University of Connecticut

# Guide to Course Selection and Student Advising Guide

# B.S.E. Civil Engineering
# December 2010

**With 3 and 4-digit Course Numbers**

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# What is in this Document?

This document is a roadmap to guide you, the undergraduate student in Civil Engineering (CE), through the complex process of selecting and registering for courses to earn your degree as efficiently and quickly as you want. It is organized according to common questions and issues you will face during your time at UConn.



This document does not substitute for the course catalog. Complete information about CE degree requirements can be found at the following web addresses:

- Undergraduate Catalog: http://www.catalog.uconn.edu/
- Gen Ed Course Lists: http://www.geoc.uconn.edu
- CE Curriculum: http://www.engr.uconn.edu/cee/ and in Appendix A.
- CE Plans of Study: http://www.engr.uconn.edu/cee/

## What Does That Abbreviation or Acronym Mean?

Large organizations (including UConn) are notorious for using abbreviations and acronyms liberally in descriptions of offices and procedures. These abbreviations and acronyms are helpful for streamlining text, but only when everyone knows what they mean. Following is a list of abbreviations and acronyms that are used in this document and that you might see elsewhere as you navigate through UConn.

| | |
|---|---|
| ABET | Accreditation Board for Engineering and Technology |
| ASCE | American Society of Civil Engineers |
| CAST | Castleman Building (home of the CEE Department) |
| CE | Civil Engineering (the undergraduate or graduate program) |
| CEE | Civil & Environmental Engineering (the Department) |
| EII | Engineering II Building (home of the SoE Assistant Dean) |
| EIT | Engineer in Training |
| ENVE | Environmental Engineering (the undergraduate or graduate program) |
| FE | Fundamentals of Engineering examination |
| GenEd | General Education courses (required of all UConn undergraduates) |
| GPA | Grade Point Average |
| P&P | Principles and Practice examination |
| PE | Professional Engineer |
| PEO's | Program Educational Objectives |
| POS | Plan of Study |
| PR's | Professional Requirements (senior level electives) |
| SoE | School of Engineering |
| UConn | University of Connecticut (you probably know this one already) |

## What Is Civil Engineering?

Civil and Environmental Engineers seek to sustainably plan, design, construct and maintain infrastructure systems that meet the evolving needs of humanity while maintaining and protecting the natural environment. We work in the natural and built environments and must account for the forces of nature in our designs, seeking to minimize any adverse effects of our designs on the environment and society. We design and construct the physical infrastructure needed by society to insure a high quality of life. This includes the buildings where we live and work, the highways where we travel, the water that we drink, as well as a multitude of other projects necessary for the well-being of life on planet earth.

Civil & Environmental Engineers address some of the most important challenges that face our world today, including:

- Restoration and protection of the environment
- Sustainable energy and the environment
- Global warming and climate change
- Global water supply and flood and drought management
- Planning and design of sustainable transportation systems
- Safe, efficient and secure transportation for people and goods
- Structural monitoring and rehabilitation of aging infrastructure
- Infrastructure protection and natural hazards mitigation
- Design and construction of new infrastructure

**The mission of the Civil and Environmental Engineering Department** is to educate students who will become leaders in the profession; to advance the profession through cutting edge research and scholarship; to provide lifelong learning opportunities; and to serve as an intellectual resource to the state, national and international communities. Our academic programs emphasize fundamental scientific concepts, state-of-the-art planning and design, critical thinking and communication skills, interdisciplinary teamwork, strong faculty-student interaction and professional development. We strive to provide a uniquely challenging and invigorating learning environment for our students.

## What is Accreditation and Why Is It Important?

Accreditation is a process to assure you that the Civil Engineering degree you earn at UConn (or any other accredited engineering school) can be trusted to prepare you for your career objectives, including gaining employment as an engineer after graduating and eventually becoming licensed as a Professional Engineer (PE) (see section "What is Professional Licensure?").

Engineering and technology programs in the US, including your CE degree from UConn, are accredited by an organization called ABET. One aspect of accreditation is announcing to our constituents – prospective students and potential employers – what our program prepares graduates for. This is known as our **Program Educational Objectives**, or PEO's, and they describe what we prepare our students to be doing 5-10 years after they graduate.

**The UConn Civil Engineering undergraduate program educational objectives** are to prepare our alumni/ae with the knowledge and skills needed to:

- actively contribute to the advancement of engineering practice in the public or private sectors in the technical areas of environmental, geotechnical, structural, transportation, and water resources engineering;
- recognize the importance of, and follow a path that can lead to, licensure as professional engineers who design and construct solutions to civil engineering problems in the natural and built environments; and
- adopt and continuously practice life-long learning through post-graduate and professional education.

In addition to publishing these PEO's, we also must assess whether or not we achieve them. One of the ways we do this is to periodically ask our graduates questions about their career progress. After you earn your degree at UConn, we may contact you at some time to do this. It is very important to maintain accreditation of your degree to help us out by answering these questions. These questions are also helpful to support our goal of continuously looking for ways to improve our program. We thank you in advance for your cooperation.

## What Else Does Accreditation Involve?

**PROGRAM OUTCOMES** are what students are expected to know and be able to do by the time of graduation, and include the following:

a.) an ability to apply knowledge of mathematics, science, and engineering
b.) an ability to design and conduct experiments, as well as to analyze and interpret data
c.) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
d.) an ability to function on multi-disciplinary teams
e.) an ability to identify, formulate, and solve engineering problems
f.) an understanding of professional and ethical responsibility
g.) an ability to communicate effectively
h.) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
i.) a recognition of the need for, and an ability to engage in life-long learning
j.) a knowledge of contemporary issues
k.) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

In addition there are special **CE PROGRAM CRITERIA** defined by the American Society of Civil Engineers (ASCE), the professional society for civil engineers in the US. These criteria require the CE Program to demonstrate that its graduates can:

- apply knowledge of mathematics through differential equations, calculus-based physics, chemistry, and at least one additional area of science, consistent with the program educational objectives;
- apply knowledge of four technical areas appropriate to civil engineering;
- conduct civil engineering experiments and analyze and interpret the resulting data;
- design a system, component, or process in more than one civil engineering context; and
- explain basic concepts in management, business, public policy, and leadership; and explain the importance of professional licensure.

