1. GENERAL INFORMATION

Professor: M. Otis

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Office hours: [Monday] [2:30-3:30]
              [Wednesday] [2:30-3:30]
              [Thursday]  [4:00-5:00]

Textbook: None. Lectures are supplemented by Powerpoint Slides, Handouts, and Lecture Notes.

2. COURSE OBJECTIVES:

(i) Introduce students (typically freshman) to the engineering profession (particularly electrical and computer areas). The role engineering plays in today's society, team building and the design process will be of primary focus. Stress the importance of ethics as it pertains to engineering and society. Students will be exposed to various forms of engineering outlets - Engineering Clubs, Professional Engineering Forums, and Senior Design Presentations.

(ii) Teach students the importance of a quality resume and have them prepare their own (with the help of the career placement office). This resume will be placed on file with the career placement office. It is stressed that students maintain their resume during their tenure here. The career placement office will also schedule “Mock-interviews” with each student.

(iii) Teach basics of resistive AC/DC circuits and some fundamental electronics with applications (for an exposure to electrical engineering). Students will use problem-solving techniques to strengthen these concepts. The students will be introduced to (and expected to use) Schematic Capture and Computer Simulation to reinforce analysis techniques. They will strengthen learned theoretical concepts with a hands-on (laboratory) team experience. Students will be introduced to lab equipment and instrumentation.
iv) Teach basics of combinational digital logic fundamentals with applications (for an exposure to computer engineering). Students will use problem-solving techniques to strengthen these concepts. The student will be introduced to (and expected to use) Schematic Capture and Computer Simulation to reinforce analysis techniques. They will strengthen the theoretical concepts learned with a hands-on (laboratory) team experience.

**Note:** At the end of the semester, students will evaluate how these course objectives have been met.

### 3. COURSE CONTENTS

1) Introduction to Engineering:
   - a) Resume Writing.
   - b) Mock Interviews.
   - c) Engineering Forums.
   - d) Engineering Clubs.
   - e) Senior Design Presentations.

2) Electrical Engineering Fundamentals:
   - a) Direct Current / Alternating Current
   - b) Basic Circuit Elements.
   - c) Circuit Analysis with EWB.
   - d) Network Theorems with EWB.
   - e) Laboratory Equipment and Instrumentation
   - f) Four Hands-on Experiences – one DC (Loaded Voltage Divider with Lab Write-up), one AC (Series Circuits with Lab Write-up), one AC to DC (Converter), and one System Application (Alarm Circuit with Lab Write-up).

3) Computer Engineering Fundamentals:
   - a) Digital Logic Circuits.
   - b) Combinational Logic with PSPICE.
   - c) Logic Reduction Techniques with PSPICE.
   - d) One Hands-on Experience – 2-bit Adder using a Hierarchical Approach (with Lab Write-up).
4. SCHEDULE FOR EXAMINATIONS, LABORATORIES, AND HOMEWORKS

There will be two examinations and one final examination in this course. All examination dates will be announced prior to examination.

Four laboratories (work in groups) will be assigned throughout the semester. A formal report should be generated (one per group) and handed in one week from date of lab completion.

Five homework’s will be assigned throughout the semester. Homework should be handed in one week from date of assignment.

5. GRADING POLICY

5.1. Grade Distribution

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<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Homework</td>
<td>15%</td>
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<tr>
<td>Laboratories</td>
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<tr>
<td>Exam 1</td>
<td>20%</td>
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<tr>
<td>Exam 2</td>
<td>20%</td>
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<tr>
<td>Final Exam</td>
<td>25%</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
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5.2. Class Attendance

Students are strongly encouraged to attend all the lectures. In case if you are unable to attend a particular lecture, please make sure that you copy the notes from a student that attended the lecture.

6. RELATIONSHIP BETWEEN COURSE OBJECTIVES AND PROGRAM'S OBJECTIVES

This section is of an informative character. First, it states the common educational objectives of the Electrical and Computer Engineering Programs. Second, for the sake of clarity, it restates the course objectives of section 2, and third, it establishes the connection between program and course objectives.

6.1. Program’s Educational Objectives:

I) **Fundamental Knowledge:** The Electrical and Computer Engineering Programs will provide students with fundamental knowledge of mathematics, Sciences and engineering, in order for them to apply this knowledge to the solution of electrical engineering problems.

II) **Design and Practical Skills:** The Electrical and Computer Engineering Programs will enable students to perform engineering design subject to engineering standards and constraints. In addition, the program will provide students with hands-on experience for implementing such designs.
III) **Social and Professional Aptitude:** The Electrical and Computer Engineering Programs will provide a broad-based education which instill in our diverse student body professional and ethical conduct, communication and teamwork skills, and the desire for life-long learning to interact effectively with the members of engineering profession as well as society at large.

### 6.2. Course Objectives

i) Introduce students (typically freshman) to the engineering profession (particularly electrical and computer areas). The role engineering plays in today's society, team building and the design process will be of primary focus. Stress the importance of ethics as it pertains to engineering and society. Students will be exposed to various forms of engineering outlets - Engineering Clubs, Professional Engineering Forums, and Senior Design Presentations.

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### 6.3. Link between Course Objectives and Program Objectives

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<thead>
<tr>
<th>Course Objective</th>
<th>Contributes to</th>
<th>Program Objective</th>
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<tbody>
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<td>(ii)</td>
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