MATH - 266, SECTION 24315

Course Syllabus
Spring 2016

General Information
The study of differential equations is a beautiful application of the ideas and techniques of calculus to everyday life. The textbook focuses on the formulation of differential equations and the general interpretations of their solutions, eliminating most of the specialized techniques. Two approaches are combined for each equation to obtain an understanding of the solutions: qualitative and analytic. Overall, the class teaches how to identify and work effectively with the mathematics in everyday life and how to express the fundamental principles that govern many phenomena in the language of differential equations.

Description: 3 credits course for Math, Science, and Engineering majors.

Topics covered:
- first and second-order differential equations
- systems of first-order differential equations
- qualitative analysis of solutions for differential equations
- the Laplace transform, numerical methods
- discrete dynamical systems

Class Time: TR 3:00-4:15 PM IT069
Instructor: Dr. Elizabeth N. Its
Office: LD 224D, email: enits@iupui.edu; please DO NOT email Oncourse
Ph: 278-3615 please DO NOT leave messages!
Office Hours: TR 11:00-12:00, 2:00-3:00 PM or by appointment
Text: Paul Blanchard, Robert L. Devaney, Glen R. Hall
Calculator Calculators are not allowed for quizzes, tests and the Final Test:
Feb 9(Ch1), Mar 10(Ch2,3), Apr 21(Ch4,6)
Final Review Apr 26, 28
Final Test May 5, 3:30 -5:30 PM

Prerequisites: Math 166 or equivalent, Math171, 261 (taken or simultaneously) with minimum

Important Dates:
Mar 13 - Last day to withdraw without instructor’s signature
Apr 15 - Last day to withdraw without Dean’s signature.
The Associate Dean for Academic Program will not endorse a withdrawal after this date unless a serious and documentable
excuse is established

Note Well: if you need help, ASK! ASK questions during the class.
ASK questions during office hours. Make an appointment and
ASK questions any other time. If I get no feedback, I can
only assume that you understand.

Additional information can be found on the Math Home Page
http://www.math.iupui.edu and on www.math.iupui.edu/~liza/math266

Attendance
One very important requirement for doing well is to attend each lecture. A
student absent from the class bears full responsibility for all material covered
in class. When you do miss a class, contact a classmate to verify what
was discussed. If you failed a test then for you attendance may become
MANDATORY.

Advice:
Working with other students in small groups is strongly recommended.
You must work (not watch) problems, problems and more problems.

Personal time expectation
You are expected to spend at least 6-8 hours per week outside of class
studying and doing homework for this course, but you may have to spend
even more time.

Homework
Homework is especially important in any math course. The homework
assignment for a section should be done after that section was presented in
class, BEFORE the next lecture. Random homework problems will be col-
lected and quizzes will be made similar to homework problems. The instruc-
tor RESERVES THE RIGHT TO START collecting complete homework (if,
for example, you failed a test).

Quizzes and homework 25% of the FINAL GRADE
You will have a REGULAR quiz once per week on Tue. Irregular quizzes
could be given on Thu. You are allowed to drop your 2 lowest scores. There
will be ABSOLUTELY NO MAKE-UP quizzes, so use your drop quizzes
wisely. Each quiz will be 10-20 minutes long, and will cover assigned home-
work. Usually problems on the quizzes will be from the assigned homework
problems or similar. NO PARTIAL CREDITS for quizzes!

Tests 50% of the FINAL GRADE
There will be 2 regular tests 15% of the final grade each and MidTerm
Test 20% of the final grade. Although makeups may be given for missed
exams, makeups will be given only for reasons acceptable to the instructor,
and written, verifiable excuses for missed exams will be required before a
makeup exam is given. Makeups are never easier than the originals.
Final 25 % of the FINAL GRADE
There will be a comprehensive FINAL EXAM.

Reminder
To receive credit for quiz and exam problems you MUST show all your work.

