

CHOOSING A TOPIC

Selection of a suitable topic for the senior project is a critically important step for successful completion of the project. It is best to have a project decided upon before registering for IME 481.

Project Requirements

A senior project will include the following:

- The project must require 150 to 200 hours to complete
- The project must apply knowledge and skills acquired in earlier coursework in the major often from multiple areas of study.
- The project must incorporate design. The design process must be used to create a solution (product, process, or system) to a problem (satisfy a need).
- The project must define an initial state (before the recommended improvements) and a projected state (after implementation of the improvements). There must be a quantifiable comparison between the two states in order to calculate the value of the design.
- The project must include an economic justification.

Inadequate attention to the topic selection may result in a change of topic by the student which typically leads to less than desirable results, including inadequate time for completion, poor quality project, change of technical advisor, delay in completion of the project, and a poor grade. Therefore, it is important for a student to give careful considerations in selecting a senior project topic.

It is possible to do a senior project as a team. Team senior projects must be approved by the technical advisor. In addition, it is often desirable to define specific areas of responsibility so that grading can be completed individually.

Finding a topic

Each student is responsible for deciding on their own project. Often an area of interest can turn into a really good project topic. Provided the objectives above (i.e., design, economics, etc.) are addressed in the project, there are many options available to a student in order to find a topic for a senior project. Listed below are a few of the methods students have used in the past.

Industry Generated Projects. Faculty or Industry representatives may often have project ideas that are available to students to work on. These projects require a different level of commitment and students must apply and be accepted by the coordinating faculty to work on these projects. It is important when dealing with an outside agency that the quality of project deliverables is very high. Thus the requirements for these types of projects are more strenuous. At a minimum there will be an additional report out session with the client. This must be arranged by the students taking into account the schedules of all

involved. Usually these reports will consist of a formal presentation and report delivery. This should be done during the ninth or tenth week of the second quarter of senior project. The Administrative advisor should have a list of these industry projects.

Coop Program or Summer Internship. Students working on a co-op program or a summer internship often work on a project that can be used as a senior project. These company-defined projects are often excellent in that they satisfy all the project requirements listed above and they provide the company with a good solution to a real problem. A student should remember that the deliverable for the senior project must be the “design” of something: a product, process or system. If a student works on implementing a previous designed solution or performing data collection, this may not qualify as a senior project.

If a student is working at a company and they find a project that they believe satisfies the requirements for a senior project, the student should contact a faculty member with a project description. The faculty member can help to define the project and possibly give solution technique advice. Generally a student on co-op or internship should do the following while still at the company:

- 1) Obtain Permission from the Company. The student must obtain permission from the company in order to use the project as a senior project. The senior project is published in the library and thus the company needs to know that it will be publicly available. If the company does not want the senior project published, often changing the name of the company is enough to make them feel comfortable. In rare cases, the senior project does not have to be published in the library.
- 2) Collect data. The student should collect all possible information regarding the project. All computer files, data sheets, and pictures should be gathered before leaving the work site. It is very difficult to go back and collect this information.

If a student is on co-op or internship and receives technical elective unit credit for their work experience, he/she may need to perform extra work (consistent with 150-200 hour requirement) for the senior project beyond the work credited. It is not possible to double count co-op technical elective units and senior project units.

Multi-Disciplinary Projects. Sometimes students will work on teams with other non-IME students. These projects will be available at the beginning of Fall quarter only. Please see the special requirements of these projects in a separate section.

Senior Electives. In most senior elective courses, instructors discuss possible areas for senior projects. Students must be aware that these projects will focus to a great extent on the subject matter of the course.

Course Projects. Frequently, students are required to do practical group projects or literature reviews as part of the requirements in the courses. These efforts, may lead to a senior project topic.

Industrial & Manufacturing Engineering Laboratories. The IME Department is engaged continuously in modernizing and expanding its laboratories in the following categories:

- Human Factors
- Computer Aided Design
- Computer Numerical Control
- Microcomputer Interfacing
- Programmable Controllers
- Robotic Applications
- Pneumatic Automation
- Industrial Metrology
- Computer Networking
- Manufacturing Simulation
- Electronic Manufacturing

Senior projects involving the modernization of these facilities allows the student to work closely with a faculty member and through expanded expertise enhance the student's job opportunities.

Faculty Research Projects. Department faculty may be involved in sponsored or individual research activities. Students with research aptitude may have an opportunity to work in these projects as research assistants. Part of such research can form excellent topics for a senior project.

Current Journals. Students can also develop senior project topics by regularly reading the current issues of journals related to the industrial or manufacturing engineering discipline. This approach, not only helps in the selection of a good senior project, but also makes a student aware of the wide range of developments taking place in the industrial or manufacturing engineering.

Currently relevant topics. Current meaningful “hot topic” may be suitable senior project topics. Global warming, sustainability, community and service learning project may provide opportunities for a good senior project.

Local companies. Sometimes local companies have engineering projects that can lead to a senior project. Students can contact local companies directly. They may have worked with the company in other classes and thus have established a working relationship. These companies are