

The following FAQ has been prepared for the Division of Construction Engineering and Management (CEM) as a result of questions prepared by students in ENGR 13100 provided by the FYE/ENGR 13100 faculty upon the review of the CEM literature for ENGR 13100.

COURSEWORK

What is a difficult area of learning that many CEM majors have?

- Because of the variety of students who come into CEM it is hard to pinpoint the most difficult area of CEM. Each student is going to have different strengths / weaknesses but overall no matter what your area of difficulty is there will be a support system to be there for you.

Can CEM majors also work to receive a major in management or business?

- Currently there is not a path to double major in CEM and Management / Business. However, you are easily able to minor in them and in most cases still graduate in 4 years.
- CEM is currently in the process completing a combine degree with Krannert which would allow a student to obtain a BS in CEM and MBA.

Can you branch out to other fields of engineering if you major in CEM?

- In CEM it is possible to minor in many of the other engineering fields in order to diversify your classes and focus your degree to your interests

What are the major similarities and differences between CEM and Civil engineering?

- Construction engineers and civil engineers have a very similar plan of study and upon graduation can go to work for the same companies. Civil engineers tend to focus more on the design where construction engineers tend to be involved with the actual construction process. However, CEM is ABET accredited so they still have the background / opportunity to move into a design role if they desire. Some of the differences between CEM and CE include the CEM is a much smaller program that has a built-in support system and a family type atmosphere. CEM is also the only engineering major to require 3 paid summer internships and will help you find these internships.

How does CEM differ from Construction Management?

- Construction Management alumni often go to work for similar companies as CEM alumni however CEM alumni stand apart because they have an engineering degree which involves higher levels of math and technical classes.

Can you double major in Civil and CEM?

- Due to the similarities between Civil Engineering and CEM you cannot double major.

How can thermodynamics become involved in construction engineering?

- Thermodynamics is a required class for all construction engineers. It is important for construction engineers to understand the fundamentals of thermodynamics and how it can influence their projects. Thermodynamics / mechanical engineering could be a focus in the plan of study if a student would like to pursue it further.

How popular is study abroad among your students?

- Historically 2-3 students each spring study at Christchurch in New Zealand and there have been others who studied in Ecuador, South Korea, Spain, and China.
- If a student is interested they should talk with their advisor to pick a location and develop a plan!

What types of research can construction engineers do?

- While research is more popular in the graduate program, if an undergraduate is interested in research they should reach out to their advisor to see what opportunities are available.
- Current research in the construction industry includes but is not limited to: looking at robotics, modular construction, materials, safety, smart jobsites, augmented and virtual reality, and 3D printing.

What is the overlap between industrial and civil engineering?

- While CEM and Industrial engineering do not have a high level of overlap on their plan of studies, they do have similar outlooks on how to approach problems and come up with the most efficient solutions. At a high level industrial engineers are going to be focused on a process where construction engineers are going to be focused on a physical construction project which includes an infinite (very few projects are the same time) number of processes to be evaluated and selected based off of safety, cost, and schedule.

What kind of physics do CEM students learn to help them in their field?

- In CEM you will take a variety of physics including statics, dynamics and electricity & electromagnetism. These all provide CEM students with a basic understand of what they are building and allows them to point out when things may look wrong.

Is it easy to get a management minor in CEM?

- Yes! In fact there is a specific plan of study for any students interested in a management minor.

Up to which math class are CEM majors required to take?

- There are two sequences of math classes that can be taken
 - MA 16500 - Calculus 1, MA 16600 - Calculus 2, MA 26100 - Multivariable Calculus, MA 26500 - Linear Algebra, MA 26600 - Ordinary Differential Equations
 - MA 16500 - Calculus 1, MA 16600 - Calculus 2, MA 26100 - Multivariable Calculus, MA 26200 - Linear Algebra and Differential Equations

What types of industry experts come to Purdue to teach classes? How do they help to understand the curriculum well?

- CEM alumni love to come back and guest teach in a variety of the CEM classes. There are also several professors that come from industry (including Brandon Fulk) that provide the real-world input. There are specific teaching positions for industry professionals and one is currently filled by Robert Bowen, the founder of Bowen engineering.

