This course covers a variety of computer tools used by mechanical engineers. Structured programming using Matlab will be emphasized. Other covered topics will include dynamic simulation, web page development, spreadsheeting, and presentation software. Use of computer tools, teamwork skills, and design will be incorporated in a project component of the course.


**Course Objectives: After completing this course a student should:**

- Objective 1: be able to write structured programs in Matlab to solve engineering problems.
- Objective 2: be able to create a variety of engineering plots and graphs using Matlab.
- Objective 3: understand and program a variety of numerical methods used for numerical differentiation and integration, equation solving, root finding, curve fitting, and differential equation simulation.
- Objective 4: be able to create and simulate simple dynamic systems using Working Model.
- Objective 5: be able to create a simple web page using HTML.
- Objective 6: know how to create a computer presentation using Power Point.

**Grading Policy:**

A grade will be given to evaluate how well the student has assimilated the course material. The total grade for the quarter will be averaged over homework, programs, quizzes, tests, and a design project. **In order to pass the course, the student must achieve a passing grade in the final exam.**

**Grade Distribution:**

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
<th>Grade Criteria</th>
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</thead>
<tbody>
<tr>
<td>Homework</td>
<td>10%</td>
<td>90+ A</td>
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<tr>
<td>Programs</td>
<td>10%</td>
<td>80-90 B</td>
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<tr>
<td>Quizzes</td>
<td>10%</td>
<td>70-80 C</td>
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<tr>
<td>Exam 1 (week 4)</td>
<td>15%</td>
<td>60-70 D</td>
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<tr>
<td>Exam 2 (week 7)</td>
<td>15%</td>
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<tr>
<td>Final Exam</td>
<td>30%</td>
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<tr>
<td>Project</td>
<td>10%</td>
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**Quizzes:**

Unannounced quizzes may be given during class. Missed quizzes will not be made up. If you must be gone, it is your responsibility to notify the instructor before your absence, and you may be excused from the quiz if your absence is reasonable.

**Exams I and II:**

Each exam will be 50 minutes long. There will be closed-computer as well as open-computer portions in each exam.

**Final Exam:**

The final exam will be a hands-on computer-examination which will expect you to demonstrate the use of the different computer tools covered in this course. You will need your computer for the final exam.
Homework:
Homework is assigned at the end of a lecture. Assigned homework is due at the start of the next lecture period. It is expected that your homework will be completed clearly and neatly showing the method as well as the answers. Homework that is sloppy, illegible, incomplete, or difficult to follow will be heavily penalized. Late homework will not be accepted except for medical reasons or if prior arrangements have been made with the instructor. Guidelines for homework include:
- Each homework set must start with a title sheet.
- Each problem should start on its own page and only use one side of the paper.
- Each problem must include a complete statement indicating the problem or question and any given information supplied.
- Your name and box number should be included on the upper right hand corner of the first page of each problem.
- Use headings and labels to identify parts of the homework problem and to provide clear structure.
- Answers should be clearly indicated by a box or by a double line underneath and should always contain the correct units when appropriate.

Think of a homework problem as a story. It should have a beginning, middle, and an end. It should be complete, logical in its structure, and easy to follow.

Programs:
You will have formal programming or computer assignment throughout the quarter. These assignments will be due one week after the date on which they are assigned. Late program assignments will not be accepted except for medical reasons or if prior arrangements have been made with the instructor. Program assignments should include the following parts (in order):
- Title sheet: (Name, Date, CM #, Section #, Assignment #, Statement of Accountability)
- Original problem statement (attachment of original assignment sheet)
- Any derivations, calculations, work or planning needed
- Program code
- Program output
- Comments

Program assignments are expected to represent a student’s individual effort. While it is certainly fine to give or get help with portions of your program, using the efforts of another as your own will not be tolerated. Additionally, the concept of team programming is not acceptable unless the problem was assigned in that manner. You will not gain the skills you are expected to learn by watching somebody else program. Any indication of using large amounts of other students work will result in reduction or loss of grade. Multiple infractions may result in failure of the course.

Words of Warning:
It is very important to your grade to not miss turning in homework and computer assignments. Each programming assignment will end up being about 1% of your total quarter grade. Each homework assignment will be approximately 1/4% of your total quarter grade. Not only do these contribute significant amounts to your total grade but they are tools by which you may prepare to do well on the quizzes and tests.