# Math 2233, Differential Equations
## Course Information                                    Spring 2012

**Professor:** Dr. Lisa Mantini, 410 Math Sciences, email mantini@math.okstate.edu, telephone 744–5777, web page http://www.math.okstate.edu/~mantini. Our course will have a page on OSU's online classroom at https://oc.okstate.edu.

**Course Times:** Tuesdays and Thursdays from 2:00 – 3:15 PM in CLB 103.

**Office Hours:** Wednesdays and Fridays from 1:00–2:30 PM, and by appointment. Generally I will also be available for at least 30 minutes after class daily.

**MLRC:** Special tutoring hours for Math 2233 are Tuesdays and Thursdays from 6:00 – 9:00 PM in the MLRC, on the fourth floor of the Classroom Building.

**Text:** *Elementary Differential Equations with Boundary Value Problems*, **ninth edition**, by Boyce and DiPrima. The Student Solutions Manual is helpful but optional.

**Calculators:** You may borrow a graphing calculator from the Math Department, if you do not own one. I permit the use of a calculator during exams in this course.

**Prerequisites:** The prerequisite for this course is a solid knowledge of techniques of integration and manipulation of exponentials and power series, as gained from successfully completing Calculus II (we strongly recommend a grade of 'C' or better).

**Course Requirements:** The 700 points required for this course are as follows:

- **Exams** worth 500 points, or 71.4% of your grade:
  - Exam 1, Thursday, February 16 (100 points);
  - Exam 2, Thursday, March 15 (100 points);
  - Exam 3, Thursday, April 19 (100 points);
  - Final Exam, **Tuesday, May 1**, 2:00 – 3:50 PM (200 points).
- **Homework and Quizzes**, worth 200 points, or 28.6% of your grade:
  - Homework is assigned approximately weekly and collected, usually on Thursdays. Each assignment is worth 15 points and your 10 best assignments determine your homework grade out of 150 points.
  - Quizzes worth 10–20 points each will be given about 4–5 times during the semester, to help prepare for exams. Quizzes count out of 50 total points.

**Grading:** Preliminary cutoffs for letter grades are:

- 627 points (89.5%) guarantees an A in the course
- 557 points (79.5%) guarantees a B
- 487 points (69.5%) guarantees a C
- 417 points (59.5%) guarantees a D

**Lecture Video:** The lectures in this course will be recorded and will be available for later viewing on OSU's video server, vbrick.okstate.edu.

**Attendance Policy:** The availability of video recordings does not remove your obligation to attend class. You are responsible for the content of every lecture. I will take roll daily. You may earn up to 10 points bonus by regular class attendance, as follows:

- 10 points bonus for missing 2 or fewer classes;
- 5 points bonus if you miss 3 classes;
- 0 bonus points if 4 or more classes are missed.

**Homework:** To do well on my exams, you must be able to identify the correct technique *quickly* and use it accurately and efficiently. Regular practice is essential. I will assign homework problems from all sections of the text. Each week the homework will be collected and a few problems, not announced in advance, will be graded. Homework should be prepared on loose sheets with **no ragged edges** and **stapled**. Once I deliver papers to the grader and post the solutions to a particular assignment, late papers will not be accepted. If you miss an assignment, that will be one of your dropped scores. In order to receive full credit your work must be clear and legible, you must show all work, and explanations must be written out in correct English sentences.

**Quizzes and the MLRC:** If class time is tight, selected quizzes may be given at the MLRC. In this case, you will have two days in which to take the quiz. Hours will be announced. You will be permitted a maximum of 30 minutes for completion of a quiz. Calculators will be permitted, but notes, books, telephones, and internet access are not permitted during quizzes.

**Partial Credit:** Engineers using differential equations in the workplace **must obtain correct answers**, in order to protect their employer from liability and to protect the lives of the public who drive on their roads, use their buildings, etc. Mathematically speaking, minor algebraic errors early in a differential equations problem can make a reasonable problem impossible or trivial or can cause your solution to be completely unrelated to the correct solution. My policy in this course is that your work on exams will earn partial credit as long as it is 100% correct. After your first error, however minor and however early in the problem, you are no longer guaranteed partial credit. Note that I do allow the use of a calculator on exams.

**Makeup exams:** Makeup exams will be given only for very serious, unavoidable circumstances and **only** if you notify me before or as soon as possible after the missed exam.

**Drop Policy:** The last day to withdraw with a grade of W is Friday, April 6.

**Boyce-DiPrima Ninth Edition Assignment List:** I assign homework from every section of the text that we cover. Assignments must be **stapled** and completed on 8.5" by 11" paper with *no ragged edges*. We will spot check a few selected exercises before returning the assignments. I highly recommend checking all of your answers in the back of the book and in the Student Solution Manual.