The undergraduate course program you take in CE is designed so that by graduation you will be able to do all of the above. Various courses in the curriculum are designed to teach you each of these things and also test whether or not you are able to do them.

## What is Professional Licensure?

Engineers are required to be licensed when their work directly affects public health, safety and welfare. Licensure ensures that engineers have met minimum qualifications, including competence, ability, experience and character. The licensing process involves an initial exam, called the *Fundamentals of Engineering Examination (FE)*, professional experience, and a second exam, called the *Principles and Practice of Engineering (P&P).* Once an individual has passed the FE exam, he/she is certified as an *Engineer-in-Training (EIT).* After passing the P&P Exam, the individual becomes a *Professional Engineer (PE)*, and is said to be "licensed". The exams are developed and administered by the *National Council of Examiners for Engineering and Surveying* (www.ncees.org).

The first exam, the *Fundamentals of Engineering Examination*, can be taken just before graduation from a four-year accredited engineering program, including UConn (See "What is Accreditation …?" on page 4). The exam stresses subject material in a typical undergraduate program, including chemistry, physics, mathematics, statistics, dynamics, mechanics of materials, fluid mechanics, electrical engineering, thermodynamics and engineering economics.

The faculty strongly encourage all CE students to take this exam in the last semester of their undergraduate program when the subject matter is still fresh in your mind. Waiting to take this exam after graduation often requires significant additional preparation. The exam is given twice a year, in April and in October. Students need to submit applications by December 1 for the April exam and by July 1 for the October examination. The application and instructions can be found online at http://www.dcp.state.ct.us/licensing/professions.htm.

Following are some hints for completing the application:

- Sign up as Class 9S.
- You only need to list faculty names; you do not need their signatures.
- Leave the part about listing experience blank.
- The UConn COOP has a notary.
- The Registrar's Office at the Wilbur Cross building can process the "Certificate of Education".
- You do not need to fill in the "Verification of Registration" form.

# Who Do I Need To See For … ?

## *Signatures*

| **If a form asks for the signature of …** | **… see:** |
|---|---|
| … the Dean | **the Assistant Dean** for undergraduate education |
| … the Department Head | **the Associate Head** of CEE |
| … your advisor | **your faculty advisor**, assigned by the **Director of Advising** in SoE |

## *People in the Registration Process and What They Do*

| | |
|---|---|
| Assistant Dean, SoE | SoE Dean's designee for undergraduate academic issues; supervises the **Director of Advising, SoE;** |
| Director of Advising, SoE | Reviews and approves POS's for all engineering students; approves substitutions for SoE requirements, such as Math, Sciences, Gen Ed; assigns students to faculty advisors |
| Associate Head, CEE | Department Head's designee for academic issues; works with the **Director of Advising, CE** to approve substitutions for CE courses and program requirements |
| Director of Advising, CE | Reviews and approves POS's for CE students; approves substitutions for CE courses and program requirements |
| Your faculty advisor | A member of the CEE Faculty who will help you in planning your program of study and selecting courses |

## *So … Who Are these People?*

| **Title** | **Name, Office, Phone, Email** |
|---|---|
| Assistant Dean, SoE | Marty Wood, EII 304A, 860-486-2167<br>marty@engr.uconn.edu |
| Director of Advising, SoE | Brian Schwarz, EII 304B, 860-486-5462<br>schwarz@engr.uconn.edu |
| Associate Head, CEE | Prof. John N. Ivan, CAST 301, 860-486-0352<br>johnivan@engr.uconn.edu |
| Director of Advising, CE | Prof. Howard I. Epstein, CAST 324, 860-486-5638<br>hie@engr.uconn.edu |
| Your faculty advisor | You can find out who your advisor is by logging into PeopleSoft, or asking the **Director of Advising, SoE** |

## How Do I Register for Classes?

1. **Sign up for an advising session.** In order to provide a more uniform advising experience for all CE students, the CEE Department now provides undergraduate course advising in sessions for 15 to 25 students. Several sessions are scheduled each week during the advising season. The sessions each week are tailored for students at a particular stage in the curriculum (*i.e.*, seniors, juniors, sophomores, frosh), specifically those who have PeopleSoft appointments in the following week. Special note for honors students: you must contact your advisor for an individual appointment. Do not attend the regular advising sessions. Your advisor will give you alternative instructions for course registration and having your bar removed.
2. **Attend the advising session.** Several things will happen in this session:
   a. **You will compare your transcript with the course curriculum.** This will identify your progress toward degree completion and identify which courses you should take next semester.
   b. **You will fill out a Plan of Study (POS).** This must be submitted for approval two (2) semesters before you expect to graduate.
   c. **The advisors will initial your name on the registration list.** Make sure you see them do this, as this is the instruction to the CEE Office staff to remove your registration bar. The CEE Office staff will usually complete this within an hour after the end of the advising session, and in any case no later than noon on the day following the advising session.
   d. **If you are registering for your last semester**, you will complete a special form to register for CE 4910W ("Civil Engineering Projects", formerly CE 280W) and get a permission number for it.
   e. **You should tell the advisors about your career plans, including graduate school.** This will help them to give you advice about which classes to take.
   f. **Fill out the review of the advising process.** Please turn this in to the box in the CEE Office, CAST 302. Do not give it to the advisors.
3. **Login to PeopleSoft** during your assigned time window and sign up for your courses. Be sure to sign up for exactly the courses your advisor directed you to take. If you need to deviate from the schedule you and your advisor discussed, contact your advisor or the Associate Head of CEE immediately to make sure this will not have repercussions on your course program and planned graduation date.

## What is the Plan of Study?

The Plan of Study (POS) is a contract between you and the University. The POS lists all of the courses you will take to meet the requirements for your degree. Once you have passed all of these courses, you will receive your degree.

