# ECE/ENGR 1620 – Introduction to Engineering II

## Course Description

### ECE/ENGR 1620 – Introduction to Engineering II (2)

This course builds on the foundational skills in engineering design and practices developed in ECE/ENGR 1618. Students will design, build, test, and present engineering projects designed to solve specified problems within given constraints. Additionally, the impact of engineering from a global, social, economic, and environmental perspective is presented through case studies. **Prerequisite: ECE/ENGR 1618**

## Prerequisite by Topic

Introduction to engineering design, instrumentation, tools, and safety

## Units and Contact Time

2 semester units. 2 units lecture (100 minutes).

## Type

Required for Electrical Engineering and Engineering Science

Elective for Computer Engineering

## Required Textbook

No textbook is required for this course.

## Recommended Textbook and Other Supplementary Material

Other supplementary materials (handouts, articles, etc.) will be available in class and on the course website.

## Coordinator(s)

Melissa Danforth (ECE), Jorge Talamantes (ENGR)

## Student Learning Outcomes

Upon completion of this course, students will be able to:

* Describe the role of engineers in society and analyze the impact of engineering decisions.
* Describe the responsibilities of engineers.
* Analyze engineering problems and apply design principles to a design project.
* Work effectively on teams to complete an engineering design project.
* Divide a project into manageable tasks and balance the load among team members.
* Participate in group meetings, meet deadlines, and achieve project goals.
* Prepare effective written and oral reports on projects.

## ABET Outcome Coverage

This course maps to the following outcomes for engineering (EAC/ABET):

*3f. An understanding of professional and ethical responsibility.*

Students will develop an understanding of professional and ethical responsibilities through presentations by practicing engineers and case studies.

*3g. An ability to communicate effectively.*

Written and oral project reports will require effective communication of projects undertaken during the course.

*3h. The broad education necessary to understand the impact of engineering solutions in a global economic, environmental, and societal context.*

Assignments will be used to provide an understanding of how engineering fits into a global context and to analyze the impact of decisions.

## Lecture Topics and Rough Schedule

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| **Week** | **First Class Period** | **Second Class Period** |
| 1 | Introduction to the “FabLab”  Safety in the Laboratory | Intro. to Computer Aided Design (CAD) |
| 2 | Continue with CAD | Begin Project 1 |
| 3 | Continue with CAD | Continue Project 1 |
| 4 | Continue with CAD | Continue Project 1 |
| 5 | Case Study on Professionalism | Continue Project 1 |
| 6 | Career and Internship Resources | Present Project 1 |
| 7 | Intro. to Matlab | Academic Advising and Registration |
| 8 | Continue with Matlab | Begin Project 2 |
| 9 | Continue with Matlab | Continue Project 2 |
| 10 | Case Study on Engineering in a Societal/Environmental Context | Continue Project 2 |
| 11 | Continue with Matlab | Continue Project 2 |
| 12 | Refresher on Report Writing | Continue Project 2 |
| 13 | Case Study on Engineering in a Global/Economic Context | Continue Project 2 |
| 14 | Safety and Engineering Responsibility | Continue Project 2 |
| 15 | Complete Project 2 | Present Project 2 and Turn in Report |

## Design Content Description

Students will complete introductory design projects and learn about engineering design. Students must demonstrate knowledge of appropriate safety procedures and complete the appropriate laboratory safety form before they will be allowed to work on the projects.

Teamwork will be crucial for projects in this course and students are expected to be good team members (e.g. attend class, participate civilly in meetings, distribute work, complete assigned tasks, etc.). Individual grades for the design projects will be based on the overall team result and observations on teamwork (which may include, but is not limited to, peer evaluations of team members).

## Prepared By

Melissa Danforth on July 12, 2014

## Approval

Approved by CEE/CS Department on [date]

Approved by Physics and Engineering on [date]

Effective Fall 2016