Is this the only engineering discipline that has the word “management” in the title?

- Yes, Construction Engineering and Management is the only engineering degree with management in the title. Other engineering majors can take management classes but they are not built into the curriculum like they are for CEM.

How do group projects work if everyone's end goal is to be a manager?

- Part of management is knowing how to work in a team. Even as a manager you will always be working with a variety of people. Group projects are an important part of the CEM curriculum and provide the real life experience to prepare for the workforce.

What are the most interesting classes in CEM?

- The most interesting class in CEM is the three paid summer internships!

How heavily are CEM majors involved in graphic design or CAD? When would you start working with things like 3D printing?

- Due to the freedom of our capstone course and the planning/design fall semester and the prototyping spring semester, most students take it upon themselves to leverage 3D printing to prototype or to sell their solutions to stakeholders.
- Additionally, while there is one computer graphics class in the plan of study, there is an option to minor in Building Information Modeling (BIM) which will provide knowledge in current and emerging graphics theories and computer graphics technologies associated with design, documentation, modeling in construction. Even with adding a minor, most students still graduate in 4 years.

How similar is CEM to architecture?

- While CEM and architecture both work with buildings, however architecture is more involved with the design side while CEM is more focused on construction.

What is the biggest draw in for the CEM program?

- The biggest draw for CEM is the three paid internships which allow you to explore the industry, actively apply what you learn in class each summer, and build industry relationships while still in school.

How many students are accepted into CEM each year?

- The goal for each CEM class is around 30-40 students, however we are committed in working with all students who are interested. The interview process should be seen as a "getting to know you" process.

Is there a focus in the courses on making buildings beautiful and sustainable?

- Professor Graff and Professor Weidner are offering technical electives that explore these aspects of the discipline.
- Additionally, there is a plan of study that allows you to obtain a minor in EEE within 4 years. There are also several extra-curricular clubs that also provide additional information that you can join.

Why not just go into the trades and actually build the buildings?

- CEM students / alumni often love the construction industry and some have worked in the trades in the past. However, as a long term career CEM alumni would like to move into management positions running construction projects / companies.

Do students in CEM have to take classes in the Krannert School of Management?

- The CEM plan of study includes taking management classes in the Krannert School of Management. These include accounting and financial management.

What portion of the classes for CEM are out of the classroom?

- CEM has a plan of study that maximizes experiential learning through job site tours, labs, internships, and a senior design project that solves a real world problem.

Is there a senior design project? If so, which one's have stood out to you?

- There is a senior design project that is both first and second semester. Teams will work with stakeholders to solve real world problems. The course is broken down into planning/design fall semester and then prototyping spring semester.
- Recent projects of interest:
 - 3D scanning and planning for the deconstruction and reconstruction of an old barn to create a new event center with the vintage appeal; students prototyped their solution at a local outdoor lab.
 - Planning and design of a 2 mile trail system and structures to support at an Indianapolis based nonprofit (living history museum).

What special courses are required for CEM graduates to go into the health field?

- If someone is interested in practicing medicine, CEM would not have many transferrable courses. However, CEM alumni often work on health care projects such as building a new hospital.

Are there concentrations related to the type of property CEM students want to develop (e.g. real estate, mall complex, stadium, etc)?

- When it comes to the type of construction, CEM students develop a "concentration" through their internships. The advisor will work with students to find out about their interests and match them with companies that align with their goals.

Do the management courses focus solely on management in an engineering environment or are they more general?

- The management classes are not focused on engineering and are the general courses offered through Krannert School of Management.

Is it possible to double major with another engineering discipline?

- Anything is possible... there have not been any students recently complete such an endeavor but we have had double majors in Spanish and Political Science.

How much control do I have over what types of courses I take? (management, estimation, structural analysis, etc.)

- There is a plan of study that can be found at the following [link](#). There will be required classes but also the flexibility to choose classes the focus on your interests. Working with your advisor you can tailor the plan of study and there are even multiple minors that fit within 4 years.