Syllabus and Information Sheet
MATH 246, Fall 2009, Sections 02xx
Differential Equations for Scientists and Engineers

Instructor: Radu Balan, MTH 2308, phone x55492, or CSIC 4131, phone x51217
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Lectures: Tu, Th, 2:00pm – 3:15pm, ARM 0126
Office hours: Mo. 2:10pm-3:50pm in Math 2308, and Wed. 3:10pm-4:00pm in CSIC 4131.

Teaching Assistant (sections 02x1): Jeremy Schwartz, MTH 4423,
Email: jschwartz@math.umd.edu
Office Hours: Tue., Thr. 10:00-10.50am in MTH 4423;

Teaching Assistant (sections 02x2): Geetanjali Kachari, MTH 1305,
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Office Hours: Tue. 11:00am-11:50am in MTH 0301, Wed. 10:00am-10:50am and Fri. 10:00am-10:50am in MTH 1305

Class Homepage:
http://www.math.umd.edu/~rvbalan/TEACHING/MATH246Fall2009/index.html

Course Description: This course is an introduction to ordinary differential equations. The course introduces the basic techniques for solving and/or analyzing first and second order differential equations, both linear and nonlinear, and systems of differential equations. The course will follow Chapters 1-4, 6-9 of Boyce and DiPrima and Chapters 1-10 and 12-14 of Hunt et al. The use of mathematical software system is an integral and substantial part of the course. All sections of the course will use the software system MATLAB.

Prerequisite: (1) MATH 141 (Calculus II) or equivalent. (2) Either Math 240 (Calculus III) or ENES102 or PHYS161 or PHYS171 or some other course with an adequate coverage of vectors

EXAMS and QUIZZES
There will be three in-class exams (24 September, 29 October, 3 December) and a two-hour uniform final exam (14 December). Their (optional) review sessions are scheduled as follows: Tuesday, 22 September, 5:00pm - 7:00pm in ARM 0131; Tuesday, 27 October, 5:00pm - 7:00pm in ARM 0131; Tuesday, 1 December, 5:00pm - 7:00pm in ARM 0131; Saturday, 12 December, 2:00pm - 4:00pm in TBD.
There will be eleven short in-class quizzes based on the homework. They are given at the beginning of the class period. They are short, so be on time. Homeworks are not collected; however the material from homeworks will appear on the quizzes and exams. No calculators, books, or notes may be used during these exams or quizzes. All items except pens, pencils, and erasers must be off the desktops.
At exams you are expected to sign the University Honor Pledge.
MATLAB PROJECTS

There are six MatLab projects worth 20 points each. Your best five count towards your course grade. Each Project assignment should be turned-in to your discussion section instructor no later than its due date by either: (i) bringing it to the discussion section, (ii) bringing it to their office during an office hour, (iii) make other arrangements directly with your discussion section instructor. If the University cancels class for any reason on the scheduled due date of a project then that project will be due on the first day that the large lecture subsequently meets. Projects turned in late will be recorded, but may not be graded for full credit.

GRADING

Quizzes: The eleven in-class quizzes will be worth 10 points each. Your ten best quiz scores will go toward your course grade. No make-up quizzes will be given.

In-Class Exams: The three in-class exams will be worth 100 points each. Generally there will be no make-up exams. If you miss an in-class exam and if you either

- have a 6 or better on every quiz covering the material on the exam,
- or earn a C- or better on all the other exams (including the final),

then your score for that exam will be replaced by the average of half your final exam score and your lowest other in-class exam score. In all other cases if you miss one or more in-class exams then your score for each missed exam will be zero. If the University closes on the day of a scheduled in-class exam, the exam will be given the next lecture time the class meets. You may appeal the score you receive on an exam by submitting your exam plus a note stating which problems you wish to have regraded to Professor Balan within two weeks of the date the exam is given.

