Rensselaer at Hartford
Department of Engineering and Science

SUMMER 2009
Course: MANE-7000 Advanced Engineering Mathematics II
Mondays, Wednesdays: 5:30 – 9:30 p.m. (50x4 minutes per class) at Groton, CT
Dates: May 11, 13, 18, 20, (25-no class), 27; June 1, 3, 8, 10, 15
Instructor: S. Ratnajeevan H. Hoole
Office Location: Room 724, 275 Windsor Street, Hartford, CT 06120-2991
Telephone No: 860-548-5356
Office Hours: Before class or by appointment only. Fax No: 860-548-5319.
Email Address: hooler@rpi.edu
Website: http://www.ewp.rpi.edu/hartford/~hooler/

Course Policy/Requirements
Pre-requisite Skill: Knowledge of a high level programming language or MATLAB is ideal but students lacking this have been successful.
Pre-requisite Courses: As in the catalog
Email:
All email to me, the instructor, must be addressed only to hooler@rpi.edu. The header must have MANE-7000: at the beginning followed by the actual topic. I receive hundreds of email (most of which I do not read) and this is necessary to track my mail.
Homework
There will be homework about every week. Homework is due a week after assignment at the beginning of the next class. Students who must miss a class (e.g. company business trip, illness) are responsible for finding out announcements including homework and may submit their completed homework using E-mail or courier (postmarked by the due date). Late homework will NOT be graded – no exceptions.
Grading
There will be a mid-term exam and a final exam:
Homework: 30%; Three assignments will be arbitrarily picked for grading. So make sure that every homework assignment has your best input.
Midterm: 25%;
Final (in-class, open book with a take-home computing component): 35%.
Attendance and participation: 10%

Academic Integrity
Student-teacher relationships are built on trust and common sense. For example, students must trust that teachers have made appropriate decisions about the structure and content of courses they teach, and teachers must trust that the assignments that students turning are their own.
The Rensselaer at Hartford Student Handbook defines various forms of Academic Dishonesty and you should make yourself familiar with these. In this class, all assignments that are turned in for a grade must represent the student’s own work. Violation of this policy will result in a penalty, which may include partial or complete loss of grade. If you have any question concerning this policy before submitting an assignment, please ask for clarification.

Buckley Amendment
The Family Educational Rights and Privacy Act (Buckley Amendment) guarantees privacy to students, particularly in the areas of grades and performance.
Catalogue Description:
MANE–7000: Advanced Engineering Mathematics II
A continuation of the advanced presentation of mathematical methods useful in engineering practice. The course covers the Frobenius method for the solution of boundary value problems; the representation of arbitrary functions by characteristic functions; calculus of functions of more than one variable including the study of extreme; overview of calculus of variations; principles of vector and tensor analysis; analytical and numerical techniques for the solution of initial and boundary value problems in partial differential equations. Symbolic manipulation and scientific computation software used extensively. Emphasis on reliable computing is made throughout.

Course Schedule Intention, subject to changes with prior notice:

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<tr>
<th>LECTURE</th>
<th>DATE</th>
<th>TOPIC</th>
<th>READING ASSGNMNT</th>
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<tbody>
<tr>
<td>1.</td>
<td>05/11</td>
<td>Ordinary Differential Equations</td>
<td>Chapters 1, 2, 3</td>
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<tr>
<td>2.</td>
<td>05/13</td>
<td>Series Solution, Laplace Transform</td>
<td>Chapters 4, 5, 6</td>
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<td>3.</td>
<td>05/18</td>
<td>Finite Difference, Linear Matrix solvers</td>
<td>Chaps. 7, 8, Handout</td>
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<td>4.</td>
<td>05/20</td>
<td>Computer Lab Class</td>
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<td>5.</td>
<td>05/27</td>
<td>MT Exam; Fourier Analysis, Partial DEs</td>
<td>Chaps. 11, 12</td>
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<td>6.</td>
<td>06/01</td>
<td>Numerical Methods</td>
<td>Part E</td>
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<td>7.</td>
<td>06/03</td>
<td>Calculus of Variations</td>
<td>Handout</td>
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<td>8.</td>
<td>06/08</td>
<td>The Finite Element Method</td>
<td>Handout</td>
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<td>9.</td>
<td>06/10</td>
<td>Contd.</td>
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<td>10.</td>
<td>06/15</td>
<td>Final Exam</td>
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