MA 214 – Calculus IV
Section 007
Department of Mathematics, University of Kentucky
Spring 2018

Instructor: Alex Happ

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Meeting Times: MWF 1:00 pm – 1:50 pm, CP 287

Office Hours: MWF 11:00 am - 11:50 am, or by appointment

Textbook

The official text for the course will be *Notes on Diffy Qs* by Jiří Lebl. A free PDF of the book is available at `http://www.jirka.org/diffyqs/diffyqs.pdf`. Content will also be drawn from *Elementary Differential Equations* by Boyce & DiPrima. This text has many versions and is a good reference if you would like a physical text for more practice, but it is not required.

Course Objectives

Calculus IV is the study of ordinary differential equations (as opposed to partial differential equations). Many phenomena in nature such as population growth, heat transfer, acceleration due to a force acting on object, and many others can best be described in terms of rates of change. When put into the mathematical context, these become equations which often involve a function and one or more of its derivatives. It is the goal of this course to gain understanding as to how these equations relate to real world problems and develop a wide array of tools for solving differential equations.

Course Expectations

The lecture material will follow the text fairly closely, and it is highly suggested that the student read the corresponding sections as they are covered in class. The student is expected to attend all lectures and complete all homework assignments on time. Cellphones and laptops should not be out during class unless instructed otherwise. It is expected that students be courteous to each other and the instructor, and that they behave in a manner conducive to allowing everyone in the classroom to learn effectively.

Absences

Absences will only be excused with proper medical documentation or for university related conflicts. The list of excused absences includes illness, death of a family member, any trips organized by the university, and religious holidays. Excused absences must be reported as soon as possible, within a week at the latest. Appropriate notification of absences due to university-related trips is required prior to the absence (*Senate Rule 5.2.4.2*). Students

are expected to withdraw from the class if more than 20% of the classes scheduled for the semester are missed (excused or unexcused) per university policy.

To report an absence, **email me** (your name, date, reason) at the email address provided above within one business day of the absence. You are also expected to furnish proof demonstrating the cause compelling you to miss class at the next class meeting for which you are present.

Please note: I do not accept the "Explanatory Statement of Absence from Class" document as appropriate verification of illness.

Calculators

For quizzes and exams, the problems will be designed so as not to require a calculator. Therefore, there will be no calculators allowed on quizzes and exams.

Class Structure

- **Homework:** We will use WeBWorK, a free web-based homework system, for assigning, completing, and grading homeworks. Your login to WeBWorK is your linkblue ID in lowercase (mine would be atha229), and your initial password is your student number without the leading 9. In general, homework will be due every Friday at 11:59pm. It is expected that students will have attempted the entirety of the current assignment before class each Friday so that they can ask whatever questions they have. On most Fridays, there will be time built into the class period for students to ask questions.

- **Quizzes:** Quizzes will be given in class most Fridays, usually covering the material from the previous few sections. These quizzes will take up to half of the class period and are intended to ensure students are keeping up with the class material and are able to apply it. Note that missed quizzes can only be made up if the absence was excused. Use of calculators will not be allowed on quizzes unless otherwise specified.

- **Exams:** There will be two midterms and a cumulative final. These are tentatively scheduled for February 16th, March 30th, and May 2nd, respectively. If you will be absent on any of these days, please inform the instructor at least one week in advance. Use of calculators will not be allowed on tests unless otherwise specified.

Grades

Your grade will be calculated out of 100%, distributed as follows, with final letter grades assigned in the usual manner:

Homework	10%		90%–100%	A
Quizzes	20%		80%–89%	B
Exam 1	20%		70%–79%	C
Exam 2	20%		60%–69%	D
Final Exam	30%		0%–59%	E
Total	100%			

Academic Integrity

You should feel free to study with friends, but any work you submit for a grade should be your own work. This applies to all exams, quizzes and written assignments. Academic dishonesty in any form will not be tolerated. This includes, but is not limited to, copying a classmate's work, allowing a classmate to copy your work, modifying an exam after it has been handed back in an attempt to deceive the instructor into believing the assignment was graded incorrectly, or using a cell phone/device during an exam. A student found guilty of academic dishonesty will receive an automatic E on the assignment, and in some cases the offense may lead to an E in the course, academic probation, or even expulsion. See Sections 6.3.1 and 6.3.2 of the University Senate Rules for more information regarding academic integrity. You can also refer to the website `http://www.uky.edu/Ombud`. A plea of ignorance is not acceptable as a defense against the charge of academic dishonesty.

Accommodations

If you have a documented disability that requires academic accommodations, please see me as soon as possible after class or during scheduled office hours. To receive accommodations in this course, you must provide me with a Letter of Accommodation from the Disability Resource Center (DRC). Letters must be received at least one week prior to the requested accommodation. The DRC coordinates campus disability services available to students with disabilities. It is located on the corner of Rose Street and Huguelet Drive in the Multidisciplinary Science Building, Suite 407. DRC Contact: (859) 257-2754 and drc@uky.edu. Their web address is `http://www.uky.edu/StudentAffairs/DisabilityResourceCenter/`.

Tentative Schedule

The following is an approximate schedule for the course. It is likely that specifics will change as the course develops.

January

W January 10	§0.2	Read Syllabus
F January 12	§0.3	
M January 15	**Academic Holiday**	
W January 17	§1.1	
F January 19	*Homework Questions* / Quiz	HW 1 Due
M January 22	§1.2	
W January 24	§1.3	
F January 26	*Homework Questions* / Quiz	HW 2 Due
M January 29	§1.4	
W January 31	§1.6	

February

F February 2	*Homework Questions* / Quiz	HW 3 Due
M February 5	§1.7 / §1.8	
W February 7	§1.8	
F February 9	§1.8 / §2.1	HW 4 Due
M February 12	§2.2 (real roots)	
W February 14	*Exam 1 Review*	
F February 16	**Exam 1**	HW 5a Due
M February 19	§2.2 (complex roots)	
W February 21	§2.5 (undetermined coefficients)	
F February 23	*Homework Questions* / Quiz	HW 5b Due
M February 26	§2.5 (variation of parameters)	
W February 28	§2.4 (free undamped)	

March

F March 2	*Homework Questions* / Quiz	HW 6 Due
M March 5	§2.4 (free damped) / §2.6	
W March 7	§2.6	
F March 9	*Homework Questions* / Quiz	HW 7 Due
March 12-16	**Spring Break**	
M March 19	§6.1	
W March 21	§6.1 / §6.2	
F March 23	*Homework Questions* / Quiz	HW 8 Due
M March 26	§6.2	
W March 28	*Exam 2 Review*	
F March 30	**Exam 2**	HW 9a Due

April

M April 2	§6.3	
W April 4	§6.3 / §6.4	
F April 6	*Homework Questions* / Quiz	HW 9b Due
M April 9	§6.4	
W April 11	§7.1	
F April 13	*Homework Questions* / Quiz	HW 10 Due
M April 16	§7.1 / §7.2	
W April 18	§7.2	
F April 20	*Homework Questions* / Quiz	HW 11 Due
M April 23	Extra Topics	
W April 25	Extra Topics / *Final Exam Review*	
F April 27	*Final Exam Review*	HW 12 Due

May

W May 2	**Final Exam**, 1:00pm – 3:00pm	

Some Important Dates

Last day to add a class — January 17
Last day to withdraw from a class — March 30

Disclaimer

I reserve the right to change or amend this syllabus at any time for any reason. In this event, proper notice will be given in class.