### *Where Do I Get A Copy of the POS?*

You can download a copy of the CE POS at this link: http://www.engr.uconn.edu/cee/. Navigate to "Information for Current Undergraduate Students" and then "Plans of Study".

### *Which POS Should I Use?*

Choose the POS for the catalog in effect when you took the majority of the 3rd year courses. For example, if you took most of these courses in academic year 2009-2010, choose the POS labeled "fall 2009", or the most recent one before that.

### *When Should I Submit My POS?*

Your POS must be submitted by the time you register for your second-to-last semester. For most students this is in the spring of the third year when they are registering for their 7th semester.

### *Who Fills Out My POS?*

You should fill out the POS together with your course advisor. It is often helpful to start this process at least one semester ahead of time, that is, in the fall of the third year.

### *Do All of the Courses I Take Go On the POS?*

You don't need to list every course on your transcript on the POS. You only need to list what is needed to meet the required courses for the CE degree and total at least 128 credits. In some cases, it may be necessary to list more than 128 credits. Some courses may not be needed; leave them off. Any course not used to meet your degree requirements can be used to meet another degree, *e.g.,* a graduate degree.

### *What If I Have Questions about the POS?*

Contact the Associate Head or the Director of Advising, CE.

## How Do I Fill Out the POS?

1. IMPORTANT: Fill in and sign the form in ink.
2. Fill out the top with the student's contact information, expected graduation date, and the catalog year requirements being followed. This is the address to which communication about the POS will be sent, so be sure it is accurate and a place where you receive mail from the postal service and an email address you check regularly. Fill out this section LAST.
3. For each of the General Education (Gen Ed) Requirements, write in the course you chose to meet that requirement.
4. If you used the same course to meet more than one GenEd requirement, write it in parentheses () for the second requirement to indicate this.
5. For the second language competency, circle "High School" if the requirement was met in high school. If not, write in the courses being used to meet that requirement.
6. For the writing competency, write the course in parentheses if it is listed elsewhere on the POS to meet another requirement.
7. When there is a choice between two courses, be sure to circle which course you took.
8. Next to "CE 2010" or "CE 291" write which two semesters this was taken.
9. Mark "T" next to any course requirements met by transfer credit.
10. Total the course credits on each row in separate columns at the right for those taken at UConn and those transferred in. Do not include courses written in parentheses (those meeting multiple requirements) in the row totals. Also compute the total UConn and transfer credits at the bottom.
11. In the "Comments" section at the bottom, indicate the following using footnotes (*, +, etc.):
    a. Titles of any "special topics" courses taken
    b. Course substitutions (attach substitution form approved by SoE Director of Advising), including any transfer courses that did not transfer directly as required courses.
12. If a minor field is taken, write it in the indicated place at the bottom, and attach the signed POS for that minor degree.
13. Once the POS is completed, both the student and the advisor sign and date it in ink.
14. Make sure the top section is completed, attach a current copy of the student's unofficial transcript and submit it to the Director of Advising, CE.

# How Do I Satisfy the General Education Requirements?

## *What is General Education?*

*General Education* (GenEd) consists of courses outside your major intended to give you a "broad" education that is not "one-dimensional". UConn has common GenEd requirements for all students, including those in Engineering. Our accreditation also requires that Engineering students devote a portion of their studies to GenEd to make sure engineers understand the world around them and the society they will serve. GenEd includes courses in the Sciences, Liberal Arts, Humanities and Social Sciences. However, the Science (Chemistry and Physics) and Mathematics courses required of Engineering majors exceed (and automatically satisfy) the GenEd science requirements.

## *What are the rules for selecting GenEd courses?*

1. Two courses each in Content Areas (CA) 1, 2, 3 and 4 (CA 3 is met with CHEM and PHYS courses). The most up-to-date list of Gen Ed courses can be found online at: http://www.geoc.uconn.edu/.
2. The six courses in CA 1 through 3 must be from 6 different Departments.
3. One of the CA 4 courses must be on a sub-list of "International" courses.
4. All Engineering students must take PHIL 1104. This counts as a CA 1 course.
5. One of your CA 1 or 2 courses may also count as one of your CA 4 courses. There are many CA 1 and 2 courses that are also on the CA 4 list. Many of these are also "International" courses.
6. You also must take one more W course, in addition to the required CE 4910W. Many of the GenEd courses are also W courses and can meet both requirements.

## *Can some GenEd courses strengthen my major?*

Courses in Economics, Geography, Psychology and Political Science can be good choices to complement your study in CE. Ask your advisor or other students for suggestions. There is a new course ENVE 1000 "Environmental Sustainability" which satisfies the CA 2 requirement.

## How Do I Satisfy the CE Program Requirements?

The courses required for the CE degree are listed in the Appendix and on the POS. Pay close attention to the pre-requisites for each course. The Appendix also gives a flow chart of the required and elective courses indicating the pre-requisite chains with arrows.

Professional Requirements (PR) consist of five (5) or six (6) elective courses in engineering, science or math (depending on the catalog you are under). CE students must take courses in four (4) different areas of CE as listed below.

**Professional Requirements for Civil Engineering Major**

*(Proficiency in four CE Areas Requirement)*

| **Technical Areas** | **Required CE Courses** | **Proficiency Courses** (4 required: at least 1 each from 4 different areas) |
|---|---|---|
| Construction Management | CE 2210 | CE 4210 |
| Environmental/Sanitary | CE 2310 | CE 3320* or 4310 |
| Geotechnical | CE 3510 | CE 4510 or 4541 |
| Hydraulic/Water Resources | CE 3120 | CE 4810 or 4820 |
| Structural | CE 3630 or 3640 | CE 3630 or 3640** |
| Surveying/Geodetic | CE 2410 | CE 4410 |
| Transportation | CE 2710 | CE 4710 or 4720 or 4580 |

*CE 3320 is allowed for CE proficiency requirements only if CE 3620 has also been taken

**Whichever was not taken as the required structural engineering course

The remaining credits of CE professional requirements may be satisfied by any 3000-level or higher course in engineering, science or mathematics, or MGMT 5335. At most one course may be at 2000-level. Following are some suggested courses:

- any courses in the above list not already used to meet proficiency requirements or other course requirements
- CE 3520 Civil Engineering Materials or CE 3300 Environmental Engineering Laboratory (only if the other was taken for the lab requirement)
- CE 3610 Basic Structural Analysis or CE 3320 Water Quality Engineering (only if the other was taken to meet CE requirements)
- CE 4610 Advanced Structural Analysis
- CE 3530 Engineering & Environmental Geology

## Which PR Courses Should I Take If I Am Interested in One Area of CE?

The program in CE is designed to give you a broad education that will give you flexibility in future career choices. The world is changing rapidly and it is to your benefit to prepare yourself to easily jump to another area according to the job market and your own developing career interests. Nevertheless, you may have one area of CE that you want to focus in. Following are lists of PR courses we suggest you take if you want to focus in any of these technical areas.

