

NucE 310W: Introduction to Nuclear Engineering Fall 2004

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215 Armsby, MW 11:15-12:05
Office hours: MW 1-2pm Thu 1:30-2:30pm

Textbook:

(no NucE textbook required, we will work from instructor class notes)
Style for Students: Effective Technical Writing in the Information Age, Joe Schall,
Outernet Publishing, 2002.

Course Objectives:

At the end of the course students should be able to:

1. Discuss knowledgeably the historical and societal context of nuclear power. Explain the current role of nuclear technology in society.
2. Demonstrate a basic knowledge of nuclear power systems that enables them to speak effectively to non-majors about nuclear power issues.
3. Demonstrate a basic knowledge of professional and ethical standards and of the process of how to arrive at ethical decisions.
4. Demonstrate effective written and oral communication in professional situations. Demonstrate an ability to perform effectively in group projects.

Summary

To function effectively in today's world, engineers need to be more than technical experts. They must also be aware of the social, political, economic and environmental effects of the technology with which they work, and develop a broader view of their profession. NucE 310W gives general information in the field of nuclear engineering and on the operation of nuclear reactors as students enter the major and aims to build writing skills that are useful in later courses.

This course attempts to give nuclear engineering students an understanding of the various professional issues they will encounter in their careers. These issues include the genesis of the nuclear power industry, the environmental impact of energy sources, the problem of radioactive waste disposal, the economics of nuclear power, safety and the impact of accidents (TMI-2 and Chernobyl), how regulation and political institutions affect the industry, and how the designs of next-generation or advanced reactors address these and other issues.

We also discuss public acceptance of nuclear power and introduce non-power applications such as in the medical field and in space propulsion. Permeating all these topics are the issues of professionalism and ethics, which we will deal with throughout the course.

The course is intended to be writing-intensive, hence the second course objective. The professional engineer must be able to effectively communicate ideas and viewpoints on a range of technical and non-technical issues to a variety of audiences. Audiences for the nuclear engineer encompass a wide range of backgrounds and interests. Nuclear engineers need to be effective at getting their point across to these various constituencies.

The writing assignments in this course include a variety of different, short communications that resemble types of writing an engineer might perform during his or her career. In each case, the emphasis is on writing that can be understood - that is, communicating the important points clearly, concisely, and in plain English.

Grading

Grading in this course is based on the written assignments, class participation, and oral presentations. Students are encouraged to participate in class discussion. To participate effectively in class, it is necessary to be both present and prepared, so you will be graded on both. Written assignments will span several types of writing of relevance to the profession including :

- Resume writing and letter for summer job
- Technical Memos
- Summary of guest lectures or class discussions
- Article on historical figure in nuclear engineering
- Ethics case study
- Letters to the editor on a topic related to nuclear power

Distribution of Grades

Assignments (4 or 5):	50%
Short Assignments:	10%
Two Group Presentations/Discussion:	30%
Class Participation (incl. quizzes):	10%

Academic Integrity

We follow the guidelines on cheating and academic integrity found at:

www.engr.psu.edu/undergrad/acad_int/students/default.htm

Please familiarize yourself with the contents of this page. It will be assumed that all students are familiar both with the policies and the consequences of transgression.