| Asn. | Due Date | Sections | Problems assigned |
|:---:|:---:|:---:|:---|
| 1 | 1/19 | 1.1 | 1, 5, 7, 9, 11, 14, 15–20, 23, 24 |
|  |  | 1.2 | 1a, 2a, 3, 8, 9, 12 |
|  |  | 1.3 | 2, 4, 6, 7, 13, 14 |
| 2 | 1/26 | 2.1 | 1c, 2c, 6c, 8c, 15, 17, 19, 20, 31, 32 |
|  |  | 2.2 | 1, 4, 5, 7, 8, 11, 16, 17, 19, 23, 26 |
| 3 | 2/2 | 2.3 | 3, 4, 7, 12, 16, 19 |
|  |  | 2.4 | 2, 3, 4, 7, 8, 10, 13, 15, 22 |
| 4 | 2/9 | 2.5 | 2, 3, 5, 9, 15, 18, 22 |
|  |  | 2.6 | 1, 2, 4, 10, 13, 16, 27, 30 (hint: clear denoms.) |
| **Exam 1** | 2/16 |  | Covers Assignments 1–4 |
| 5 | 2/23 | 3.1 | 3, 6, 7, 10, 11, 12, 15, 17, 20 |
|  |  | 3.2 | 2, 3, 4, 5, 7, 8, 13, 14, 16, 22, 38, 39 |
| 6 | 3/1 | 3.3 | 1, 5, 8, 11, 14, 17, 19, 21, 35, 36, 37 |
|  |  | 3.4 | 3, 4, 5, 9, 12, 13, 16, 23, 25, 41, 42, 43 |
| 7 | 3/8 | 3.5 | 1, 2, 3, 4, 5, 6, 13, 15, 17, 29 |
|  |  | 3.7 | 2, 3, 5, 6, 8, 11, 12, 17, 18 |
| **Exam 2** | 3/15 |  | Covers Assignments 5–7 |
| 8 | 3/29 | 3.6 | 2, 5, 7, 9, 13 |
|  |  | 3.8 | 1, 3, 5, 7, 9, 11a, 12 |
| 9 | 4/5 | 5.1 | 1, 3, 5, 9, 13, 14, 17, 19, 23 |
|  |  | 5.2 | 1, 2, 6, 12, 16, 18 |
| 10 | 4/12 | 6.1 | 1, 5, 6, 10, 14, 15, 19, 22 |
|  |  | 6.2 | 2, 5, 12, 14, 16, 22, 28, 30, 33 |
| **Exam 3** | 4/19 |  | Covers Assignments 8–10 |
| 11 | 4/26 | 6.3 | 1, 2, 4, 7, 10, 14, 17, 19, 20, 21, 30 |
|  |  | 6.4 | 3, 5, 8 |
| 12 | 5/1 | 4.1 | 4, 5, 7, 8, 11, 13 |
|  |  | 4.2 | 1, 4, 11, 14, 18, 32 |
|  |  | 4.3 | 1, 4, 7 |
| **Final** | 5/1 | 2–3:50 PM | Comprehensive: Covers Assignments 1–11 |

**Tentative Course Calendar:** Here is a tentative calendar for the semester. This schedule is approximate and may be adjusted as the semester progresses. Section numbers refer to the ninth edition of Boyce and DiPrima.

| Week of | Tuesday | Thursday | Notes |
|---------|---------|----------|-------|
| **Jan 9** | Intro, 1.1, 1.2 | 1.2, 1.3 | |
| **Jan 16** | 2.1, 2.2 | 2.1, 2.2 | PS 1 Due |
| **Jan 23** | 2.3, 2.4 | 2.3, 2.4 | PS 2 Due |
| **Jan 30** | 2.5, 2.6 | 2.5, 2.6 | PS 3 Due |
| **Feb 6** | 3.1,3.2 | 3.1, 3.2 | PS 4 Due |
| **Feb 13** | 3.2, Review | **EXAM 1** | |
| **Feb 20** | 3.3, 3.4 | 3.3, 3.4 | PS 5 Due |
| **Feb 27** | 3.5, 3.7 | 3.5, 3.7 | PS 6 Due |
| **Mar 5** | 3.6, 3.7 | 3.6, 3.8 | PS 7 Due |
| **Mar 12** | 3.8, Review | **EXAM 2** | |
| **Mar 19** | **SPRING BREAK, NO CLASS** | | |
| **Mar 26** | 5.1, 5.2 | 5.1, 5.2 | PS 8 Due |
| **Apr 2** | 6.1, 6.2 | 6.1, 6.2 | PS 9 Due (WD) |
| **Apr 9** | 6.2, 6.3 | 6.3, 6.4 | PS 10 Due |
| **Apr 16** | 6.4, Review | **EXAM 3** | |
| **Apr 23** | 6.4, 4.1–4.3 | Review | PS 11 Due |
| **Apr 30** | **Final Exam**, 2–3:50 PM | | |

**Academic Dishonesty:** Oklahoma State University is committed to the maintenance of the highest standards of integrity and ethical conduct of its members. This level of ethical behavior and integrity will be maintained in this course. Participating in a behavior that violates academic integrity (e.g., unauthorized collaboration, plagiarism, multiple submissions, cheating on examinations, fabricating information, helping another person cheat, unauthorized advance access to examinations, altering or destroying the work of others, and fraudulently altering academic records) will result in your being sanctioned. Violations may subject you to disciplinary action including the following: receiving a failing grade on an assignment, examination or course, receiving a notation of a violation of academic integrity on your transcript (F!), and being suspended from the University. Carefully read the OSU policy at academicintegrity.okstate.edu.