**Construction Engineering**

CE 4210
CE 4410
CE 3630 or 3640
CE 4510 or 4541
CE 5720 or 5580

**Environmental Engineering***

CE 4310
CE 4410
CE 4810
CE 4210
CE 3530 or ENVE 3230

**Geotechnical Engineering**

CE 4510
CE 4210 or 4410
CE 4810 or 4310
CE 3630 or 3640
CE 3530 or 4541

**Pavement Engineering**

CE 4210
CE 4410
CE 3630 or 3640
CE 4510 or 4541
CE 5580

**Site Engineering**

CE 4210
CE 4410
CE 4710
CE 4810 or 4510 or 4541
CE 5720

**Structural Engineering**

CE 3630 or 3640
CE 4510 or 4541
CE 4210
CE 4410
CE 4610

**Transportation Engineering**

CE 4210
CE 4410
CE 4710
CE 3630 or 3640 or 4510 or 4541
CE 5720 or 5730 or 5740

**Water Resources Engineering**

CE 4210
CE 3320 or 4310
CE 4410
CE 4810
CE 4820

*to focus in environmental engineering, be sure to choose CE 3320 and CE 3300 for the lab and analysis requirements. If you follow this track, it will be easy to also get a minor in ENVE.

# How Do I Choose Free Electives?

## *How many free elective credits do I get?*

The number of free elective credits varies for each student, depending on many factors. To find out how many free elective credits you need, fill out your POS to meet all of the GenEd and CE requirements, and then total the credits for those courses. The difference between 128 and that number is the number of free elective credits you must put on your POS.

## *What can I take for free electives?*

You may take any course, either at UConn or transferred from another college or university, subject to the following restrictions:

### University Course Restrictions (listed in the Undergraduate Catalog):

- No credit for MATH 1010
- Not more than 12 credits of biology (MCB or EEB) at the 1000-level
- Not more than 3 credits of EKIN 1160
- Not more than 6 credits from PHIL 1101 through 1107 (note that PHIL 1104 is required for students in Engineering)
- Not both STAT 1000 and 1100

No credit for a course prerequisite to a second course in the same department may be counted for credit toward graduation after the student has passed the second course (see "FAQ's about Course Registration Issues", page 20)

### Additional SoE Restrictions (these may <u>not</u> be used on the POS):

- MATH 1110Q or 1112Q or courses numbered below 1100
- PHYS 1010Q and 1030Q
- CSE 1000
- STAT 1000
- Courses labeled "independent study" or "variable topics" taken in departments outside the School of Engineering
- No course taken on a Pass/Fail basis may be counted for credit toward graduation or used to meet any course requirement of the School of Engineering (other than CE 2010)
- No more than 8 credits of 1000-level PHYS or CHEM

# What about Transfer Courses and Course Substitutions?

## *How do I get credit for courses I took somewhere else?*

Courses from other institutions with a grade of C- or better can be transferred and can count as credit towards graduation, subject to the credit restrictions noted on page 14. Note also that not every course will help you meet course requirements in CE. If you are planning to take a course elsewhere to meet a graduation requirement, check with the Associate Department Head to make sure the course will satisfy a graduation requirement before you sign up for and take the course. The following website gives information about how to transfer in credit for courses taken at other colleges and universities:
http://web2.uconn.edu/transfer/transfercredits_uconn.html
You can also search for courses offered at colleges and universities in Connecticut that transfer as UConn courses at the following webpage:
http://transfer.uconn.edu/search.php.

## *Can I substitute another course for one that is required?*

Following is a list of automatic course substitutions that do not require special approval. Simply cross out the course number on the POS and write in the course you are using to meet the requirement. Other substitutions may be granted under special circumstances. You may petition the Associate Head of CEE and the Director of Advising for SoE for any other course substitutions before taking the substituted course.

| Instead of taking … | … you may substitute |
|---|---|
| ENGL 1010 or 1011 | ENGL 91002 and ENGL 91003 (transferred courses) |
| ENGR 1000 or ENGR 1166 | The equivalent credits in any engineering courses |
| MATH 1131Q | MATH 1125Q and 1126Q* |
| MATH 1131Q | MATH 1151Q |
| MATH 1132Q | MATH 1152Q |
| MATH 2110Q | MATH 2130Q |
| MATH 2410Q | MATH 2420Q |
| MATH 1131Q, 1132Q, 1133Q and 1134Q | MATH 2141Q and 2142Q and 2143Q and 2144Q |
| CHEM 1127Q | CHEM 1124Q and 1125Q |
| CHEM 1127Q and CHEM1128Q | CHEM 1124Q and 1125Q and 1126* |
| PHYS 1501Q and PHYS 1502Q | PHYS 1201Q and 1202Q and 1530Q* |
| PHYS 1501Q and PHYS 1502Q | PHYS 1201Q and 1202Q and 1230Q* |
| ECE 3002 | ECE 2001W |
| CE 2210 | (STAT 3025Q and CE 2211) or (CE 2251 and 2211) |
| ME 2233 | CHEG 2111 |

*the credits for MATH 1125Q, CHEM 1124Q and 3 credits of the PHYS may not be counted on the POS.