Final Exam: The two-hour Final Exam will be worth 200 points. It will be based on the entire course, including material covered after the third in-class exam. It will be common for all Math 246 sections. If you miss the Final Exam, and if by the next day you present a legitimate, well-documented excuse showing that for reasons beyond your control it was absolutely impossible for you to take the Final Exam, and if you have a C- or better at the time of the Final Exam, then you will receive a grade of "I" for the course. In all other cases a score of zero will be assigned for the Final Exam and your course grade will be evaluated accordingly. If the University closes on the day of a scheduled final exam, then it will be given whenever the University reschedules it.

Your course grade will be based on the sum of your scores on your three in-class exams (maximum of 100 points each) 300 points (about 42.857%) your Final Exam (maximum of 200 points) 200 points (about 28.571%)
The maximum total score possible for the course is 700 points. The point cutoffs for course grades will be no higher (and will most likely be lower) than those set forth in the following table:

630 points (90%) for a grade of "A";
560 points (80%) for a grade of "B";
490 points (70%) for a grade of "C";
420 points (60%) for a grade of "D".

Pluses and minuses will be awarded to those whose point total is close to a cutoff. Anyone whose final exam grade is above the next highest course grade cutoff will be advanced over that cutoff if they are within 15 points of it. Qualitative factors such as your class participation may also be taken into account when determining your course grade. Almost all students will be given a course grade that is within one letter grade of their final exam grade.

The course grade of "I" will be awarded only if all the following conditions are met:

1. You have completed all but a small portion of the required work.
2. You have an average grade of "C-" or better on the work completed.
3. You have a valid reason for not completing the course on time.
4. You agree to make up the material within a short period of time.
5. You request the incomplete no later than the day after the final exam.

**TUTORING**

Some free drop-in tutoring services appropriate for Math 246 students are listed below.

**Math Tutoring Room**

- Mondays - Fridays, 8:00am - 4:50pm in MTH 0301

This service begins soon after the term begins and ends on the last day of classes. It is run by the Department of Mathematics and is located in the basement of the Mathematics Building.

Tutors will be scheduled for most hours, but maybe not all. Please check the tutoring schedule posted at [http://www.math.umd.edu/undergraduate/resources/tutoring.html](http://www.math.umd.edu/undergraduate/resources/tutoring.html) to see when tutors are actually scheduled to be there. This schedule is subject to change. Tutors are graduate students, and may therefore be your best source of help outside of office hours.

- **MATLAB Tutoring for Math 246** in the Parking Garage 2 WAM Lab:
This service begins soon after the term begins and ends on the last day of classes. It is run by the Department of Mathematics, but is located in the Parking Garage 2 WAM Lab. The tutoring schedule should be posted at http://www.math.umd.edu/undergraduate/resources/tutoringmatlab.html.

**Disabled Student Services (DDS):** If you have a disability that might affect your performance on these timed exams, you may contact the DDS office in Susquehanna Hall. If they assess that you merit either private conditions and/or extra time then they will give you forms with which you must notify your instructors. This notification must be renewed for each course each semester. Because instructors must be notified of the DSS assessment at least one week before you use their service, you should arrange for it well in advance. Once I have been notified, you may arrange to take your exams at DDS with the extra time they indicate by giving me a "Test Authorization Form" one week prior to each time you plan to use their service. Your testing time at DDS must overlap the entire in-class exam time.

**TEXTBOOKS AND OTHER RESOURCES**

**Required Resources**

**Principle Texts:**

  The optional ODE Architect CD is not required for the course!
  The optional WileyPLUS is not required.

**MATLAB Computer Program:**

- MATLAB Student Version R2009a is the most recent.
  The Mathworks Inc., Natick, MA. Avoid versions R2008a and R2008b! Older student versions that includes MATLAB 6.0 or 7.0 will work.
  This software is available in most OIT WAM labs, so you do not have to buy it.

**Other Resources**

- *Getting Started with MATLAB 7, A Quick Introduction for Scientists and Engineers* by Rudra Pratap, Oxford University Press, New York, 2005