
Optional Text: A good reference book on MATLAB.

Course Content: This course introduces you to the fundamental techniques of measurements and data analysis. The main topics that will be covered include (1) An Introduction to Experiments, (2) Measurement Systems, (3) Probability and Statistics, (4) Uncertainty Analysis, and (5) Signal Characterization and Analysis.

Learning Goals: At the conclusion of this course, you should be able to:

- communicate through written work the purpose, method and results of an experiment,
- apply a proper “units” analysis to any engineering/science problem and be able to convert correctly between the metric and English systems of units,
- determine the appropriate measurement techniques for an experiment and the uncertainties associated with that experiment, and
- analyze data in either discrete or analog form using appropriate statistical methods and analysis tools to arrive at technically sound conclusions.

Course Grade: Your final course grade will be based upon your performance as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Lab Exercise Tech Memos/Report</td>
<td>45 %</td>
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<tr>
<td>1 TN @ 10 % and 1 TR @ 15 %</td>
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<tr>
<td>Mid-Term Exam</td>
<td>25 %</td>
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<tr>
<td>Final Exam</td>
<td>30 %</td>
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<td>100 %</td>
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Homework: No homework will be graded this semester. Problems from the text will be suggested each week and listed on the class web site. Some of these problems will be worked in the help sessions. You are strongly encouraged to work these problems by yourself and ask the TA for help, if you need it. Solutions to the problems will not be issued. Examination problems will be similar. So, if you keep pace with working these problems along the way, you will be prepared well for the examinations.

Laboratory Exercises and Conditions: There will be 4 laboratory exercises this
You will perform the laboratory exercises during scheduled lab times. You must read the laboratory exercise handout prior to coming to lab and be prepared to answer questions from the TA about the exercise. You are required to be on time for these exercises. There will be a 10% penalty if you show up late and a 25% penalty if you miss your scheduled lab time (you then must re-schedule with the TA). You must attend and complete all lab exercises to pass the course. You will work either by yourself or with one lab partner. An account will be taken of those who have had to work alone. Absolutely no sharing of data or written material between groups is allowed unless specified for that exercise. Exercise results will be communicated either as a technical memo or as a technical report. There is a late period penalty for submission of written documents: up to 24 hours late (30% off); thereafter until the beginning of the following class (50% off); thereafter (0%). Documents are due at the beginning of the class. All due dates are posted on the course web site.

Exams: A mid-term exam will be given that covers the lecture and laboratory material of the first half of the semester, and a final exam that covers the lecture and laboratory material of the entire semester. Each exam will consist of two parts, one, multiple choice and fill-in-the-blank (graded no partial credit), and, the other, problems like the homework (graded partial credit). Cell phones, PDAs, and the like are prohibited during exams. Unless excused officially, a student who is late for an exam will have whatever time is remaining to take the exam. If they miss the exam, they will receive a score of 0.

Assistance: We will be available throughout the semester to answer questions. The graduate assistants assigned to this course are listed on the course web site. Do not assume anyone will be available if you just stop by his/her office, including me. Please call or email us ahead to set up a time. Work directly with the responsible graduate student for the specific laboratory exercise or homework. A regularly scheduled ‘help session’ will be held every week. The purpose of the session is to answer your questions on homework or laboratory exercises. This is YOUR time to ask questions and not our time to lecture on more material!

Course Policies: Class Attendance and Excuses: You are expected to attend and to be engaged in every class. Attendance will not be taken. I ask for your full, undivided, and focused attention during class. Distractions to me during lecture and other students in class to learn the lecture material will not be tolerated. Example distractions include working homework for another class, emailing, text-messaging, web browsing, reading other material, and carrying on conversations. Thus, NO open laptops or cell phones are permitted in class. If any distractions occur, you will be asked to leave the classroom. Please be considerate of others.

In situations in which you cannot make lecture, it is your responsibility to get the class notes from a classmate. However, you must be present for all scheduled exams and laboratory exercises. You will be neither excused from nor granted any extension for an assignment unless you obtain an approved "Verification for Absence" by the University's Vice President for Residence Life. The University will mail a copy of the excuse to me. Any ‘unofficial’ excuse will not be accepted.

Re-Grade Policy: There will be no re-grades of examinations or lab exercise memos and reports except to correct a point-addition error. You are encouraged to discuss
the reasons for any deficiencies in your memos and reports with the TA for that exercise. However, your point score will not be changed.

**Honesty:** You are all expected to follow the Academic Honor Code of the University, which states “As a member of the Notre Dame community, I will not participate in or tolerate academic dishonesty.” Copying (in part or whole) another's problem solution, computer program or written work (plagiarism), and cheating on exams are considered dishonest and absolutely will not be tolerated. This implies that there should not be the exchange of solutions and so forth on laboratory exercises and exams. Discussions of approaches to solutions can be held, but with the intent of teaching one another as opposed to allowing your friend to copy a solution because he or she did not have the chance to do their work. It is dishonest to use the work of another student even with his or her consent if you are being graded on an individual basis. When you write only your name on an assignment, it means ONLY you did the work. This includes the work of those students currently taking the class as well as those who took it previously and gave you their files. If you have any questions about my policies, it is your responsibility to ask me. Please do not hesitate to do so!