## Can I Get a Minor in Another Subject?

Yes! Many CE students choose a minor in another subject that complements their program in CE. Contact the department or office listed in the Catalog or web-page for the minor program in which you are interested to find the courses required. Share this information with your Advisor, and together you can select courses to meet the requirements for both your major and the minor. Some minors in particular are popular as they can be satisfied easily along with the CE program or complement your study. These are discussed here.

### *Minor in Environmental Engineering*

It is very easy to fulfill the requirements for the ENVE Minor within the requirements for the CE degree. Here is how to do it without having to use any free electives or extra courses:

| Course | On CE POS | On ENVE Minor POS |
|---|---|---|
| CE 2210 Decision Analysis in CEE | Required course | Elective course |
| CE 2310 Environmental Engineering Fundamentals | Required course | Required course |
| CE 3320 Water Quality Engineering | Choose instead of CE 3610 | Required course |
| CE 3510 Soil Mechanics | Required course | Elective course |
| CE 4310 Environmental Modeling | ENVE proficiency in Professional Requirements | Required course |
| ENVE 3230 Introduction to Air Pollution | Choose as 5$^{th}$ Professional Requirement course | Required course |

### *Minor in Engineering Management*

This undergraduate minor provides an opportunity for non-business majors to obtain knowledge in the principles of managing organizations. Following are the required courses:

- Core courses:
    A. MEM 2221 Principles of Engineering Management
    B. OPIM 4895 Special Topics -- Project Management
    C. either MEM 2211 or MEM 3221
- Two elective courses from the following: BADM 3741; BADM 3742; BADM 3710; BADM 3730; BADM 3750; either BADM 3760 or OPIM 3103C but not both; MEM 3221; OPIM 4895 other than Project Management.

More information about this minor is available here:
http://www.engr.uconn.edu/minorengrmgmt.php

## Can I Get a Minor ….? (continued)

### *Minor in Mathematics*

The requirements for this minor are 15-18 credits of Mathematics, following one of two tracks:

1. Five courses chosen from among the following courses: MATH 2110Q (or 2130Q or 2143Q), 2210Q (or 3210 or 2144Q), 2360Q, 2410Q (or 2420Q or 2144Q), 3146, 3150 (or 4110), 3160, 3230, (or 4210), 3240, 3250, 3260, 3330 (or 4310), 3370, 3510, 3710, 4735 or certain sections of 3094, 3795, and 3799 approved by the department head.
2. Math 2141Q, 2142Q, 2143Q and 2144Q.

Note that MATH 2110Q and 2410Q are required by the CE Program. Therefore a CE student must take only three more courses to get a MATH minor. One of these courses can be used as the fifth professional requirement course, and the other two can be chosen as free electives. The following courses are relevant for CE majors:

- MATH 2210 Applied Linear Algebra
- MATH 3146 Complex Variables
- MATH 3150 Analysis
- MATH 3160 Probability
- MATH 3410 Differential Equations for Applications
- MATH 3430 Applied Analysis
- MATH 3510 Numerical Analysis
- MATH 3710 Mathematical Modeling

# What Do I Need to Pay Attention to This Semester?

## *First Year*

- Be sure to pass MATH 1132Q (formerly MATH 116Q) by the end of your 2nd semester to avoid getting behind with your engineering courses next year. Consider taking it in the summer if you were not able to pass it in the spring semester.
- Determine which GenEd requirements you have met, and make sure that your choices for GenEd courses for the next year do not duplicate any requirements.

## *Second Year*

- Be sure to pass the following courses by the end of the 4th semester to avoid getting behind in your 3rd and 4th year engineering courses:
    - CE 2110 (formerly CE 211)
    - MATH 2110Q and MATH 2410Q (formerly MATH 210Q and 211Q); these may be taken simultaneously and are also often offered in the summer or may be taken at another institution.
    - CHEM 1128Q (formerly 128Q); this is often offered in the summer or may be taken at another institution.
- Make sure you are on track to satisfy the Gen Ed requirements, including a W course, by the end of the third year.

## *Third Year*

- Complete your POS with your course advisor and plan out which courses you want to take for your professional requirements and free electives.
- Be sure to submit your POS in the spring when you register for your 7th semester courses.

## *Fourth or Final Year*

- Make sure the courses you take each semester are all on your POS.
- Meet with your advisor in the first week of your last semester to make sure you have passed or are registered in all of the courses listed on your POS. If necessary revise and re-submit the POS at that time.

# FAQ's about the POS and Major Course of Study

## *How do I revise my POS?*

Once your POS is approved, you may revise it once without re-filling it out from scratch. Following are the instructions for revising it:

1. Make the corrections on the approved version and initial next to each revision (both the student and the advisor).
2. Both the student and advisor sign the POS again next to the original signatures, with the new date.
3. Submit the form to the CE Director of Advising, with a copy of the student's unofficial transcript.

## *How do I change my major?*

As you take more and more courses, you may find that your declared major is not a good match for you and your educational or career objectives. After thinking about it, see your Advisor for an additional point of view. Following is a suggested course of action:

1. Contact the department offering the major you are considering changing to. Find out what the course requirements for that major are.
2. Consider taking courses for one semester that will advance you towards either major, taking one or more courses in the new major to try it out. Do this by consulting with your advisor and with an advisor for the new major. This way if you find the new major does not suit you, you have not fallen behind in your current major.
3. If you decide to change majors, contact the Assistant Dean's office to file the necessary paperwork and get reassigned to an advisor in the new major.

## *How do I add a second major or degree?*

Contact the department offering that major and the Director of Advising in the SoE (for majors in SoE), to get assigned an advisor in that program. You will have to file a second POS for that major, but you may use the same courses to meet both major requirements. A second **major** (within SOE) does not require additional credits as long as you meet all of the requirements for both degrees. A second **degree** (e.g., German for EuroTech) requires an additional 30 credits of 2000-level or higher courses beyond the CE degree, for a total of 158 credits.

# FAQ's about Course Registration Issues

## *How Do I drop a course?*

First, discuss the implications of dropping the course with your Advisor. Review the Catalog and the Registrar's website for more information. The Office of the Registrar and the Office of the Assistant Dean of Engineering can give you the required forms and tell you the signature requirements.

