Credit*

Transfer credit from another college or university or by AP exam credits is handled by Student Achievement Services (SAS), located in the Technology Advancement Center. Questions regarding transfer credits earned before enrolling at Clarkson should be directed to the CEE Executive Officer. Transfer students should be sure that the SAS receives their final transcript(s) as soon as possible prior to/during their first semester on campus.

### Advanced Placement Credit

It is possible to receive Advanced Placement (AP) credit for courses prior to attending Clarkson. It is best to do this prior to arriving on campus for your first semester. Requests to have AP credits accepted must be initiated with Student Achievement Services (SAS). For more information, including minimum score requirements, please visit <https://www.clarkson.edu/student-achievement-services-sas/ap-credit-transfer-information>.

### Cross-Registration within the Associated Colleges of the St. Lawrence Valley

Clarkson has joined St. Lawrence University, SUNY Canton, and SUNY Potsdam to form the Associated Colleges of the St. Lawrence Valley. This program allows students to take up to two courses per year at the other institutions of the Associated Colleges. Completed courses will be posted as transfer credit to the Clarkson transcript (grade of C or better is required). Clarkson students typically use this opportunity to take language, art, education, or music courses not offered at Clarkson. The Cross Registration form for this program is available at the Student Achievement Services (SAS), <https://intranet.clarkson.edu/student-life/sas/forms>.

### Off-Campus Course Permission

After enrolling at Clarkson, students may desire to take classes at another institution (other than through the Associated Colleges) to fulfill course requirements at Clarkson. Off-campus courses will be posted as transfer credit to the Clarkson transcript (grade of C or better is required). Before taking a course at another university, the Off-Campus Permission form (available through myCU) must be completed. This involves approval by the student, the course department chair, and the major advisor/department chair/program director. Failure to obtain prior approval through this process may prevent the course from transferring into Clarkson and/or prevent it from meeting curricular requirements.

### ***Special Interests***

Undergraduate students may participate in research projects with department faculty members, earning academic credit (CE495 or CE496) during the school year. In the summers, research projects are available at Clarkson or other universities. These typically pay a stipend.

In a directed-study course, a student learns a subject by reading materials under the guidance of a faculty member, without lectures or other scheduled class activities. Both undergraduate research and directed study feature valuable one-on-one interactions with faculty members.

### ***Research Experience for Undergraduates (REU) Programs***

Clarkson currently hosts a program funded by the National Science Foundation that provides special opportunities for CEE undergraduate students from Clarkson and other universities to gain experience in research that is relevant to Civil and Environmental Engineering. Read more about Clarkson's REU program at <https://www.clarkson.edu/research-experience-undergrads-reu> or find other REU opportunities at <https://www.nsf.gov/crssprgm/reu>.

### ***Commencement***

Any student who is within six (6) credit hours of meeting the BSCE or BSEnVE degree requirements may participate in commencement. Students who require more than six (6) credit hours to complete their BS degree will not be allowed to participate in commencement and they will be required to complete their remaining credit hour requirements on-campus. Written approval of the CEE Department Chair must be obtained by a student who has completed all but six credit hours for graduation in order to complete them off campus.

### ***Graduate School***

Many of you should consider graduate school, particularly if you find you would like to become more focused within some aspect of the broad fields of civil and environmental engineering. You should continually seek information regarding this topic. Your advisor can be of great help in discussing graduate school options, as can a professor from whom you have taken a class and who you know shares professional interests with you. An additional source of information that can be of help to you is the CEE Graduate Handbook, which the department publishes annually and is available from the CEE Office (Rowley 140) or online at <https://www.clarkson.edu/cee>. Within that handbook, you will find detailed information on the Master of Science in Civil and Environmental Engineering and Doctor of Philosophy in Civil and Environmental Engineering programs. CEE also offers a non-thesis Master of Science in Civil and Environmental Engineering. Assistantships are not available for this degree but it can be completed in twelve (12) to eighteen (18) months for full-time students. Note that additional courses taken at the 500 or 600 levels that are not used to fulfill your undergraduate degree requirements can be transferred to a graduate degree program upon admission.

### ***Cooperative Education Program***

The Cooperative Education Program (co-op) is a good way to get practical experience by working for a company for one semester. To find out more about co-ops, visit the Career Center: <https://www.clarkson.edu/career>.

### ***Semester Abroad***

Let Clarkson be your launching point for a life-changing global experience. Clarkson makes it easy to study abroad and still earn credit toward graduation through formal study abroad exchange agreements with numerous colleges and universities in multiple countries. Spend a full academic year or semester living and learning in a stimulating and challenging new environment. Wherever you go, you will return to Clarkson with a new perspective on yourself and

your world. We encourage you to start your study abroad research early. Visit the International Center at <https://www.clarkson.edu/international-center/study> to find programs that best match your interests and career goals.

### ***Summer Employment (Internships)***

Each fall, the Career Center holds evening sessions to help students prepare for a summer job-search. In the spring semester, some summer job interviews can be scheduled through the Career Center. The Career Center is always willing to assist with resume preparation. It is very beneficial for an engineering major to have meaningful summer work experience, especially in the summer between the junior and senior years.



## CEE Department Co-Curricular and Extra-Curricular Activities

### *Societies and Activities*

There are a number of professional and honor societies on campus that relate to the fields of Civil and Environmental Engineering. To learn more about these organizations check the Student Activities Office, 127 Student Center or contact the presidents of the organizations (found through Knightlife: <https://knightlife.clarkson.edu>).

### Professional Societies in CEE

The student chapters of the several professional societies of interest to Civil and Environmental Engineers (named below) are active at sponsoring and participating in a variety of events during the year, including Open House, Parent's Weekend, field trips, and hosting a number of guest speakers.

<i>Organization Name</i>	<i>Faculty Advisor</i>
○ Clarkson Construction Club/Associated General Contractors (AGC)/CEM Program Activities	Professor Erik Backus
○ American Society of Civil Eng. (ASCE)	Professor Steve Wojtkiewicz
○ New York Water Environment Assoc. (NYWEA)	Professor Stefan Grimberg
○ Engineers for International Sustainability (formerly Engineers Without Borders)	Professor Shane Rogers
○ Society of Women Engineers (SWE)	Professor Jan DeWaters
○ Timber Bridge	Professor Behzad Behnia

In addition to on-campus activities, students have opportunities to participate in regional and national student conferences as well as leadership seminars. Various types of scholarships, awards, and loans are available through the local chapters of these societies. Several student competitions are announced on a regular basis and students are always encouraged to participate in these competitions. Contact the presidents (see Knightlife) or the faculty advisors of the student chapters to get more information about these activities. During the past several years, the ASCE student chapter has participated in regional steel bridge, timber bridge, construction management, and concrete canoe design competitions.

### Honor Societies

In addition to the professional societies described above, several academic honor societies also have chapters at Clarkson. Their primary purposes include recognizing and encouraging continued outstanding scholarly achievement and providing a forum for professional development activities.

<i>Organization Name</i>	<i>Faculty Advisor</i>
○ Chi Epsilon (Civil and Env. Eng.)	Professor Xianda Shen
○ Tau Chi Alpha (Env. Eng.)	Professor Stefan Grimberg
○ Tau Beta Pi (All Engineering)	Professor Sitaraman Krishnan
○ Phi Kappa Phi (All Engineering)	Professor Richard McCluskey
○ Phalanx (All Majors)	Professor Erik Backus

### *CEE Department Student Awards*

The Civil and Environmental Engineering Department honors several deserving students each year with the following awards:

- The Charles Martin Clark Memorial Prize – Established in 1946 by Mr. Clark's associates on the Board of Water Supply of the City of New York, the Charles Martin Clark Memorial Prize is awarded annually to a senior civil and environmental engineering student of outstanding scholarship and character, possessing qualifications required for a successful professional career.
- Arthur L. Straub Memorial Award – Established in 1976, the Arthur L. Straub Memorial Award is presented annually to a senior civil and environmental engineering student who possesses the qualities of professional maturity and scholastic ability, and also is involved in extracurricular activities. The Straub Award is given to honor Arthur L. Straub, a Professor of Civil and Environmental Engineering at Clarkson from 1956 to 1976.
- Civil and Environmental Engineering Award for Writing – Established in 1998 by the faculty of the department. The recipient is a civil and environmental engineering student who has exhibited superior performance in their writing assignments and reports.
- Keith M. Russ Civil and Environmental Engineering Achievement Awards – Presented annually to two juniors exhibiting outstanding academic performance, with additional consideration for services to the CEE department, the University, and/or the community. Selected by the Department Chair based on recommendations from the faculty. The awards are equal in recognition and are not intended as "first" and "second" place awards, although awards may be of equal or different dollar amounts.
- The Ackermann Awards – Presented annually to one sophomore and one junior who have demonstrated the greatest academic improvement (improved cumulative GPA) between the prior fall semester and the semester in which the students will be selected as awardees. In exceptional cases, deviation from this rule is permitted with a majority vote by the CEE Undergraduate Committee.