Grading
25 %- Quizzes and Homework
50 % - Tests
25 % - Final Exam

Unless otherwise announced in class, numerical scores will translate into letter grades following the scale*: 99-100 A+, 93-98 A, 90-92 A-, 88-89 B+, 83-87 B, 80-82 B-, 78-79 C+, 73-77 C, 70-72 C-, 68-69 D+, 60-67 D, 0-59 F.

* In addition to the scale you have to take the final to pass the class. You have to pass the final to get grades B or higher. You have to to get A- or higher for the final to get A+ for the class.

Tentative Schedule and Assigned Homework

<table>
<thead>
<tr>
<th>DATE</th>
<th>Section</th>
<th>Assignment</th>
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</thead>
<tbody>
<tr>
<td>Jan 12</td>
<td>1.1</td>
<td>1,3,5,19</td>
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<tr>
<td>Jan 14</td>
<td>1.2-1.4</td>
<td>1.2: 1,5,9,11,13,17,19,23,25,27,29,33,37; 1.3:7.9</td>
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<tr>
<td>Jan 21</td>
<td>1.5</td>
<td>1-7(odd),9(a,b),11(a,b),15,17</td>
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<tr>
<td>Jan 26</td>
<td>1.6</td>
<td>1-21(odd),29,31</td>
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<tr>
<td>Jan 28</td>
<td>1.7</td>
<td>1-11 (odd)</td>
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<tr>
<td>Feb 2</td>
<td>1.8</td>
<td>1-11 (odd)</td>
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<tr>
<td>Feb 4</td>
<td>1.9</td>
<td>1-17(odd)</td>
</tr>
<tr>
<td>Feb 9</td>
<td>TEST1</td>
<td></td>
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<tr>
<td>Feb 11</td>
<td>2.1,2.2</td>
<td>2.2: 13-17(odd) part (a) only</td>
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<tr>
<td>Feb 16</td>
<td>2.3,2.4,2.6</td>
<td>2.3: 1,3(b,c),7; 2.4: 1-7(odd), 9, 11(a,c); 2.6: 3,9</td>
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<tr>
<td>Feb 18</td>
<td>3.1</td>
<td>3.1: 5-9(odd), 17, 19, 27-31(odd)</td>
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<tr>
<td>Feb 23</td>
<td>3.2</td>
<td>1-9(odd) NO part (c), 11-23(odd)</td>
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<tr>
<td>Feb 25</td>
<td>3.3</td>
<td>1-16(odd)</td>
</tr>
<tr>
<td>Mar 2</td>
<td>3.4</td>
<td>3-7(odd) NO part (e), 9-13(odd)</td>
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<td>Mar 4</td>
<td>3.5,3.7</td>
<td>3.5: 1-11(odd),17,19, and 3.7: 1,3,5,7,11,13</td>
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<tr>
<td>Mar 9</td>
<td>3.6</td>
<td>1-19(odd)</td>
</tr>
<tr>
<td>Mar 11</td>
<td>TEST2</td>
<td></td>
</tr>
<tr>
<td>Mar 23</td>
<td>4.1</td>
<td>1-17(odd; in 13-17 also sketch the solution you describe in (c))</td>
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<tr>
<td>Mar 25</td>
<td>4.2</td>
<td>1-13(odd) use the polar form of the particular solution; sketch it together with the forcing</td>
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<tr>
<td>Mar 30</td>
<td>4.3</td>
<td>1-17(odd)</td>
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<tr>
<td>Apr 1</td>
<td>4.4</td>
<td>1-11(odd)</td>
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<tr>
<td>Apr 6</td>
<td>4.4</td>
<td>1-11(odd)</td>
</tr>
<tr>
<td>Apr 8</td>
<td>6.1</td>
<td>1,3,7-27(odd)</td>
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Apr 13   6.1     1,3,7-27(odd)
Apr 15   6.3     1-29(odd)
Apr 20   6.3     1-29(odd)
Apr 22   Review
Apr 27   TEST3
Apr 29   Review
May 4    Review
May 8    FINAL

In addition to these problems some problems from the review sections could be assigned.

THE INSTRUCTOR RESERVES THE RIGHT TO ADJUST THIS SYLLABUS WHEN NECESSARY