## *What happens if I take a course before one of its prerequisites?*

Very bad idea! Don't take courses out of sequence, even if someone gives you a permission number to register for the course, PeopleSoft allows you to register for it and the instructor lets you in. The credits won't count for the pre-requisite course when you eventually take it. So what happens is if the pre-requisite course is also required, you still have to take it BUT you will have to take an additional course to get enough credits to graduate!

## *What happens if I don't drop a course?*

Drop any course you are not attending because if you leave a course on your schedule, don't attend, and don't take the final exam you will get an "F" and you're stuck with it! Make sure, however, that dropping the course does not mess up your financial aid if it depends on maintaining "full-time" status.

## *What If I decide I want to take a different course after seeing my advisor?*

Contact your advisor before signing up for a different course schedule than what you agreed upon in your advising session. Making a change in your schedule without talking to your advisor could result in missing a critical graduation requirement and postponing your graduation by a semester or even a year.

## *How many credits may I take per semester?*

Engineering students may take up to 19 credits in one semester. To enroll in 20 or more credits you must get an overload approval form signed by your advisor (or the Associate Head of CEE) and the Assistant Dean of Engineering.

# FAQ's about Other Issues

## *How do I get put on probation or dismissed?*

When your GPA falls below 2.0, you may be put on Scholastic Probation or eventually dismissed. Refer to the "Scholastic Standards" section of the Catalog for details. The School of Engineering has "Supplementary Academic Standards" also listed in the Catalog.

## *What is my "Technical GPA" and why does it matter?*

The Technical GPA is the GPA calculated on your Engineering, Science (CHEM & PHYS) and Mathematics (MATH) courses. Your Technical GPA must exceed 2.0 to be admitted to your third year (fifth semester). Note also that decisions on Probation and Dismissal include consideration of your Technical GPA. Refer to the "Scholastic Standards" and "Supplementary Academic Standards" sections of the catalog for details.

## *May I take graduate courses as an undergraduate student?*

Yes. You will need to get a permission number from the instructor teaching the course. He/she will ask if you have the necessary preparation or pre-requisites that would be expected of graduate students taking the course. Most CE seniors have the preparation necessary to take entry-level graduate courses in the Department. In general, if you have a GPA of at least 3.0, and have the necessary preparation courses, you should be able to successfully complete a graduate course as an undergraduate. There are two ways you might apply a graduate course to your academic record:

1. As a regular course on your CE undergraduate POS. You may use it either as a Professional Requirement course or as a free elective. If you choose this option you may reduce the credit requirements for a MS degree in CE at UConn up to a total of 6 credits if you earn at least a B+ in the same number of graduate credits used on an undergraduate POS.
2. If you don't need it for your undergraduate POS, then you can take it as an extra course and save it to use for a graduate degree at UConn or another institution.

# APPENDICES

*A. CE Curriculum Catalog of 2009-2010*

*B. CE Curriculum Catalog of 2011-2012*

*C. Curriculum Flowchart (pre-requisite chart)*

## CIVIL ENGINEERING PROGRAM – University of Connecticut, Storrs, CT

(Catalog of 2009-2010)

## NORMAL SEMESTER BY SEMESTER COURSE SEQUENCE (128 credits)

| **FIRST YEAR - First Semester** | **Cr.** | **Second Semester** | **Cr.** |
|---|---|---|---|
| **CHEM 1127Q or 1147Q** General Chemistry | 4 | **CHEM 1128Q or 1148Q** General Chemistry | 4 |
| **MATH 1131Q** Calculus I | 4 | **MATH 1132Q** Calculus II | 4 |
| **ENGR 1000** Orientation to Engineering | 1 | **ENGR 1166** Foundations of Engineering | 3 |
| **CSE 1010** Intro to Computing for Engineers | 3 | (1)(2) CA 1 (_____) | 3 |
| (1) **ENGL 1010** Seminar in Academic Writing **or ENGL 1011** Sem. in Writing thru Literature | 4 | (1)(2) CA 2 (_____) | 3 |
| **TOTAL** | **16** | **TOTAL** | **17** |

| **SECOND YEAR - First Semester** | | **Second Semester** | |
|---|---|---|---|
| **PHYS 1501Q** Physics for Engineers I | 4 | **PHYS 1502Q** Physics for Engineers II | 4 |
| **MATH 2110Q** Multivariable Calculus | 4 | **MATH 2410Q** Elem. Differential Equations | 3 |
| **CE 2110** Applied Mechanics I | 3 | **CE 2120** Applied Mechanics II | 3 |
| **CE 2410** Geomatics & Spatial Meas. | 4 | **CE 2710** Transportation Engineering | 3 |
| **PHIL 1104** Philosophy & Ethics (CA 1) | 3 | (2) CA 2 (_____) | 3 |
| **TOTAL** | **18** | **TOTAL** | **16** |

| **THIRD YEAR - First Semester** | | **Second Semester** | |
|---|---|---|---|
| (3) **CE 2010** C&EE Professional Issues Seminar | 0 | (3) **CE 2010** C&EE Professional Issues Seminar | 0 |
| **CE 2210** Decision Analysis in CEE | 3 | **CE 3520** Civil Engineering Materials **or CE 3300** Environmental Engineering Lab | 3 |
| **CE 2310** Environmental Engineering Fundamentals | 3 | **CE 3610** Basic Structural Analysis **or CE 3320** Water Quality Engineering | 3 |
| **CE 3110** Mechanics of Materials | 3 | (4) **CE 3630** Steel Structure Design or (5) Prof. Req. (_____) | 4 (3) |
| **CE 3120** Fluid Mechanics | 3 | (2) GenEd: CA 4 (_____) | 3 |
| **CE 3510** Soil Mechanics I | 4 | (2) GenEd: CA 4 (_____) | 3 |
| **TOTAL** | **16** | **TOTAL** | **16(6)** |

| **FOURTH YEAR – First Semester** | | **Second Semester** | |
|---|---|---|---|
| **ECE 3002** Electrical Engineering Principles | 3 | **CE 4910W** Civil Engineering Projects | 3 |
| (5) Prof. Req. (_____) | 3 | **ME 2233** Thermodynamic Principles | 3 |
| **Or** (4) **CE 3640** Rein. Concrete Struc. Design | (4) | **Or CHEG 2111** Chem. Engrg. Thermodynamics | |
| (5) Prof. Req. (_____) | 3 | (5) Prof. Req. (_____) | 3 |
| (5) Prof. Req. (_____) | 3 | (5) Prof. Req. (_____) | 3 |
| Elective (_____) | 2 | Elective (_____) | 3 |
| **TOTAL** | **14(6)** | **TOTAL** | **15(6)** |

NOTES:

(1) These courses may be taken either semester in the first year.