### *Civil and Environmental Engineering SPEED Teams*

Clarkson University established the SPEED program (Student Projects for Engineering Experience and Design) during the late 1990s to facilitate student access to project-based, team learning experiences as a way of enhancing their ability to tackle "real-world", open-ended problems. Many of the SPEED project opportunities stem from national engineering design competitions that require students to conceptualize, design, build, and test the products of their combined skills and ingenuity. Most of the projects are multidisciplinary in nature and require contributions by students from various academic disciplines including engineering, business, science, and liberal arts. SPEED projects teach that to complete a project successfully, individual students must learn to work and communicate effectively with peers with varying experience, interests, and skill levels and be able to appreciate and make use of the contributions of engineers, scientists, managers, accountants, marketing strategists, and many others.

### Construction Engineering and Management Team

Sponsored nationally by the Associated Schools of Construction and the Associations of General Contractors, the Construction Engineering and Management Team provides students interested in construction management with an excellent opportunity to learn the ins and outs of the popular fields of Commercial Construction and Heavy Civil Construction while preparing for a competition in the Northeastern US. Activities of the CEM Team include preparing a schedule, a bid, and a proposal for a construction project; successfully "selling" the project by presenting it orally and in writing to a panel of judges; learning about the construction industry; and having a great time in the process!

### Concrete Canoe Team

Co-sponsored by the American Society of Civil Engineers (ASCE), 3M, and the National Precast Concrete Association (NCPA), the competition involves a design paper and an oral presentation before a panel of judges, as well as a canoe race. All students interested in taking on the challenge of designing, building, and rowing a concrete canoe are welcome to participate.

### Steel Bridge Team

The American Institute of Steel Construction (AISC) and American Society of Civil Engineers (ASCE) co-sponsor the national Steel Bridge Competition annually. The goal of the Steel Bridge Team is to design and build a steel bridge that is light, easy to construct, able to withstand heavy loads, aesthetically pleasing, and at least long enough to bridge a specified span. Although of primary interest to CEE students, all Clarkson students interested in the challenge of designing and building a bridge of steel are welcome to participate with the team.

### Timber Bridge Team

The US Forest Service, the Forest Products Society, and the American Society of Civil Engineers sponsor the Timber Bridge competition annually to promote interest in the use of wood as a competitive bridge construction material and to develop an appreciation for the engineering capabilities of wood. The Timber Bridge Team takes on the challenge of designing, building, and load-testing a timber bridge that must meet exacting specifications with respect to span, width, depth, height, length, and composition of individual members. Although of primary interest to CEE students, all Clarkson students interested in the challenge of designing and building a bridge of wood are welcome to participate.

### *Other Extracurricular Activities*

CEE students are encouraged to take part in the broad range of extracurricular opportunities across the Clarkson community. CEE students are often found among the leaders of the Clarkson University Student Association (CUSA), the Clarkson Union Board (CUB), the Integrator, and many other campus organizations. Many CEE students participate in intercollegiate sports, as well as intramural and club activities. In addition, Potsdam offers many other extracurricular activities. The Associated Colleges of the St. Lawrence Valley publishes a calendar of "Special Events" every month. This and other local publications list lectures, concerts, seminars, club meetings, professional societies, sports, movies, etc., that are going on in the area.

### Phalanx: Clarkson's Highest Honor Society

Phalanx is Clarkson's highest honor society recognizing those that not only are stellar academically, but have stepped out in service to others and leadership in the community. Its purpose is to recognize the achievements and promote the interests of students, faculty, staff, and other Clarkson Community members in extracurricular activities, scholarship, and athletics at Clarkson. Phalanx gives out two kinds of awards each year for individuals, commendable service and commendable leadership, as well as distinguished service for organizations.

## **Clarkson University Support Services**

Clarkson has many services, such as Student Support Services, Counseling Services, Accessibility Services to help you whether your needs are related to academic or personal issues. For more detailed information, you will find a table that provides a list of relevant websites referenced later in this Handbook.

### ***English as a Second Language Test***

All non-native English speaking undergraduates are required to take the English as a Second Language (ESL) Placement Test. Depending on the results, the student must take up to two semesters of ESL. A student who is at the intermediate level must pass both the intermediate and advanced ESL courses (ESL250 and ESL350). Contact the Student Success Center for further information.

### ***Career Center***

There are many things that you can do to plan your career. The best place to start is to decide on your interests. Build a career on the aspects of engineering that you enjoy. Talk to your advisor, get involved in the activities of student chapters of the three professional societies (AGC, ASCE, NYWEA), or meet with the Career Center and find out what they can do for you.

### ***Student Achievement Services (SAS)***

Student Achievement Services (SAS) combines the activities of the Bursar, Registrar, and Financial Assistance offices and is located on the second floor of the Technology Advancement Center. This office fulfills most administrative needs of students and can be explored further at <https://www.clarkson.edu/student-achievement-services-sas>.

### ***Student Success Center***

Student Success Center offers services related to educational development, tutoring, student support, and accommodations for people with disabilities. Seminars are offered on topics such as time management, stress control, study strategies, and reading improvement. For appointments or further information visit <https://www.clarkson.edu/student-success>.

### ***Accessibility Services***

The Office of Accessibility Services is located in 1003A Price Hall. This is the initial point of contact for most students and staff members seeking accommodations or services related to a disabling condition. Services can include short-term arrangements for students who have become temporarily disabled also. For further information visit <https://www.clarkson.edu/accessibility-services>.

### ***The Student Health and Counseling Center (SHAC)***

The SHAC provides medical care and mental wellness services to serve the students and help them achieve the healthiest version of themselves. For further information visit <https://www.clarkson.edu/health-services>.

### ***International Student Advising***

International student advising is available at the International Center located in the Educational Resources Center (ERC). The service includes orientation and special advising concerning topics such as visa status requirements and work regulations, for example. For further information visit <https://www.clarkson.edu/international-center>.

## *The Writing Center*

Clarkson's Writing Center tutors can help you produce more effective written work. Writing tutors are available to help you improve your memos, lab reports, design projects, other course assignments, and even personal writing. For further information visit <https://www.clarkson.edu/writing-center>.

