

# **MTH306 – Ordinary Differential Equations**

## **Section Y Fall 2011**

When: Tuesday and Thursday 2:00PM-3:20PM  
Where: NSC 216

**Instructor:** Avner Peleg

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Office hours (tentative): Monday 4:00PM-5:00PM, Friday 11:30AM-1:00PM.

**Textbooks:** Differential Equations and Boundary Value Problems: Computing and Modeling, by C. Henry Edwards and David E. Penney, second custom edition for the University at Buffalo.

**Prerequisites:** MTH142 (College Calculus II) with grade of C or higher.

**Tentative syllabus:** Chapters 1-8 of the textbook.

**Course description:** Analytic solutions, qualitative behavior of solutions to differential equations. First-order and higher-order ordinary differential equations, including nonlinear equations. Covers analytic, geometric, and numerical perspectives as well as an interplay between methods and model problems. Discusses necessary matrix theory and explores differential equation models of phenomena from various disciplines. Uses a mathematical software system designed to aid in the numerical and qualitative study of solutions, and in the geometric interpretation of solutions.

**Recitations:** Recitations begin in the second week of the semester. Some recitations will be devoted to solving problems and discussing additional examples. These recitations will be held in Clemens 04 on Tuesday between 1:00PM-1:50PM (section Y1) and in Knox 109 on Thursday between 1:00PM-1:50PM (section Y2). Other recitations will be in the computer lab, Baldy 8B. Please follow in-class announcements for information on recitation locations.

**Homework:** Homework will be assigned each week. Homework assignments will be usually announced in class and collected by the TA in the recitations. In weeks when recitations do not take place homework assignments will be collected in class by the instructor. Selected homework problems on each assignment will be graded. Homework is an important component of the course and is worth 15% of the final grade. Notice that: (1) Late homework will not be accepted. (2) It is your responsibility to show your work and to present it in readable form. Unreadable answers or answers without justification will not receive credit.

**Quizzes:** There will be several quizzes during the semester. Each quiz will be 10 minutes long and will take place during the class. The total weight of the quizzes in the final grade is 10%.

**Exams:** There will be one midterm exam and a final exam. The midterm exam is scheduled for Thursday, October 20 between 2:00PM-3:20PM in NSC 216. The final exam is scheduled for Tuesday, December 13 between 3:30PM-6:30PM in NSC 216. The weight of the midterm exam is 25%, and the weight of the final is 40%.

**Project:** One lab project will be assigned during the recitations that will be held in Baldy 8B. The project will involve both pen-and-paper calculations and calculations using the software package

Maple. Afterwards, you will be required to summarize the project in a written report. Late reports will not be accepted. The project is worth 15%.

<b>Grade:</b>	Homework	15%
	Quizzes	10%
	Project (1)	15%
	Midterm (1)	25%
	Final	40%

The final number grade will be translated to a letter grade, and the translation will not be worse than:

85-105	A
70-84	B
60-69	C
50-59	D
0-49	F

The boundaries for plus/minus grades (A-, B+, B-, etc.) will be determined only after the final exam.

**Course web site:** <http://www.math.buffalo.edu/~apeleg/mth306y.html>

This web site will be updated with announcements, homework assignments and other useful resources. It is recommended that you visit the web site on a regular basis.

**Maple:** Maple is a symbolic mathematics software package that we will use to analyze and solve differential equations. In particular, we will make extensive use of Maple in the lab project. Maple is on all public IT computers on campus. You can also download a version of Maple for your own computer by going to <http://ubit.buffalo.edu/software/> and choosing one of the links under "Download more software". If you have not previously used Maple it would be good to start getting familiar with it right from the beginning of the course.

**Lab computer accounts:** The machines in Baldy 8B use the Science and Engineering Node Services (SENS) username and passwords, the same as for the unix.eng and unix.nsm clusters. If you do not have a SENS username, please apply for one at: <http://www.sens.buffalo.edu/accounts>.

**Attendance:** Students are expected to attend every scheduled class. Three good reasons to attend classes are: (1) Some of the examples discussed in class do not appear in the book. These examples may appear as part of homework, quizzes, projects, the midterm exam, or the final exam. (2) If you miss a quiz for an unjustified reason, you lose all points given for the quiz. (3) Attendance will be checked occasionally.

All students attending the class must be registered for the class.

**Make-up exams: there will be no make-up exams.** If due to severe circumstances beyond your control (car accident, illness, etc.), you will not be able to take the exam, please call me immediately (before the exam) and let me know your situation. If you have a good reason and can present convincing documentation as to why you are not able to take the exam, your final grade will be calculated without taking into account that particular exam.

**Academic integrity:** Students are expected to behave in accordance with the university policy on academic integrity. The guiding principle of academic integrity is that a student's submitted work must be the student's own. Cheating and plagiarism will result in formal charges.

Please notice: a random sample of papers in each exam, quiz, and homework assignment will be

photocopied.

**Incomplete:** A grade of incomplete (I) will be assigned only under extraordinary circumstances, which are beyond the student's control (like a non-elective surgery during the last week of class).

**Students with disabilities:** If you have a diagnosed disability (physical, learning or psychological), which will make it difficult for you to carry out the coursework as outlined, or requires accommodations such as recruiting note takers, readers, or extended time on exams and/or assignments, please advise me during the first two weeks of the course, so that we may review possible arrangements.

**Studying strategy:** Please note that this course turns out to be difficult, as we will make use of almost all the concepts/techniques that you learned in Calculus I/II. Below are some tips on how to do well in the course.

- (1) Review background material at the beginning of the semester.
- (2) Study regularly throughout the semester.
- (3) Read each topic in the book before class.
- (4) Review the theory afterwards using your notes and the book.
- (5) Do the homework regularly.
- (6) Seek help from me or from the TA when you don't understand something.

**Math Help Center:** If you need assistance you can also use the services of the Math Help Center, which is located in Room 110 of the Math Building. The Math Help Center will be open Monday through Friday 9:00AM-4:00PM starting from Monday, September 12.

**Some important dates:**

Sat Sep 3: Last day to drop the course (no record will appear on your transcript if you drop the course).

Tue Sep 6: (a) Last day to add the course. (b) Last day to file "Petition to make up an Incomplete" with the Math Department.

Thu Sep 29: No MTH306 class (due to Rosh Hashanah).

Fri Nov 11: Last day to resign from the course (an "R" will appear on your transcript).

Wed Nov 23 through Sun Nov 27: No class (Fall Recess).

Thu Dec 8: Last MTH306 class.

Fri Dec 9: Semester ends.