WENTWORTH INSTITUTE OF TECHNOLOGY

College of Engineering and Technology
Syllabus and Course Outline
ENGR100 - Introduction to Engineering (2-4-4)
FALL SEMESTER - 2013

Instructor: James R. McCusker PhD
Office Location: DOBBS 209
Office Hours: Tuesday 12:00 PM-2:00 PM and Thursday 12:00 PM-2:00PM
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Meeting Times and Credits:

This is a four-credit course. There will be two hours of lecture per week and two laboratory sessions per week. Each laboratory session is two hours long.

Attendance:

Attendance will be taken at every class meeting. Each student is expected to strive for 100% attendance. Students beware: absentia leads to failure, plain and simple. Attendance is to be taken seriously. Class attendance policy in general class policies section.

Catalog Description:

This course develops the skills needed during the student's study of engineering. Topics include task/time management, effective use of notes, engineering research, oral and written communications, problem-solving techniques, ethics and professional responsibility and Institute resources. In the laboratory, students work in teams to complete a variety of engineering tasks.

Prerequisites:

Freshman status in the electromechanical, electrical, computer, or interdisciplinary engineering programs.

Textbook:

(1) Studying Engineering Ed. 4, *By Raymond Landis - Discover Press (2013) - ISBN 978-0-9793487-4-7*

(2) The instructor will also provide an extensive number of articles and handouts to supplement the textbook and class notes.

Goals:

A central goal of this course is to help the student develop the skills needed to succeed during his or her study of engineering. The Institute goal for this introductory course is to introduce the student to the various engineering disciplines, to understand an engineer's role both now and in the future, and to provide the student with the necessary and appropriate skills and awareness of the resources to complete successfully his or her program through the development of intellectual and interpersonal connections between the student and the Institute.

Course Objectives:

1. The student will develop an objective understanding of what engineering study entails.
2. The student will understand the academic expectations of Wentworth with respect to work habits, behavior, and classroom demeanor.
3. The student will understand societal trends, both domestic and global, and determine an engineer's role in facing these challenges.
4. The student will be able to explain the importance of reading various types of articles, books and reference materials, and demonstrate comprehension by reciting, summarizing and/or paraphrasing.
5. The student will gain a working knowledge of various computer software programs that will be valuable tools in their engineering education.
6. The student will recognize and understand the concepts of working in groups/teams.
7. The student will be able to locate and effectively utilize, as needed, Institute resources such as the Course Instructor, Academic Advisor, Departmental Offices, Department Head, Student Services Center, Career Center, Computer Center, Library, Counseling Center, Housing Office, Center for Teaching and Learning, and Health Center. Also included are Institutional organizations (e.g. Professional Societies and Student Clubs.)
8. The student will demonstrate effective oral and written communications and research skills in presentation of reports and papers. This includes understanding the Academic Honesty Policy.
9. The student will have a clearer understanding of engineering, as well as the engineering profession - its history, as well as future career roles and directions within it.

Learning Outcomes:

1) (abet criteria d) Ability to function on multidisciplinary teams

Assessment: Peer Assessment

2) (abet criteria f) Understanding of professional and ethical responsibility.

Assessment: Indicator Question in Final Exam

3) (abet criteria h) Broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.

Assessment: Research paper/project

Recommended References:

Learning to Learn, by Marcia Heiman and Joshua Slomianko, 7th Edition, Learning to Learn, Inc. 1998.

The Elements of Style, Strunk and White. Mcmillian Publishing Co.

Please note that throughout the semester the students are urged to do research and look beyond the textbook and class notes so that they develop the valuable skill of learning to learn. This skill of learning to learn independently and effectively is vital to each student's success during the course of study and to his or her lifelong professional development.

Topics to be covered and general plan for the lecture portion of the course:

(Please note that the following is an outline of the topics to be covered in this course, rather than a weekly schedule. The instructor reserves the right to modify the order as he sees fit.)

- Elements of success: a discussion of common strategies employed by successful students.
- Introduction to engineering: history of engineering education, the engineering disciplines, and the engineering profession.
- Challenges to engineers in the near and intermediate future: population growth, environmental challenges, energy shortage, etc.
- Team learning.
- Introduction to engineering computer software.
- Library resources, engineering related databases, the internet, filtering of electronic information and how to do research.
- Writing effective technical reports. Effective memo writing. Effective oral presentations.
- Effective problem-solving techniques.
- Engineering Ethics, and codes of ethics in various engineering disciplines.
- Engineering Units, Dimensions, and Analysis

The laboratory portion of this course:

The laboratory component of this course is intended to be an introduction to the following four areas:

A) Computer Graphics,
B) Innovation in Engineering
C) MATLAB
D) Basic Manufacturing Processes or Electrical Engineering Laboratory (depending on major)

Hence, the laboratory component of this course is divided into four modules, with each module lasting three weeks and covering one of the four aforementioned areas "A" through "D". The students of all ENGR100 sections are regrouped into four groups; during the semester each group will rotate through all four laboratory modules.

More on the activities of the laboratory modules will be communicated to you by the instructors of those modules. The grade of the laboratory portion is 30% of the overall grade of the course.

General course requirements and policies:

In order to meet the objectives outlined above, the following will be undertaken:

(1) Topics shown above will be the subjects of lectures and class discussions. Attendance and class participation will be noted.

(2) Students will be required to work in teams and to submit one formal group-research paper. The topics will be announced at a later time.

(3) Each team is required to complete one (freshmen) research project and to deliver one multimedia-assisted oral presentation covering the work done in the design project.

(4) Each student is to maintain an ENG100 notebook. This notebook is to contain a complete log of the activities that the student undertakes: that includes notes from class lectures, notes from articles read, record of research activities, etc.

(6) As an effort to help the student develop good time management skills, the student is required to use a planner/calendar. If the student does not have a planner/calendar at the start of this course, he or she will be provided with one (gratis) from the Dean of Student's office.

(7) All written work submitted for this course must meet the Standards for English I. Poorly written papers will be returned to the student without grade, for revision. Students are encouraged to utilize the Center for Teaching and Learning (CTL) facility to help polish their papers. Papers without proper references/bibliography will not be accepted; the student must give credit where credit is due - it is the ethical, professional, and legal thing to do. No late papers or reports will be accepted. Please note that The Center for Teaching and Learning, located in Beatty 402, offers FREE tutoring in a number of subjects from all departments and is open Monday-Friday (Monday-Thursday evenings). You are encouraged to visit the CTL website http://www.academics/resource to make an appointment of you need extra help with your courses.

Grading:

● Quizzes	……	10%
● Formal report - research project:	……	10%
● Oral presentation- research project:	……	5%
● Class attendance	……	10%
● Homework	……	10%
● Midterm Exam:	……	10%
● Final Exam:	……	15%
● Grade on four laboratory modules: (This grade will be provided by the laboratory instructors)	……	30%
TOTAL	……	**100%**