(2) CA = Content Area in General Education (GenEd) Requirements (For current lists of GenEd courses, visit http://geoc.uconn.edu). These courses must include one W course and may be taken at any time.

(3) You must complete two semesters of CE 2010 with satisfactory grade **before taking** CE 4910W.

(4) All students must take either CE 3630 or CE 3640.

(5) Professional Requirements must be chosen to include at least one course from four of the following technical areas: Construction Management (CE 4210), Environmental/Sanitary (CE 3320 if also taken CE 3610, or CE 4310), Geotechnical (CE 4510 or CE 4541), Hydraulic/Water Resources (CE 4820 or CE 4810), Structural (CE 3630 or CE 3640), Surveying/Geodetic (CE 4410), and Transportation (CE 4710). The remaining course may be any 2000-level or higher course in engineering, mathematics or science not already used to satisfy another requirement or MGMT 5335.

(6) The credit totals for the last three semesters depend on how many structural design courses are chosen and when they are taken. If the second structural design class is selected as a professional requirement, the number of free elective credits is reduced by one.

**CIVIL ENGINEERING PROGRAM – University of Connecticut, Storrs, CT**
(Catalog of 2009-2010)

## PROFESSIONAL REQUIREMENTS

The professional requirements are satisfied by fifteen (15) credits of 3000-level or higher courses in engineering, science or mathematics, including at most one course at the 2000-level and MGMT 5335. Following are specific restrictions on these courses:

**Proficiency in 4 CE Areas (12 Credits):** All CE students must take one course in each of the seven technical areas listed in the table below as "Required Courses". In addition, for the Professional Requirements, Each student must take a second course from four different of these areas listed as "Proficiency Courses". (F) and (S) indicates if the course is typically offered in the First or Second semester.

| **Technical Areas** | **Required Courses** | **Proficiency Courses** (4 required @ 1 each from 4 Areas) |
|---|---|---|
| Construction Management | CE 2210 Decision Analysis in CEE (F) | CE 4210 Operations Research in CEE (S) |
| Environmental | CE 2310 Environmental Engineering Fundamentals (F) | CE 3320* Water Quality Engineering (S) or CE 4310 Environmental Modeling (S) |
| Geotechnical | CE 3510 Soil Mechanics I (F) | CE 4510 Foundation Design (S) or CE 4541 Soil Mechanics II (F) |
| Hydraulic / Water Resources | CE 3120 Fluid Mechanics (F) | CE 4810 Engineering Hydrology (F) or CE 4820 Hydraulic Engineering (S) |
| Structural | CE 3630 Steel Structure Design (S) or CE 3640 Reinforced Concrete Structure Design (F) | **CE 3630 Steel Structure Design (S) or CE 3640 Reinforced Concrete Structure Design (F) |
| Surveying / Geodetic | CE 2410 Geomatics and Spatial Measurement (F) | CE 4410 Computer Aided Site Design (S) |
| Transportation | CE 2710 Transportation Engineering (S) | CE 4710 Case Studies in Transportation Engineering (F) |

*CE 3320 is permitted for Professional Requirements only if CE 3610 was also taken.
**To meet proficiency in the Structural area, the second of the two courses must be taken.

**Restrictions on the Remaining Three Credits of Courses**:

- CE 3520 Civil Engineering Materials (S) or CE 3300 Environmental Engineering Laboratory (S) may be used only if the other was taken for the laboratory requirement
- CE 3610 Basic Structural Analysis (S) or CE 3320 Water Quality Engineering (S) may be used only if the other was taken to meet CE requirements

**Additional CE Courses that can be used for Professional Requirements:**

- CE 3530 Engineering and Environmental Geology (S)
- CE 4610 Advanced Structural Analysis (F)

## CIVIL ENGINEERING PROGRAM – University of Connecticut, Storrs, CT

(Catalog of 2011-2012)

## NORMAL SEMESTER BY SEMESTER COURSE SEQUENCE (128 credits)

| FIRST YEAR - First Semester | Cr. | Second Semester | Cr. |
|---|---|---|---|
| **CHEM 1127Q or 1147Q** General Chemistry | 4 | **CHEM 1128Q or 1148Q** General Chemistry | 4 |
| **MATH 1131Q** Calculus I | 4 | **MATH 1132Q** Calculus II | 4 |
| **ENGR 1000** Orientation to Engineering | 1 | **ENGR 1166** Foundations of Engineering | 3 |
| **CSE 1010** Intro to Computing for Engineers | 3 | (1)(2) CA 1 (_____) | 3 |
| (1) **ENGL 1010** Seminar in Academic Writing **or ENGL 1011** Sem. in Writing thru Literature | 4 | (1)(2) CA 2 (_____) | 3 |
| **TOTAL** | **16** | **TOTAL** | **17** |

| SECOND YEAR - First Semester | | Second Semester | |
|---|---|---|---|
| **PHYS 1501Q** Physics for Engineers I | 4 | **PHYS 1502Q** Physics for Engineers II | 4 |
| **MATH 2110Q** Multivariable Calculus | 4 | **MATH 2410Q** Elem. Differential Equations | 3 |
| **CE 2110** Applied Mechanics I | 3 | **CE 2120** Applied Mechanics II | 3 |
| **CE 2410** Geomatics & Spatial Meas. | 4 | **CE 2710** Transportation Engineering | 3 |
| **PHIL 1104** Philosophy & Ethics (CA 1) | 3 | (2) CA 2 (_____) | 3 |
| **TOTAL** | **18** | **TOTAL** | **16** |

