MAT 2680 Differential Equations

Section D666  Mondays & Wednesdays 2:30pm–3:45pm  Namm Building room N518
Instructor:  Professor Neil Katz  Office:  Namm Building N726
Telephone:  718.260.5782  e-mail:  nkatz@citytech.cuny.edu
Office Hours:  Monday 11:00am – noon, Tuesday noon – 1:00pm, or by appointment


Calculator: Your instructor is familiar with the Texas Instruments TI-81/82/83/84 models and can help you to use them. You may choose any model you wish, as long as you know how to use it except that TI-89, Inspire with CAS capability or calculators with similar capabilities are not permitted on quizzes, tests or exams.

Prerequisite: Calculus II (MAT 1575)

Grades will be based on the following grading scheme:

30%  Quizzes, written assignments, and class participation
30%  Tests  Wed Mar 2, Wed Mar 30, and Wed May 4
40%  Final Exam  Wed May 25

Homework
Homework assignments for each section of the textbook covered by this course are shown on the table on the second page of this syllabus. The schedule for the lectures is shown on the reverse side of this page. Homework problems from the textbook will *not* be collected. They will be taken up in class as completely as time allows.

Quizzes, Written Assignments, and Class Participation
There will usually be at least one short quiz each week (except for weeks in which a test is scheduled). The quizzes will be closely related to the problems assigned for homework. There will also be a written assignment on the material covered in chapter 3 which will count as three quizzes. The best ten quizzes as well as class participation will count for 30% of the grade.

Tests and Examinations
Tests and exams will be held in the usual classroom (Namm Building N518). The use of calculators is allowed, but no other aids are permitted. Tests and the final exam will be one hour fifteen minutes long. No makeup tests or quizzes will be given.

*Test 1* (Mar 2) will cover section 1.2, chapter 2, and chapter 4
*Test 2* (Mar 30) will cover chapter 5
*Test 3* (May 4) will cover chapter 6 and chapter 7
The *Final Exam* (May 25) is set by your instructor and covers the whole course apart from chapter 3.

*Please note that only sections of the textbook from which homework problems are assigned will be covered by tests and exams.*

Attendance
As required by the college, class attendance will be taken. Up to three classes can be missed without penalty. Not being present for an entire class (arriving late or leaving early) twice will count as one absence and will affect evaluation in class participation.
Syllabus and Homework assignments

The course will follow (as best as possible) the schedule below. The reading should be done before the scheduled class. Homework assignments are the best preparation for quizzes and tests. It should be done as soon as possible after the class for which the problems are assigned.

<table>
<thead>
<tr>
<th>Date</th>
<th>Section</th>
<th>Reading Topic (pages)</th>
<th>Homework Assignment</th>
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<tr>
<td>Feb 1</td>
<td>1.2</td>
<td>First Order Equations (p.7-13)</td>
<td>p.14: 1, 2(a-c,e-h), 4(a-f), 5, 6, 9</td>
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<td>Feb 3</td>
<td>2.1</td>
<td>Linear First Order Equations (p.30-41)</td>
<td>p.41: 1–9 odd, 17–23 odd, 31–37 odd</td>
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<td>Feb 8</td>
<td>2.2</td>
<td>Separable Equations (p.45-52)</td>
<td>p.52: 2, 3, 6, 12, 17–27 odd, 28, 35, 37</td>
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<td>Feb 10</td>
<td>2.4</td>
<td>Transformation of Nonlinear Equations into Separable Equations (p.62-68)</td>
<td>p.68: 1–4, 7–11 odd, 15–18, 23–27 odd</td>
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<td>Feb 17</td>
<td>2.5</td>
<td>Exact Equations (p.73-79)</td>
<td>p.79: 1–21 odd, 29, 30, 33, 34</td>
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<td>Feb 22</td>
<td>4.1</td>
<td>Growth and Decay (p.130-137)</td>
<td>p.138: 1–7 odd, 11, 13, 17</td>
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<td>4.2</td>
<td>Cooling and Mixing (p.140-147)</td>
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<td>4.3</td>
<td>Elementary Mechanics (p.151-160)</td>
<td>p.160: 3, 5, 7, 10</td>
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<td>Feb 24</td>
<td>5.1</td>
<td>Homogeneous Linear Equations (p.194-203)</td>
<td>p.203: 1–5 odd, 9–21 odd</td>
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<td>Feb 29</td>
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<td>Constant Coefficient Homogeneous Equations (p.210-217)</td>
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<td>Test 1</td>
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<td>Mar 9</td>
<td>5.4</td>
<td>The Method of Undetermined Coefficients I (p.229-235)</td>
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<td>Mar 14</td>
<td>5.6</td>
<td>Reduction of Order (p.248-252)</td>
<td>p.253: 1–3, 5, 9, 13, 17, 19, 25, 31</td>
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<td>Mar 16</td>
<td>5.7</td>
<td>Variation of Parameters (p.255-262)</td>
<td>p.262 1–5, 7, 11, 13, 31, 33, 34</td>
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<td>Mar 21</td>
<td>6.1</td>
<td>Spring Problems I (p.268-277)</td>
<td>p.277: 1, 3, 7–13 odd, 19, 21</td>
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<td>6.2</td>
<td>Spring Problems II (p.279-284)</td>
<td>p.288: 3, 4, 7–11 odd, 14–16</td>
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<td>Mar 28</td>
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<td>Spring Problems II (continued) (p.284-287)</td>
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<td>The RLC Circuit (p.290-295)</td>
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<td>Euler’s Method (p.96-106)</td>
<td>p.106: 1–7 odd, 11–13, 15–19 odd, 20–22</td>
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<td>7.2</td>
<td>Series Solutions Near an Ordinary Point I (p.320-328)</td>
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<td>Series Solutions Near an Ordinary Point II (p.335-338)</td>
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<td>Regular Singular Points Euler Equations (p.344-346)</td>
<td>p.347: 1–12</td>
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<td>May 2</td>
<td>8.1</td>
<td>Introduction to the Laplace Transform (p.394-402) [NOTE: use table on p.463 of textbook for homework]</td>
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<td>The Inverse Laplace Transform (p.405-412) [NOTE: use table on p.463 of textbook for homework]</td>
<td>p.412: 1(a,b,d,e), 2(a-e), 3(a-d), 4(a,d,e), 6(a), 7(a), 8(a,d)</td>
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<td>May 11</td>
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<td>Solution of Initial Value Problems (p.414-419) [NOTE: use table on p.463 of textbook for homework]</td>
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<td>May 16</td>
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<td>The Unit Step Function (p.420-428)</td>
<td>p.428: 1–13 odd, 19, 23, 24</td>
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<td>May 18</td>
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<td>Constant Coefficient Equations with Piecewise Continuous Forcing Functions (p.431-437)</td>
<td>p.438: 1–4, 8–18</td>
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<td>May 23</td>
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