

## **IEGR 204: Introduction to IE and Computers**

2 credits; 3 contact hours

Fall 2016

Instructor: Masud Salimian, Ph.D.

218 Mitchell Engineering, Ext. 3135

No Textbook, only supplemental materials

Supplemental Material: Class Web site, Facebook page, various websites and journal articles

### **Catalog Description:**

This course introduces:

- (1) students to the basics of computer usage for industrial engineering (IE) problem solving,
- (2) IE as a career,
- (3) an overview of the curriculum, and
- (4) IE research. Topics include: computer internal representation and mathematics, Microsoft Office Applications (including Word, Excel, PowerPoint), image editing, and Web site development.

Prerequisite(s): Student must be an Industrial Engineering Major (Required course for ISE majors)

### **Goals for the Course:**

- 1) the student will be able to understand computer internal representation (i.e., what computers are doing internally when processing information);
- 2) the student will be able demonstrate required computer skills for engineers (e.g., MS Office, www applications, etc.);
- 3) the student will be able to perform basic math/engineering related problems;
- 4) the student will gain strong individual and teamwork skills through various research home assignments and laboratory assignments which supplement the course materials by providing a 'hands-on' mechanism for solving problems efficiently.

### **Topics to be Covered**

Topic 1 Introduction to Industrial Engineering (IE) and the IE Curriculum

Topic 2 Overview of Computer Hardware, Internal Representation & Computer Mathematics

Topic 3 MS Office Word

Topic 4 Research and Report Writing

Topic 5 MS Office Excel

Topic 6 Computational Problem Solving

Topic 7 MS Office PowerPoint (if necessary)

Topic 8 Presentation Strategies

Topic 9 Introduction to Computer Programming

### **Additional Information:**

The 204 course has evolved into both a research and a pre-introduction to computer programming course.

1- Students learn how to research by doing 3 research assignments (essay, literature critique, & a 5 to 6-page full paper) on an individualized IE topic which will be distributed on second week of the classes.

2- Learning the APA structure is mandatory because it prepares you for reports you are expected to write in your junior and senior classes and especially for your senior design project.

3- Learning about computers: parts of the computer including motherboard components; bits, bytes, etc., conversions between binary, decimal, hexadecimal, and octal values (and all combinations of these conversions); conversion of negative decimal values to binary values; history of USB from 1.0 to 3.1 (with discussion of Thunderbolt 1 and 2); data transfer rate equations.

4- Learning essential software for report writing (MS WORD), spreadsheet calculations (MS EXCEL), presentation (MS POWERPOINT), and modeling, graphing and problem solving in EXCEL and MAPLE; and an introduction to C++.

**Assessment:**

1. Tests, quizzes, homework and projects
2. Class attendance and participation
3. On time work submission, following format guidelines
4. Volunteerism, helping other class participants, community of learning

Please note that course Web site, Facebook group, and Google group are integral elements of the course and your participation is required.

**Grading Scheme**

Homework assignments 25%

Test 1            25%

Test 2            25%

Test 3            25%