## Appendices

<i>Appendix</i>	<i>Contents</i>
A	Faculty of the Department of Civil and Environmental Engineering
B	Listing of Internet/Intranet Sites Referenced in this Handbook
C	Civil Engineering Curriculum Worksheet (Class of 2025 and thereafter)
D	Civil Engineering Curriculum Worksheet (Class of 2021 and thereafter)
E	Environmental Engineering Curriculum Worksheet (Class of 2025 and thereafter)
F	Environmental Engineering Curriculum Worksheet (Class of 2020 and thereafter)
G	Double Major Civil and Environmental Engineering Curriculum Worksheet (Class of 2025 and thereafter)
H	Double Major Civil and Environmental Engineering Curriculum Worksheet (Class of 2020 and thereafter)
I	Civil Engineering Curriculum Flowchart (Class of 2025 and thereafter)
J	Environmental Engineering Curriculum Flowchart (Class of 2025 and thereafter)
K	Civil and Environmental Hosted Minors Tracking Sheet
L	Professional Elective Approval Form
M	Design Credits Course Listing

*Appendix A: Faculty of the Department of Civil and Environmental Engineering*

**CEE Department Faculty**

<b>Name</b>	<b>Office</b>	<b>Contact</b>	<b>Group<sup>5</sup></b>
Erik Backus Professor of Practice Director, Construction Engineering Management Program	132 Rowley	<a href="mailto:ebackus@clarkson.edu">ebackus@clarkson.edu</a> (315) 268-6522	CEM
Abul Baki, PhD Assistant Professor	226 Rowley	<a href="mailto:abaki@clarkson.edu">abaki@clarkson.edu</a> (315) 268-4156	WRE
Behzad Behnia, PhD Assistant Professor	106 Rowley	<a href="mailto:bbehnia@clarkson.edu">bbehnia@clarkson.edu</a> (315) 268-6533	ISM
Michelle Crimi, PhD Professor Dean of Graduate School	106 TAC	<a href="mailto:mcrimi@clarkson.edu">mcrimi@clarkson.edu</a> (315) 268-4174	ENV
Robert Curtis Adjunct Instructor		<a href="mailto:rcurtis@clarkson.edu">rcurtis@clarkson.edu</a> (315) 268-6529	CEM
John Dempsey, PhD Professor	240B Rowley	<a href="mailto:jdempsey@clarkson.edu">jdempsey@clarkson.edu</a> (315) 268-6517	ISM
Lissette Fernandez, PhD Assistant Professor	107 Rowley	<a href="mailto:lfernand@clarkson.edu">lfernand@clarkson.edu</a> (315) 268-6491	ISM
Andrea Ferro, PhD Professor ISE Associate Director for Research	206 Rowley	<a href="mailto:aferro@clarkson.edu">aferro@clarkson.edu</a> (315) 268-7649	ENV
Allen Gontz, PhD Professor	126 Rowley	<a href="mailto:agontz@clarkson.edu">agontz@clarkson.edu</a> (315) 268-7716	ISM
Stefan Grimberg, PhD Professor Co-Director of Center of Excellence in Healthy Water	204 Rowley	<a href="mailto:sgrimber@clarkson.edu">sgrimber@clarkson.edu</a> (315) 268-6490	ENV
Thomas Holsen, PhD Jean S. Newell Distinguished Professor of Engineering Co-Director of CAARES	CAMP Annex 206	<a href="mailto:tholsen@clarkson.edu">tholsen@clarkson.edu</a> (315) 268-3851	ENV
William Olsen Professor of Practice	102 Rowley	<a href="mailto:wbolsen@clarkson.edu">wbolsen@clarkson.edu</a> (315) 268-3878	CEM
Sulapha Peethamparan, PhD Professor	236 Rowley	<a href="mailto:speetham@clarkson.edu">speetham@clarkson.edu</a> (315) 268-4435	ISM

<sup>5</sup> Construction Engineering Management (CEM); Environmental Engineering (ENV); Infrastructure, Structures, and Materials Engineering (ISM); Water Resources Engineering (WRE)

Name	Office	Contact	Group <sup>6</sup>
Susan Powers, PhD Jean '79 & Robert '79 Spence Professorship in Sustainable Environmental Systems Director of Institute for a Sustainable Environment Director of Sustainability	122 TAC	<a href="mailto:spowers@clarkson.edu">spowers@clarkson.edu</a> (315) 268-6542	ENV
Shane Rogers, PhD Professor	212 Rowley	<a href="mailto:srogers@clarkson.edu">srogers@clarkson.edu</a> (315) 268-6501	ENV
Xianda Shen, PhD Assistant Professor	232 Rowley	<a href="mailto:xshen@clarkson.edu">xshen@clarkson.edu</a> (315) 268-6606	ISM
Tyler Smith, PhD Associate Professor CEE Executive Officer	140A Rowley	<a href="mailto:tsmith@clarkson.edu">tsmith@clarkson.edu</a> (315) 268-3844	WRE
Spencer Thew Distinguished Service Professor	136 Rowley	<a href="mailto:stheew@clarkson.edu">stheew@clarkson.edu</a> (315) 268-6507	CEM
Robert Thomas, PhD Assistant Professor	228 Rowley	<a href="mailto:rthomas@clarkson.edu">rthomas@clarkson.edu</a> (315) 268-6546	ISM
Siwen Wang, PhD Assistant Professor	130 Rowley	<a href="mailto:swang@clarkson.edu">swang@clarkson.edu</a> (315) 268-4446	ENV
Steven Wojtkiewicz, PhD Professor CEE Department Chair	140B Rowley	<a href="mailto:swojtkie@clarkson.edu">swojtkie@clarkson.edu</a> (315) 268-7741	ISM
Weiming Wu, PhD James K. Edzwald Professor of Water Engineering	128 Rowley	<a href="mailto:wwu@clarkson.edu">wwu@clarkson.edu</a> (315) 268-6550	WRE
Suguang Xiao, PhD Assistant Professor	234 Rowley	<a href="mailto:sxiao@clarkson.edu">sxiao@clarkson.edu</a> (315) 268-2341	ISM
Yang Yang, PhD Assistant Professor	208 Rowley	<a href="mailto:yangyang@clarkson.edu">yangyang@clarkson.edu</a> (315) 268-3861	ENV
<b><u>Research Faculty</u></b>			
Fengbin Huang, PhD Research Assistant Professor		<a href="mailto:fehuang@clarkson.edu">fehuang@clarkson.edu</a>	WRE
Kerop Janoyan, PhD Research Professor		<a href="mailto:kjanoyan@clarkson.edu">kjanoyan@clarkson.edu</a>	ISM
Hung Tao Shen, PhD Distinguished Research Professor		<a href="mailto:htshen@clarkson.edu">htshen@clarkson.edu</a>	WRE

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<sup>6</sup> Ibid.



## Emeritus Faculty

Name	Contact	Group <sup>7</sup>
Norbert Ackermann, PhD	<a href="mailto:nackermann@clarkson.edu">nackermann@clarkson.edu</a>	WRE
Gordon Batson, PhD	<a href="mailto:gbatson@clarkson.edu">gbatson@clarkson.edu</a>	ISM
James Edzwald, PhD	<a href="mailto:jedzwald@clarkson.edu">jedzwald@clarkson.edu</a>	ENV
Feng-Bor Lin, PhD	<a href="mailto:fblin@clarkson.edu">fblin@clarkson.edu</a>	ISM
Levon Minnetyan, PhD	<a href="mailto:levon@clarkson.edu">levon@clarkson.edu</a>	ISM
Hayley Shen, PhD	<a href="mailto:hhshen@clarkson.edu">hhshen@clarkson.edu</a>	WRE
Hung Tao Shen, PhD	<a href="mailto:htshen@clarkson.edu">htshen@clarkson.edu</a>	WRE
Poojitha Yapa, PhD	<a href="mailto:pyapa@clarkson.edu">pyapa@clarkson.edu</a>	WRE
Thomas Young, PhD	<a href="mailto:tyoung@clarkson.edu">tyoung@clarkson.edu</a>	ENV

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<sup>7</sup> Ibid.

