Introduction to Differential Equations

Section: MTH 306LLB-Y

Semester: Spring 2014

Instructor: Yorck Sommerhäuser

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Office hours: Monday 12:00 pm–1:00 pm, Tuesday, 4:00 am–5:00 pm, Thursday 4:00 am–5:00 pm and by appointment.

Prerequisites: C or better in College Calculus 1 and 2 (MTH 141/MTH 142) or an equivalent course.

Textbook: C. H. Edwards/D. E. Penney: Differential equations and boundary value problems - computing and modeling, 2nd UB custom edition, Pearson, Upper Saddle River, 2008

Course description: We study analytic solutions to differential equations as well as their qualitative behavior. This includes first-order and higher-order ordinary differential equations, and also nonlinear equations. We cover analytic, geometric, and numerical perspectives as well as an interplay between methods and model problems. We discuss the necessary matrix theory and explore differential equation models of phenomena from various disciplines. In particular, we use the mathematical software system MAPLE to aid in the numerical and qualitative study of solutions, and in the geometric interpretation of solutions.

Coverage: We cover at least the sections 1.1-1.6, 2.2, 2.4, 3.1-3.6, 4.1, 4.2, 5.1, 5.2, 5.4, 6.1, 6.2, 7.1-7.6, and 8.1-8.3. Time permitting, we will also cover the sections 6.3 and 6.4.

Attendance: Attendance is required and contributes to the final grade. Three classes may be missed without affecting this grade. Absence in more than half of the classes results in failing the entire course.

Exams: There will be two midterm exams and a comprehensive final exam. The midterm exams take place on Thursday, March 6 as well as Thursday, April 3. The final exam takes place Tuesday, May 13, 3:30 pm–6:30 pm, in NSC 205.

Homework: Every week, there will be an online homework assignment, which uses the online homework system WeBWorK at http://ww2.math.buffalo.edu/

webwork2/2014_1_MTH306_Sommerhauser/. For this system, your username is your UBIT name, and your password is your UB person number. The time frame for this homework begins on Tuesday after the lecture, and ends on Tuesday one hour before the lecture. However, late homework is accepted for another week, but only for 75 percent of the point value. This grace period also ends on Tuesday one hour before the lecture. Moreover, there will be a reading assignment in every lecture.

Recitation sessions: The recitation sessions begin in the second week of classes. During the recitation sessions, you will either take a quiz or work on a computer algebra project using the computer algebra system MAPLE, which can be downloaded at http://www.buffalo.edu/ubit/service-guides/software.html. Both quizzes and computer algebra projects will contribute to your final grade. The recitation sessions are

- Y2: Thu, 12:00 pm–12:50 pm, Baldy 8B (Alumni 90)

- Y3: Tue, 1:00 pm–1:50 pm, Baldy 8B (Clemen 119)

Grading weights:

Attendance:	5 %
Online homework:	10 %
Quizzes:	10 %
Projects:	10 %
Midterm exams:	20 % each
Final exam:	25 %

Grading scale:

A:	90%	A-:	88%		
B+:	86%	B:	80%	B-:	78%
C+:	76%	C:	70%	C-:	68%
D+:	66%	D:	60%		

Tutoring: Mathematics tutors are available at no charge in the Mathematics Help Center in Rooms 107 and 110 of the Mathematics Building, which is open Monday to Friday from 9 am to 12 m and 1 pm to 3 pm on days when classes are in session.

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

Academic honesty: You are expected to adhere to the letter and spirit of academic honesty. For homework assignments, you can discuss assignments with other students, but you have to carry out the detailed solution yourself. You must have your student ID for all exams.