| THIRD YEAR - First Semester | | Second Semester | |
|---|---|---|---|
| (3) **CE 2010** C&EE Professional Issues Seminar | 0 | (3) **CE 2010** C&EE Professional Issues Seminar | 0 |
| **CE 2210** Decision Analysis in CEE | 3 | **CE 3520** Civil Engineering Materials **or CE 3300** Environmental Engineering Lab | 3 |
| **CE 2310** Environmental Engineering Fundamentals | 3 | **CE 3610** Basic Structural Analysis **or CE 3320** Water Quality Engineering | 3 |
| **CE 3110** Mechanics of Materials | 3 | (4) **CE 3630** Steel Structure Design or (5) Prof. Req. (_____) | 4 (3) |
| **CE 3120** Fluid Mechanics | 3 | (2) GenEd: CA 4 (_____) | 3 |
| **CE 3510** Soil Mechanics I | 4 | (2) GenEd: CA 4 (_____) | 3 |
| **TOTAL** | **16** | **TOTAL** | **16(6)** |

| FOURTH YEAR – First Semester | | Second Semester | |
|---|---|---|---|
| (5) Prof. Req. (_____) | 3 | **ME 2233** Thermodynamic Principles | 3 |
| **Or** (4) **CE 3640** Rein. Concrete Struc. Design | (4) | **Or CHEG 2111** Chem. Engrg. Thermodynamics | |
| (5) Prof. Req. (_____) | 3 | **CE 4910W** Civil Engineering Projects | 3 |
| (5) Prof. Req. (_____) | 3 | (5) Prof. Req. (_____) | 3 |
| (5) Prof. Req. (_____) | 3 | (5) Prof. Req. (_____) | 3 |
| Elective (_____) | 2(6) | Elective (_____) | 3(6) |
| **TOTAL** | **14(6)** | **TOTAL** | **15(6)** |

NOTES:

(1) These courses may be taken either semester in the first year.

(2) CA = Content Area in General Education (GenEd) Requirements (For current lists of GenEd courses, visit http://geoc.uconn.edu). These courses must include one W course and may be taken at any time.

(3) You must complete two semesters of CE 2010 with satisfactory grade **before taking** CE 4910W.

(4) All students must take either CE 3630 or CE 3640.

(5) Professional Requirements must be chosen to include at least one course from four of the following technical areas: Construction Management (CE 4210), Environmental/Sanitary (CE 3320 if also taken CE 3610, or CE 4310), Geotechnical (CE 4510 or CE 4541), Hydraulic/Water Resources (CE 4820 or CE 4810), Structural (CE 3630 or CE 3640), Surveying/Geodetic (CE 4410), and Transportation (CE 4710). The remaining course may be any 2000-level or higher course in engineering, mathematics or science not already used to satisfy another requirement or MGMT 5335.

(6) The credit totals for the last three semesters depend on how many structural design courses are chosen and when they are taken. If the second structural design class is selected as a professional requirement, the number of free elective credits is reduced by one.

**CIVIL ENGINEERING PROGRAM – University of Connecticut, Storrs, CT**
(Catalog of 2011-2012)

## PROFESSIONAL REQUIREMENTS

The professional requirements are satisfied by eighteen (18) credits of 3000-level or higher courses in engineering, science or mathematics, including at most one course at the 2000-level and MGMT 5335. Following are specific restrictions on these courses:

**Proficiency in 4 CE Areas (12 Credits):** All CE students must take one course in each of the seven (7) technical areas listed in the table below as required courses. In addition, for the Professional Requirements, Each student must take a second course from four of these areas listed as "Proficiency Courses". (F) and (S) indicates if the course is typically offered in the First or Second semester.

| **Technical Areas** | **Required Courses** | **Proficiency Courses** (4 required @ 1 each from 4 Areas) |
|---|---|---|
| Construction Management | CE 2210 Decision Analysis in CEE (F) | CE 4210 Operations Research in CEE (S) |
| Environmental | CE 2310 Environmental Engineering Fundamentals (F) | CE 3320* Water Quality Engineering (S) or CE 4310 Environmental Modeling (S) |
| Geotechnical | CE 3510 Soil Mechanics I (F) | CE 4510 Foundation Design (S) or CE 4541 Soil Mechanics II (F) |
| Hydraulic / Water Resources | CE 3120 Fluid Mechanics (F) | CE 4810 Engineering Hydrology (F) or CE 4820 Hydraulic Engineering (S) |
| Structural | CE 3630 Steel Structure Design (S) or CE 3640 Reinforced Concrete Structure Design (F) | **CE 3630 Steel Structure Design (S) or CE 3640 Reinforced Concrete Structure Design (F) |
| Surveying / Geodetic | CE 2410 Geomatics and Spatial Measurement (F) | CE 4410 Computer Aided Site Design (S) |
| Transportation | CE 2710 Transportation Engineering (S) | CE 4710 Case Studies in Transportation Engineering (F) or CE 4720 Highway Engineering – Design (S) or CE 4580 Pavement Design (F) |

*CE 3320 is permitted for Professional Requirements only if CE 3610 was also taken.
**To meet proficiency in the Structural area, the second of the two courses must be taken.

**Restrictions on the Remaining Six (6) Credits of Courses**:

- CE 3520 Civil Engineering Materials (S) or CE 3300 Environmental Engineering Laboratory (S) may be used only if the other was taken for the laboratory requirement
- CE 3610 Basic Structural Analysis (S) or CE 3320 Water Quality Engineering (S) may be used only if the other was taken to meet CE requirements

**Additional CE Courses that can be used for Professional Requirements:**

- CE 3530 Engineering and Environmental Geology (S)
- CE 4610 Advanced Structural Analysis (F)

# CEE Course Sequence with Prerequisites