*Appendix B: Listing of Clarkson Internet/Intranet Sites Referenced in Handbook*

**Clarkson University** (<http://www.clarkson.edu>)

Campus Map (<https://clarkson.university-tour.com/map.php>)

Catalog (<https://www.clarkson.edu/clarkson-catalog>)

Directory (<https://intranet.clarkson.edu/directory>)

Intranet (<https://intranet.clarkson.edu>)

Student Organizations (<https://knightlife.clarkson.edu>)

**Department of Civil & Environmental Engineering** (<https://www.clarkson.edu/cee>)

Fundamentals of Engineering Exam (<https://intranet.clarkson.edu/academic/school-of-engineering/fundamentals-of-engineering-examination-f-e>)

Undergraduate Research Experiences (<https://www.clarkson.edu/research-experience-undergrads-reu>)

**Student Achievement Services** (<https://www.clarkson.edu/student-achievement-services-sas>)

AP / Transfer Credit (<https://www.clarkson.edu/student-achievement-services-sas/ap-credit-transfer-information>)

Clarkson Common Experience / KA (<https://intranet.clarkson.edu/academic/common-experience/ce-knowledge-area-communication-point-and-technology-courses>)

Common Forms (<https://intranet.clarkson.edu/student-life/sas/forms>)

Course Catalog (<https://intranet.clarkson.edu/student-life/sas/classes-schedules>)

Financial Aid Forms (<https://intranet.clarkson.edu/student-life/sas/financial-aid-forms>)

Registrar (<https://www.clarkson.edu/student-achievement-services-sas>)

University Regulations (<https://www.clarkson.edu/student-achievement-services-sas/clarkson-regulations>)

**Student Support Services** (<https://www.clarkson.edu/student-success-center/student-support-services>)

**Accessibility Services** (<https://www.clarkson.edu/accessibility-services>)

**Student Health and Counseling Services** (<https://www.clarkson.edu/health-services>)

**Career Center** (<https://www.clarkson.edu/career>)

**International Center** (<https://www.clarkson.edu/international-center>)

**Writing Center** (<https://www.clarkson.edu/writing-center>)

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Appendix C: Civil Engineering Curriculum Worksheet (Class of 2025 and after)

CIVIL ENGINEERING CURRICULUM  
CLASS OF 2025 and after

Faculty Advisor		Student Name		Student Number		Class Year	
<b>FRESHMAN – FALL</b>				<b>FRESHMAN – SPRING</b>			
	Design / KA / Comm	Semester	Grade		Design / KA / Comm	Semester	Grade
CM131 General Chemistry I (4 cr)				CM132 General Chemistry II (4 cr)			
PH131 Fund. Physics I (4 cr)				PH132 Fund. Physics II (4 cr)			
UNIV190 Clarkson Seminar <sup>1</sup>				ES110 Engineering & Society <sup>1</sup>	STS / TECH / C1		
MA131 Calculus I				MA132 Calculus II			
FY/PE100 First Year Seminar (0 cr)				ES100 Intro. Computer (2 cr)			
<b>SOPHOMORE – FALL</b>				<b>SOPHOMORE – SPRING</b>			
CE212 Intro. Engineering Design (F) <sup>2</sup>	1.5 / C1			ES222 Strength of Materials			
ES220 Statics				CE305 Construction Plan. & Mgmt. (5)	1		
Elective – KA / UC				ES330 Fluid Mechanics			
MA231 Calculus III				MA232 Differential Equations			
CE301 Intro. Geospatial Analysis	TECH			ES Elective ES223 (recommended)			
<b>JUNIOR &amp; SENIOR YEARS</b>							
Elective – KA / UC				CE310 Geotechnical Eng. (S)	1 / C1		
ES Elective ES260 (recommended)				CE340 Intro. Environmental Eng. (S)	1		
ES Elective ES250 or ES340				Elective – KA / UC			
CE320 Structural Analysis (F)	1 / C1			<input type="checkbox"/> CE441 Reinforced Concrete Design (S) <b>OR</b> <input type="checkbox"/> CE442 Steel Design (F)	3		
CE330 Water Resources Eng. I	1 / C1			CE490/1 Senior Design (S)	3 / C1 / TECH		
STAT383 Probability & Statistics				<b>PROFESSIONAL CONCENTRATIONS (optional)</b>			
EC350 Econ. Principles / Eng. Econ. <sup>3</sup>	EC			<b>Construction Engineering Management</b>	<b>Structural Engineering</b>	<b>Water Resources Engineering</b>	
Science Elective <sup>4</sup>				<input type="checkbox"/> CE411 <input type="checkbox"/> CE415 <input type="checkbox"/> CE441 <input type="checkbox"/> CE442	<input type="checkbox"/> CE420 <input type="checkbox"/> CE415 <input type="checkbox"/> CE441 <input type="checkbox"/> CE442 <input type="checkbox"/> CE490 (C1) with structures focus	<input type="checkbox"/> CE430 <input type="checkbox"/> CE470 <input type="checkbox"/> CE479 (C1) <input type="checkbox"/> CE490 (C1) with water resources focus	
Prof. Elective				<b>One of the following:</b> <sup>5</sup> <input type="checkbox"/> OM380 (EC); <input type="checkbox"/> OS286 (IG); <input type="checkbox"/> OM451; <input type="checkbox"/> COMM217 (C2); <input type="checkbox"/> LW270; <input type="checkbox"/> LW466; <input type="checkbox"/> EHS330; <input type="checkbox"/> FN361;	<b>Two of the following:</b> <sup>5,6</sup> <input type="checkbox"/> CE408; <input type="checkbox"/> CE411; <input type="checkbox"/> CE445; <input type="checkbox"/> CE448; <input type="checkbox"/> CE452; <input type="checkbox"/> CE453; <input type="checkbox"/> CE501; <input type="checkbox"/> CE512; <input type="checkbox"/> CE521; <input type="checkbox"/> CE538; <input type="checkbox"/> CE541; <input type="checkbox"/> CE549; <input type="checkbox"/> CE555	<b>Two of the following:</b> <sup>5</sup> <input type="checkbox"/> CE315; <input type="checkbox"/> CE340; <input type="checkbox"/> CE380 (C1); <input type="checkbox"/> CE434 (STS/C1); <input type="checkbox"/> CE435; <input type="checkbox"/> CE478; <input type="checkbox"/> CE481 (C1); <input type="checkbox"/> CE482	
Prof. Elective				<b>AND completion of one track</b> <i>Construction / Infrastructure</i> <b>Two of the following:</b> <sup>5</sup> <input type="checkbox"/> CE304; <input type="checkbox"/> CE315; <input type="checkbox"/> CE404; <input type="checkbox"/> CE406; <input type="checkbox"/> CE408; <input type="checkbox"/> CE410; <input type="checkbox"/> CE453; <input type="checkbox"/> CE461		<b>One of the following:</b> <sup>5</sup> <input type="checkbox"/> BY/EV330 (CGI/STS/C1); <input type="checkbox"/> BY431; <input type="checkbox"/> COMM428 (CGI/STS); <input type="checkbox"/> ES436 (CGI/STS); <input type="checkbox"/> EV305 (C1); <input type="checkbox"/> PHIL370 (STS/C1); <input type="checkbox"/> POL374 (CGI/STS/C1); <input type="checkbox"/> POL375 (CGI); <input type="checkbox"/> POL470 (STS/C1)	
Prof. Elective				<i>Architectural / Building</i> <b>Two of the following:</b> <sup>5</sup> <input type="checkbox"/> CE304; <input type="checkbox"/> CE404; <input type="checkbox"/> CE408; <input type="checkbox"/> CE409; <input type="checkbox"/> CE410; <input type="checkbox"/> CE448			
Optional: CE499 FE Exam Review (0 cr)							
ES499 Prof. Experience (0 cr)							
<b>OTHER COURSES (not counted toward degree requirements)</b>				<b>CLARKSON COMMON EXPERIENCE (KA/UC) CHECKLIST</b>			<b>CEE DESIGN CREDITS</b> <input type="checkbox"/> (16.5 required)
				At least 4 of 6 Knowledge Areas <input type="checkbox"/> CGI <input type="checkbox"/> CSO <input type="checkbox"/> EC <input type="checkbox"/> IA <input type="checkbox"/> IG <input type="checkbox"/> STS			CivE Req. <sup>7</sup> 12.5
				One course with two Knowledge Areas (UC) <input type="checkbox"/>			
				Four additional Knowledge Area courses <input type="checkbox"/> ES110 STS <input type="checkbox"/> EC350 EC <input type="checkbox"/> <input type="checkbox"/>			
<sup>1</sup> Transfers replace with KA/UC elective, if not credited.							<b>COMM. POINTS</b> <input type="checkbox"/> (6.0 required)
<sup>2</sup> Transfers replace with a 400-level CE course with at least 1.5 design credits, if not credited.							CivE Req. <sup>7</sup> 6.0
<sup>3</sup> Transfers replace with EC200, if credited with EC150 or EC151.							
<sup>4</sup> Any BY course (3 credits or greater). CE315, CE316, or course designated by CEE Chair.							
<sup>5</sup> Or course designated by CEE Chair.							
<sup>6</sup> CE445, CE501, CE512, CE521, CE538, CE541, CE549 are offered infrequently.							
<sup>7</sup> Amount gained through curriculum requirements may vary if required courses are substituted.							

