AME 60612—Mathematical Methods I
Spring 2015

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The TAs will hold office hours every Tuesday, 7-9 PM in 117J Cushing Hall. I am available on a walk-in basis during the day.

Course web site: http://www.nd.edu/~powers/ame.60612

Listserver address: ame60612-01-sp15@acadlist.nd.edu When e-mail is sent to this address, the entire class will be receive a copy of the mail.

Course time and location: Tu-Th 12:30 PM-1:45 PM, 117 DeBartolo

Prerequisites: formally none, knowledge of undergraduate calculus through differential equations

Catalog description: “Partial differential equations, characteristics, separation of variables, similarity and transform solutions, complex variable theory, singular integral equations, integral transforms. (Every spring).”

Comments: The course will consist of a survey of elements of advanced mathematics. Topics will be as listed in the catalog with some additional material interspersed. A primary source will be the course notes, which are being developed this term. The text will serve as a complement to the lecture notes, which are self-contained.

Notes available on the Web

J. M. Powers, 2015, Lecture Notes on Mathematical Methods II,
http://www.nd.edu/~powers/ame.60612/notes/notes.pdf

Text available in Bookstore


Other Useful Texts


Required Work and Grading

Exams will be closed book, closed notes and held in class. The final exam will be comprehensive. Calculators are not allowed on exams.
Homework will be assigned regularly. All homework will be graded and returned. Homework must be done on one side only of 8 1/2” by 11” engineering paper with no frayed edges. Multiple pages must be stapled. You should briefly restate the problem, give a sketch if helpful, give all necessary analysis, and place a box around your final answer. All plots must be computer generated, trimmed, and taped to engineering paper. Label all axes. Raw computer output will not be graded. Neatness and effective communication are considered in grading as well as the final answer itself.

Two short (one page maximum) critical reviews of works from the literature will be required. The first review will consider a topic of current interest in applied mathematics from the journal SIAM Journal on Applied Mathematics. The second must consider an article on mathematics which has stood the test of time. It must be over fifty years old and written by a well-known mathematician. The articles you choose should not fall into the category of review, historical discussion, biography, or other version of “math lite;” rather, it should be a substantive, original contribution. Your reviews should 1) summarize the article’s major findings and 2) offer an argument why this paper is deserving of its recognition. The reviews are required to be written in a LaTeX format and will be checked primarily for style, format, grammar, and content.

Grades will be assigned based on students’ performance on examinations, homework, and papers. Pertinent information is as follows:

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<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
<th>Date</th>
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<tbody>
<tr>
<td>Midterm Exam</td>
<td>30</td>
<td>Thursday, 26 February 2015</td>
</tr>
<tr>
<td>Final Exam</td>
<td>40</td>
<td>Tuesday, 5 May 2015, 10:30 AM-12:30 PM</td>
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<tr>
<td>Homework</td>
<td>28</td>
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<tr>
<td>Reviews</td>
<td>2</td>
<td>Thursday, 18 February 2015; Thursday, 2 April 2015</td>
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<td><strong>Total</strong></td>
<td><strong>100</strong></td>
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Honesty Policy

Academic honesty is expected. When confronted with an apparent violation, I will enforce the appropriate University regulations to the best of my ability. I will also try to make my expectations clear. By and large, though, these issues are out of my control and as such I do not seek out violations. Instead, I depend upon your basic integrity to prevent any problems.

In brief my expectations are as follows. I encourage you to freely discuss the homework amongst one another as you formulate your solutions individually. Your written work should represent your understanding of the problem. In practice this means copying (in whole or in part) another student’s homework, exam, computer program, or paper is not permitted. If you choose to discuss your work with a colleague, it should be a discussion in which one teaches another or both work to a mutual understanding. As a counter-example, it is not acceptable to give a friend your homework five minutes before class so that friend can copy your work. I also consider it unacceptable to copy work from a student who was in the class in a previous year. In your written reports, be careful to correctly use quotation marks for words that did not originate with you. Paraphrasing should be held to a minimum, but if used, the paraphrased section should be specifically identified and unambiguously cited. It is not sufficient to simply list a reference but not indicate where a specific quotation or paraphrase was employed. In addition all sources used should be fully cited. As is done in the scientific literature, you should briefly acknowledge in writing any significant discussions or interactions you had regarding the work you submit. As a general principle, I do not accept the justification that you were not sure of my intentions. If you feel you may be in an ethical grey area, then you should consult with me before acting.