Appendix D: Civil Engineering Curriculum Worksheet (Class of 2021-2024)

Faculty Advisor		Student Name		Student Number		Class Year	
FRESHMAN – FALL	Design Credit <sup>2</sup>	Semester	Grade	FRESHMAN – SPRING	Design Credit <sup>2</sup>	Semester	Grade
CM131 General Chem. I (4 cr)				CM132 General Chem. II (4 cr)			
PH131 Fund. Physics I (4 cr) <sup>3</sup>				PH132 Fund. Physics II (4 cr) <sup>3</sup>			
UNIV190 Clarkson Seminar				ES110 Engineering & Society (TECH)	STS (C1)		
MA131 Calculus I				MA132 Calculus II			
FY/PE100 First Year Seminar (0 cr)				ES100 Intro Computer (2 cr)			
<b>SOPHOMORE – FALL</b>				<b>SOPHOMORE - SPRING</b>			
CE212 Intro. Eng. Des.	1.5			ES222 Strength of Materials			
ES220 Statics				CE305 Construction Planning and Management (S)	1.0		
Elective - KA or UC <sup>3</sup>				ES330 Fluid Mechanics			
MA231 Calculus III				MA232 Differential Equations			
CE301 Geospatial Analysis & Appl.				ES Elective <sup>7</sup> (ES223 RBD recommended) (S)			
<b>JUNIOR AND SENIOR YEARS</b>							
Elective - KA or UC <sup>3</sup>				CE310 Geotechnical Engineering I (S) (3 cr)	1 (C1)		
ES elective <sup>7</sup> (ES260 Materials Science recommended)				CE340 Intro. Environmental Eng. (S)	1		
ES Elective <sup>7</sup> (ES250 Elect. Sci. or ES340 Thermo. recommended)				University Course (UC) Elective			
CE320 Structural Analysis (F) (3cr)	1 (C1)			CE441 Reinforced Concrete Design (F) <b>OR</b> CE442 Steel Design (S)	3		
CE330 Water Resources I (F&S) (3 cr)	1 (C1)			Senior. Design (CE490 Str., Trans., Geo./Constr. OR CE491 Water Resources/Environmental OR CE492 Building/Construction) (S)	3 (C1)		
STAT383 Probability & Statistics				<input checked="" type="checkbox"/> <b>Checklist to monitor progress towards Professional Concentration</b>			
EC350 Econ. Principles / Engineering Economics <sup>4</sup>	EC			<b>Construction Engineering Management</b>	<b>Structural Engineering</b>	<b>Water Resources Engineering</b>	
Professional Elective				<input type="checkbox"/> CE411 (F) <input type="checkbox"/> CE415 or CE515 (F) <input type="checkbox"/> CE441 (F) <input type="checkbox"/> CE442 (S)	<input type="checkbox"/> CE420 or CE520 <input type="checkbox"/> CE415 or CE515 <input type="checkbox"/> CE441 <input type="checkbox"/> CE442 <input type="checkbox"/> CE490 or CE492	<input type="checkbox"/> CE430 <input type="checkbox"/> CE470 <input type="checkbox"/> CE479 <input type="checkbox"/> CE490/1/2 Senior Design with Water Resources focus	
Professional Elective				<input type="checkbox"/> <b>One of the following:</b> <sup>6</sup> OS286, FN361, EM/OM380 (EC), EM/OM451, EHS330, LW270, LW466, COMM217/417 (C2)	<input type="checkbox"/> <input type="checkbox"/> <b>Two of the following:</b> <sup>5</sup> CE408, CE411, CE521, CE544, CE438 or CE538, CE401 or CE501, CE445, CE448, CE455 or CE555, CE453 or CE553, CE449, CE512	<input type="checkbox"/> <input type="checkbox"/> <b>Two of the following:</b> <sup>5</sup> CE315, CE340, CE380, CE434, CE435, CE478, CE481, CE482	
Professional Elective				<b>AND</b> completion of at least one of these Tracks			
Professional Elective				<b>Construction/Infrastructure Track:</b> <input type="checkbox"/> <input type="checkbox"/> <b>Two of the following:</b> <sup>5</sup> CE315, CE406, CE 453/553, CE407, CE408, CE410/510, and/or CE461		<input type="checkbox"/> <b>One of the following:</b> <sup>5</sup> BY/EV330, BY431, ES436, COMM428, EV305, POL/SOC470	
Professional Elective				<b>Architectural Engineering &amp; Building Construction Track:</b> <input type="checkbox"/> <input type="checkbox"/> <b>Two of the following:</b> <sup>5</sup> CE409, CE448, CE407, CE408, and/or CE410/510			
<b>ES499 (Prof. Experience) (0cr)</b>							

<sup>1</sup> Courses are 3 credits unless otherwise noted.

<sup>2</sup> A Total of 16.5 Design Credits are required

<sup>3</sup> Depending on Mathematics placement

<sup>4</sup> Recommended for Fall semester immediately before graduation but before senior design

<sup>5</sup> Or other course designated by CEE Department Chair

<sup>6</sup> EM/OM380 is the preferred course in this group; students are encouraged to take more than one in this group using their KA/UC electives

<sup>7</sup> Eligible ES elective courses are ES223 Rigid Body Dynamics, ES260 Materials Science, ES340 Thermodynamics, and ES250 Electrical Science

Effective for 2018-2019



Appendix F: Environmental Engineering Curriculum Worksheet (Class of 2021-2024)

Faculty Advisor		Student Name		Student Number		Class Year	
<b>FRESHMAN – FALL</b>				<b>FRESHMAN – SPRING</b>			
CM131 General Chem. I (4 cr)	ID/Des. Credit <sup>2</sup>	Semester	Grade	CM132 General Chem. II (4 cr)	ID/Des. Credit <sup>2</sup>	Semester	Grade
PH131 Fund. Physics I (4 cr) <sup>3</sup>				PH132 Fund. Physics II (4 cr) <sup>3</sup>			
UNIV190 Clarkson Sem. <sup>5</sup>				ES110 Engr. & Society (TECH)	STS (C1)/		
MA131 Calculus I				MA132 Calculus II			
FY/PE100 First Year Seminar (0 cr)				ES100 Intro Computer (2 cr)			
<b>SOPHOMORE – FALL</b>				<b>SOPHOMORE - SPRING</b>			
CE212 Intro. Eng. Des.	1.5/			CE340 Intro to Environmental Engr. (S)	1		
ES220 Statics				CE380 Fund. of Environmental Engr. (S)	1		
Elective - KA or UC <sup>3</sup>				ES330 Fluid Mechanics			
MA231 Calculus III				MA232 Differential Equations			
CH210 Molecular Properties				Elective - KA or UC <sup>3</sup>			
<b>JUNIOR AND SENIOR YEARS</b>							
Elective - KA or UC <sup>3</sup>				BY320 Microbiology (S)			
<input type="checkbox"/> CM241 Organic Chemistry (F) <b>OR</b> <input type="checkbox"/> CM221 Spectroscopy (F)				EC350 Econ. Principles / Engineering Economics <sup>4</sup>	EC		
Earth Science Elective <sup>6</sup>				STAT383 Probability & Statistics			
CE301 Geospatial Analysis & Appl.				ES340 Thermodynamics I			
CE330 Water Resources I (F&S)	1 (C1)			Senior Design CE491 (Water Resources/ Environmental) (S) OR Approved Alternate	3 (C1)		
CE479 Water & Wastewater Treat. (F)	3 (C1)			<input checked="" type="checkbox"/> <b>Checklist to monitor progress towards Professional Concentration(s)</b>			
Core Prof. Course				Core Professional Courses	Thesis Option	Double Major Option	
Core Prof. Course				Core Professional Courses must include three of these courses <sup>5</sup> : <input type="checkbox"/> CE 482/582 Systems (2) <input type="checkbox"/> CE 486 Ind Ecology (1) <input type="checkbox"/> ES 432 Risk Anals (1.5) <input type="checkbox"/> CE 481 Haz Waste (2.5)	Students are encouraged to work with a professor in their senior year to utilize CE 495 and CE 496 as two of the professional electives in order to prepare an undergraduate thesis.  <input type="checkbox"/> CE 495 <input type="checkbox"/> CE 496	If a student desires a double major in both Civil and Environmental Engineering, the following courses should be selected as professional electives (see also the Civil Engineering Curriculum or Double Major sheet which is authoritative):  <input type="checkbox"/> ES 222 Strength <input type="checkbox"/> ES 250 Electrical Sci. OR ES223 Rigid Body D. <input type="checkbox"/> ES 260 Material Sci. <input type="checkbox"/> CE 305 Const. Planning & Mgmt.(1) <input type="checkbox"/> CE 310 Geotech I (1) <input type="checkbox"/> CE 320 Str. Anal. (1) <input type="checkbox"/> CE 441 Reinforced Concrete Design (3) OR CE 442 Steel Design (3)	
Core Prof. Course							
Professional Elective:							
Professional Elective:							
Professional Elective:							
Professional Elective:							
Professional Elective:							
Professional Elective:							
Professional Elective:							
Professional Elective:							
ES499 (Prof. Experience) (0cr)							
<b>OTHER COURSES (Do not count towards degree requirements)</b>							
See also page 2,							

<sup>1</sup> Courses are 3 credits unless otherwise noted.

<sup>2</sup> A Total of 16.5 Design Credits are required.

<sup>3</sup> Depending on Mathematics placement; may adj. to ES110 in 1<sup>st</sup> Sem., PH131 in 2<sup>nd</sup> Sem. w/ KA Course, & PH132 in 3<sup>rd</sup> Sem.

<sup>4</sup> Recommended for Fall semester immediately before grad. but before senior design; Transfers w/ EC150/151 cred. take EC200

<sup>5</sup> Or other course designated by CEE Department Chair. For UNIV190: Transfers use other KA/UNIV Course.

<sup>6</sup> Eligible Earth Science elective courses are CE435/535 Groundwater Hydrology & Geochemistry; CE315 Geology for Engineers, ES436 Global Climate Change: Science, Engineering and Policy, CE477 Atmospheric Chemistry, CE310 Geotechnical Engineering I: Soil Mechanics (note ES222 required).

Effective for 2017-2018





Appendix H: Double Major Civil & Environmental Engineering Curriculum Worksheet (Class of 2021-2024)

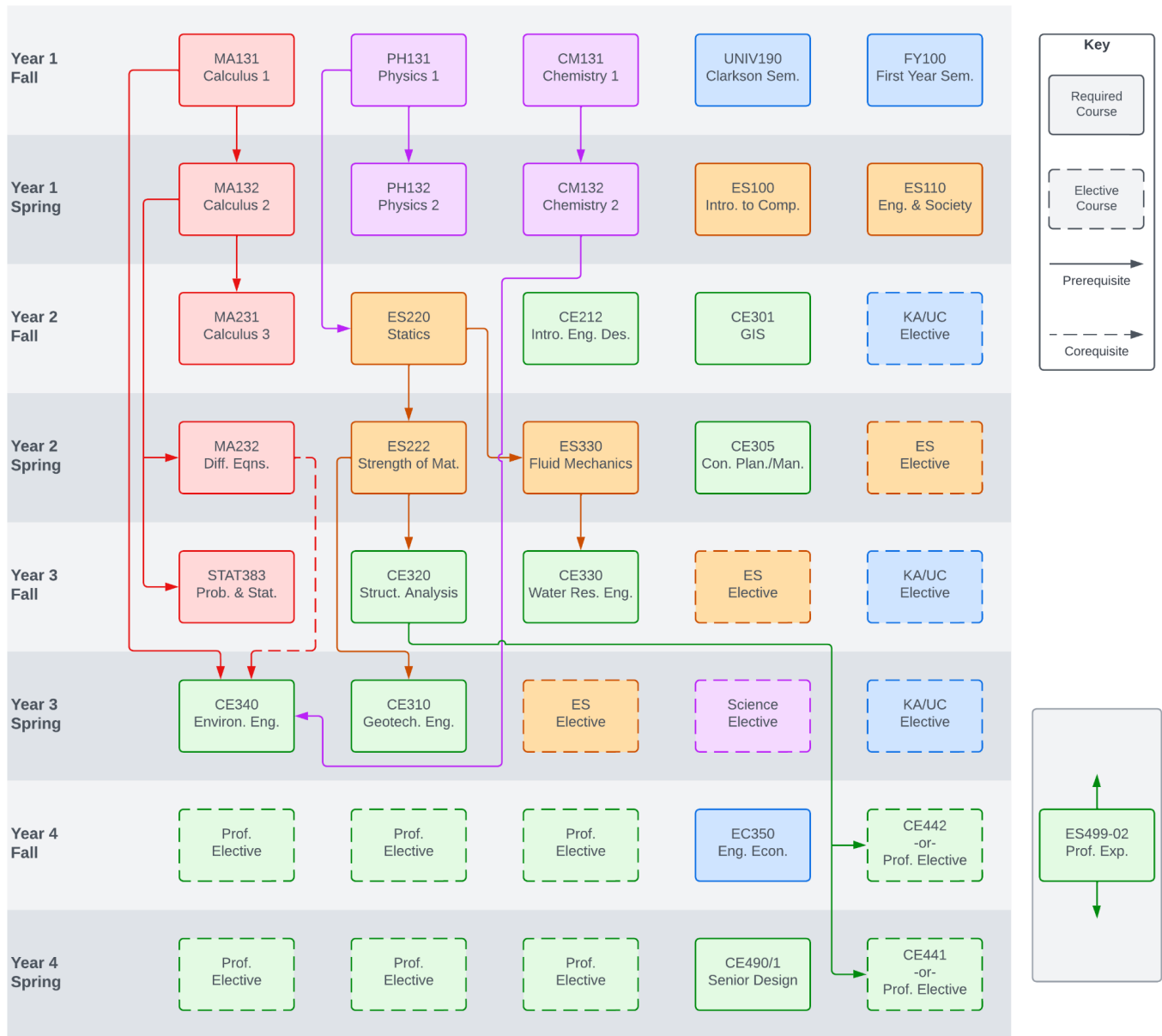
Faculty Advisor		Student Name		Student Number		Class Year	
<b>FRESHMAN - FALL</b>				<b>FRESHMAN – SPRING</b>			
Design Credit <sup>2</sup>	Semester	Grade		Design Credit <sup>2</sup>	Semester	Grade	
CM131 General Chem. I (4 cr)				CM132 General Chem. II (4 cr)			
PH131 Fund. Physics I (4 cr)				PH132 Fund. Physics II (4 cr)			
UNIV190 Clarkson Sem.				ES110 Engineering & Society (TECH)	STS (C-1)/		
MA131 Calculus I				MA132 Calculus II			
FY/PE100 First Year Seminar (0 cr)				ES100 Intro Computer (2 cr)			
<b>SOPHOMORE - FALL</b>				<b>SOPHOMORE - SPRING</b>			
CE 212 Intro. Eng. Des. (F)	1.5/			CE340 Intro to Environmental Engr	1		
ES220 Statics				CE380 Fundamentals of Environmental Engr	1		
CH210 Molecular Properties				ES222 Strength of Materials			
MA231 Calculus III				MA232 Differential Equations			
Elective – KA				Elective – KA			
<b>JUNIOR/SENIOR YEAR</b>							
ES330 Fluid Mechanics ( F Junior Yr)				CE320 Structural Analysis (F Junior Yr)	1 (C1)		
ES260 Material Science (F&S)				CE441 Reinforced Concrete Design (S Senior yr) OR CE442 Steel Design (F Senior Yr)	3		
ES340 Thermodynamics I (F&S)				CE330 Water Resources I (F&S)	1 (C1)		
ES Elective (ES 223 or ES 250) (F&S)				CE479 Water &Wastewater Treatment (F)	3 (C1)		
<input type="checkbox"/> CM241 Organic Chemistry (F) OR <input type="checkbox"/> CM221 Spectroscopy (F)				Senior Design CE491 (Water Resources/ Environmental) (S) OR Approved Alternate	3 (C1)		
BY320 Microbiology (S)				<b>Environmental Engineering Core Professional Courses</b>			
STAT383 Probability and Statistics (F&S)				Core Professional Courses must include three of these courses <sup>5</sup> :			
EC350 Econ. Principles & Engineering Economics (F&S)				<input type="checkbox"/> CE482/582 Environmental Systems (2)			
Elective – KA/UC				<input type="checkbox"/> CE486 Industrial Ecology (1)			
				<input type="checkbox"/> ES432 Risk Analysis (1.5)			
				<input type="checkbox"/> CE481 Hazardous Waste Engineering (2.5)			
EnvE Core Professional Course <sup>3</sup>							
EnvE Core Professional Course <sup>3</sup>							
EnvE Core Professional Course <sup>3</sup>							
CE301 Geospatial Analysis & Appl. (F&S)							
CE305 Construction Planning and Management (S)	1						
CE310 Geotechnical Engineering I (S)	1 (C1)						

<sup>1</sup> All courses are 3 credits unless otherwise noted

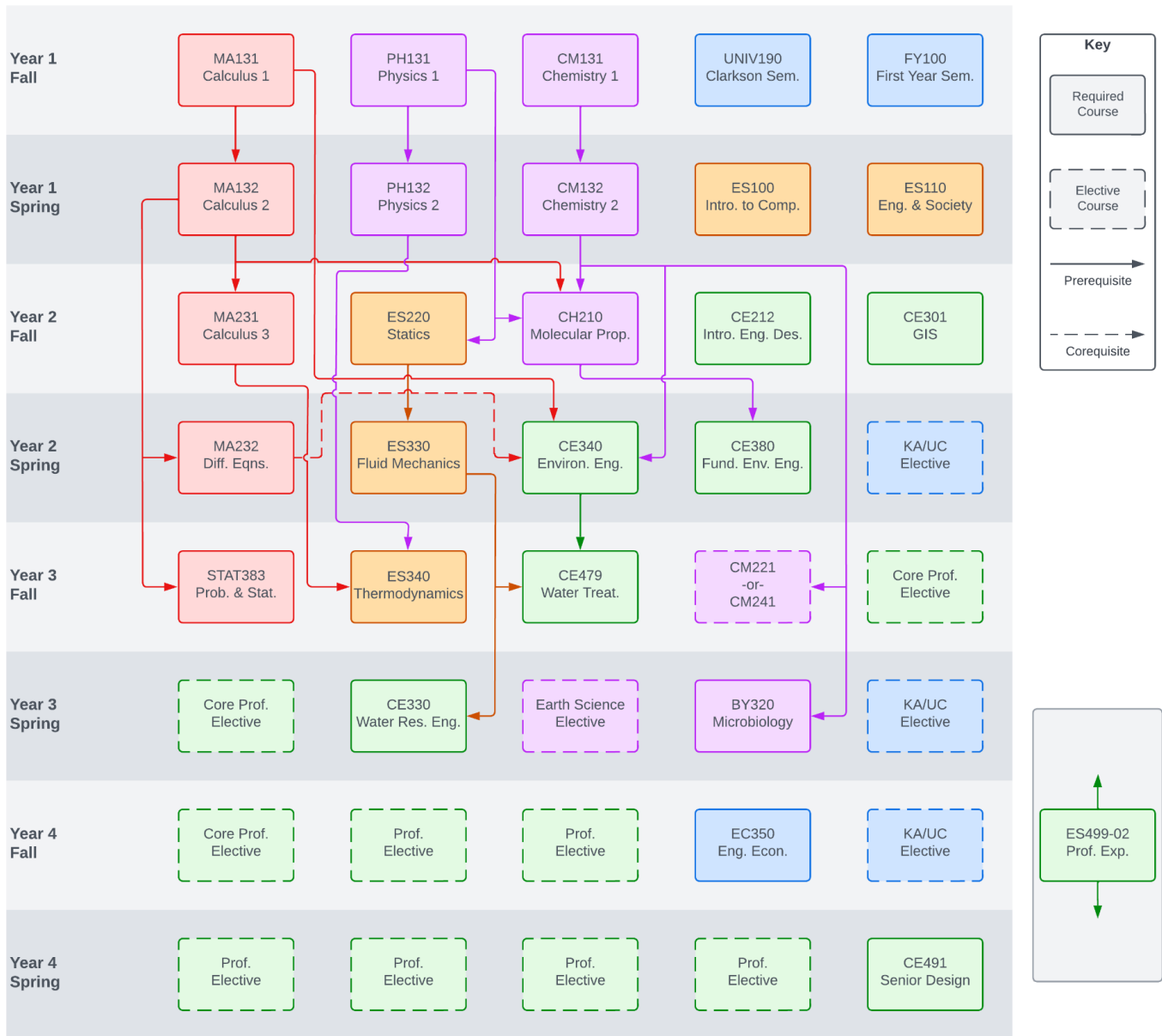
<sup>2</sup> A total of 16.5 design credits are required

<sup>3</sup> Environmental Engineering Core Professional Courses must include three of these courses: CE 482/582 Systems (2); CE 486 Ind Ecology (1); ES 432 Risk Anals (1.5) ; CE 481 Haz Waste (2.5)

Appendix I: Civil Engineering Curriculum Flowchart (Class of 2025 and after)



Appendix J: Environmental Engineering Curriculum Flowchart (Class of 2025 and after)



Appendix K: Civil & Environmental Engineering Hosted Minors

CIVIL & ENVIRONMENTAL ENGINEERING MINORS  
CURRICULUM CHECKLIST

Faculty Advisor	Student Name	Student Number	Class Year
<input type="checkbox"/> <b>MINOR IN ARCHITECTURAL &amp; FACILITIES ENGINEERING</b>			
<p><b>Core Required Courses</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> CE305 Construction Planning &amp; Management</li> <li><input type="checkbox"/> CE408 Building Info. Modeling/Integrated Project Delivery</li> <li><input type="checkbox"/> CE409 Fundamentals of Building Systems</li> <li><input type="checkbox"/> CE448 Introduction to Architectural Engineering</li> </ul>		<p><b>Complete TWO of the following core electives</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> CE304 Introduction to Scheduling &amp; Estimating</li> <li><input type="checkbox"/> CE410/510 Sustainable Infrastructure and Building</li> <li><input type="checkbox"/> CE415/515 Foundations and Retaining Structures</li> <li><input type="checkbox"/> CE442 Steel Design</li> <li><input type="checkbox"/> ME411 Introduction to Heat Transfer</li> <li><input type="checkbox"/> EE221 Linear Circuits</li> <li><input type="checkbox"/> EE333 Power System Engineering</li> <li><input type="checkbox"/> EHS330 Occupational Safety &amp; Ergonomics</li> <li><input type="checkbox"/> EV305 Sustainability and the Environment</li> <li><input type="checkbox"/> CE404 Applications in Scheduling &amp; Estimating</li> <li><input type="checkbox"/> CE411 Construction Materials Engineering</li> <li><input type="checkbox"/> CE441 Reinforced Concrete Design</li> <li><input type="checkbox"/> ME310 Thermodynamic Systems Engineering</li> <li><input type="checkbox"/> ME444 Computer Aided Engineering</li> <li><input type="checkbox"/> EE331 Energy Conversion</li> <li><input type="checkbox"/> EE/ME450 Control Systems</li> <li><input type="checkbox"/> ES238 Introduction to Energy Systems</li> </ul>	
<p><b>Complete ONE math elective</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> DS/MA241 Introduction to Data Science</li> <li><input type="checkbox"/> MA330 Advanced Engineering Math</li> <li><input type="checkbox"/> STAT383 Probability and Statistics</li> <li><input type="checkbox"/> STAT389 Probability and Statistics / Multivariate Analysis</li> </ul>			
<p><b>Complete ONE management elective</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> EM/OM380 Project Management (EC)</li> <li><input type="checkbox"/> FN361 Financial Management</li> <li><input type="checkbox"/> OS286 Organizational Behavior I (IG)</li> <li><input type="checkbox"/> LW270 Law and Society I</li> </ul>			
<p><b>Complete ONE art elective</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> DA110 Drawing (IA/C1)</li> <li><input type="checkbox"/> DA200 3D Digital Modeling &amp; Imagery (IA)</li> </ul> <p><i>Or other approved course in art history, architectural history, art appreciation, applied art, or related study</i></p>		<p><b>Complete ONE capstone design course</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> CE490/491 Senior Design</li> <li><input type="checkbox"/> ME446 Integrated Design II</li> <li><input type="checkbox"/> EE412 Senior Design</li> <li><input type="checkbox"/> EM456 Process Engineering &amp; Design</li> </ul> <p><i>Must have an Architectural and/or Facilities focus</i></p>	
<input type="checkbox"/> <b>MINOR IN ENVIRONMENTAL ENGINEERING</b>			
<p><b>Core Required Courses</b></p> <p><i>Complete ONE of the following</i></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> CE340 Introduction to Environmental Engineering</li> <li><input type="checkbox"/> CE380 Fundamentals of Environmental Engineering</li> <li><input type="checkbox"/> CH220 Materials Balances</li> </ul> <p><i>Complete ONE of the following</i></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Capstone Design with specific environmental focus (e.g., CE490/1, MP401, AE451, CH420, EE412, EM456, ME446)</li> <li><input type="checkbox"/> Environmentally-related research (e.g., CE495, CE496, ES443/4/5/6/7)</li> </ul>		<p><b>Complete TWO of the following professional electives</b></p> <p><i>Core Professional Electives (minimum ONE required)</i></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> CE479 Water and Wastewater Treatment Processes</li> <li><input type="checkbox"/> CE481 Hazardous Waste Management Engineering</li> <li><input type="checkbox"/> CE482 Environmental Systems Analysis and Design</li> <li><input type="checkbox"/> CE486 Industrial Ecology</li> <li><input type="checkbox"/> ES432 Risk Analysis</li> </ul> <p><i>Other Professional Electives</i></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> BY314 Bioinformatics</li> <li><input type="checkbox"/> BY328 Conservation Biology</li> <li><input type="checkbox"/> BY412 Molecular Biology Laboratory</li> <li><input type="checkbox"/> BY425 Biological Systems &amp; Environmental Change</li> <li><input type="checkbox"/> BY431 Limnology &amp; BY432 Limnology Laboratory</li> <li><input type="checkbox"/> BY486 Molecular Biotechnology</li> <li><input type="checkbox"/> CE430 Water Resources Engineering II</li> <li><input type="checkbox"/> CE434 Sustainable Development Engineering</li> <li><input type="checkbox"/> CE435 Groundwater Hydrology &amp; Geochemistry</li> <li><input type="checkbox"/> CE477 Atmospheric Chemistry</li> <li><input type="checkbox"/> CE478 Solid Waste Management and Landfill Design</li> <li><input type="checkbox"/> ES436 Global Climate Change: Science, Engineering &amp; Policy</li> <li><input type="checkbox"/> EHS406 Industrial Hygiene Control Methods</li> <li><input type="checkbox"/> EHS416 Principles of Occupational Health</li> <li><input type="checkbox"/> EV314 Adirondack Integrated Research Project</li> </ul>	
<p><b>Complete ONE chemical principles elective</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> CH210 Chemical Engineering Principles</li> <li><input type="checkbox"/> CH221 Spectroscopy</li> <li><input type="checkbox"/> CM241 Organic Chemistry I</li> <li><input type="checkbox"/> CM371 Physical Chemistry I</li> </ul>			
<p><b>Complete ONE biological principles elective</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> BY214 Genetics</li> <li><input type="checkbox"/> BY222 Ecology &amp; BY224 Ecology Laboratory</li> <li><input type="checkbox"/> BY320 Microbiology</li> <li><input type="checkbox"/> BY330/EV330 Great Lakes Water Protection</li> </ul>			

*Appendix L: Professional Elective Approval Form*

Clarkson University  
Wallace H. Coulter School of Engineering  
Department of Civil and Environmental Engineering



**Clarkson**<sup>TM</sup>

CIVIL & ENVIRONMENTAL ENGINEERING

**Professional Elective Approval Form**

For consideration of any other course as a Professional Elective on a case-by-case basis, both the student and advisor should agree that the course is professionally relevant, meets the student's professional career objectives, is of reasonable rigor, and does not contain a significant amount of material already in the student's program. Students must still fulfill the minimum 16.5 design credit requirement for graduation. In case of questions regarding the appropriateness of a course as a professional elective, contact the Department's Executive Officer. This form is NOT required for those courses already approved as annotated in this handbook.

All requests for approval **MUST** be accompanied by a justification statement explaining the reasons why the course that is not listed as a normally acceptable professional elective is required to satisfy your specific career objectives.

Name of Student: \_\_\_\_\_

Student Number: \_\_\_\_\_

**Course Requested for approval:**

Course Number: \_\_\_\_\_ Course Title: \_\_\_\_\_ Credit Hours: \_\_\_\_\_

Semester to be Taken: \_\_\_\_\_

**Approvals:**

Student Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Advisor Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Chair / XO Approval: \_\_\_\_\_

Date: \_\_\_\_\_

*Appendix M: Design Credits Course Listing*

The CEE department requires that a total of 16.5 credit hours of design be taken through the CivE or EnvE curricula. The following is a list of courses that carry design credits:

Course No.	Course Title	Design Credits
CE212	Introduction to Engineering Design	1.5
CE302	Surveying, Geodetic Control, and Engineering Measurements	1
CE304	Introduction to Scheduling and Estimating	2
CE305	Construction Planning and Management	1
CE310	Geotechnical Engineering I: Soil Mechanics	1
CE320	Structural Analysis	1
CE330	Water Resources Engineering I	1
CE340	Introduction to Environmental Engineering	1
CE380	Fundamentals of Environmental Engineering	1
CE404	Applications in Scheduling and Estimating	2
CE406	Infrastructure Construction	2
CE408	Building Information Modeling and Integrated Project Delivery	2
CE409	Fundamentals of Building Systems	2
CE410	Sustainable Infrastructure & Building	3
CE411	Construction Materials Engineering	2
CE415/515	Foundations, Stability, and Retaining Structures	3
CE430	Water Resources Engineering II	1
CE433	Human Exposure Analysis	2
CE434	Sustainable Development Engineering	2
CE435/EV435	Groundwater Hydrology & Geochemistry	1
CE441	Reinforced Concrete Design	3
CE442	Steel Design	3
CE445	Timber Design	3
CE448	Introduction to Architectural Engineering	2
CE452/552	Advanced Mechanics of Materials	1
CE453/553	Properties and Performance of Concrete Materials	1
CE461	Transportation Systems Design	3
CE463	Railroad Engineering	2
CE478	Solid Waste Management & Landfill Design	2
CE479/579	Water and Wastewater Treatment Processes	3
CE481/581	Hazardous Waste Management Engineering	2.5
CE482/582	Environmental Systems Analysis & Design	2
CE486/586	Industrial Ecology	1
CE490/491	Senior Design (Structures, Transportation, Geotechnical, Construction, and Facilities/Architectural or Water Resources/Environmental)	3
CE508	BIM for Construction Prefabrication	2
CE521/ME521	Composite Mechanics and Design	1
CE541	Bridge Engineering	2
CE555	Structural Damage Assessment, Rehabilitation, and Repair and Strengthening	1
CE584	Chemodynamics	1
EE/ES438	Alternate Energy Systems	1
EHS406	Industrial Hygiene Control Methods	2
ES432	Risk Analysis	1.5
EV314	Adirondack Integrated Research Project	1
EV390	Sustainability Project Experience	3



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