Math 214 Section 004, Fall 2017
Elementary Differential Equations: Course Outline

COURSE DESCRIPTION

This course covers first-order ODEs, higher-order ODEs, Laplace transforms, linear systems, nonlinear systems, numerical approximations, and modeling.

PREREQUISITES

Grade of C or better in MATH 213

INSTRUCTOR

Dr. Tyler White
Office: TBD,   Email: twhite5@gmu.edu   Phone: 703-993-1460.

GRADUATE TEACHING ASSISTANT

Calvin Stanley
Office: Exploratory Hall Room 4311,   Email: cstanle@gmu.edu

OFFICE HOURS

By Appointment

LECTURES

Tuesday and Thursday, **9:00am-10:15am** in **Robinson B220**. Attendance is mandatory, and is worth 50 points to your final grade. Any missed class will result in 5 points deducted from your attendance grade.

RECITATION

All students are required to be registered and attend the recitation for this course. Recitation is on Tuesdays from 7:20pm - 8:10pm in Krug Hall room 18. Quizzes and attendance will be taken during every recitation. The recitation will be run by our Graduate Teaching Assistant Calvin Stanley.

TEXTBOOK FOR THE COURSE

"Elementary Differential Equations" 10th edition, Boyce, and DiPrima. Wiley (2012)

ADDITIONAL INFORMATION ABOUT THE COURSE

Available on the Blackboard web page for the course: http://mymason.gmu.edu.

EXAMS

There will be a two exams and a final exam. The exams will be given on Thursday September 28th, and Thursday November 5th. The final exam will be on Thursday December 14th, from 7:30am to 10:10am. The final exam will be cumulative, but with a heavy emphasis an the material after the second exam.

You are expected to work alone on all examinations. You cannot use any books, notes, or calculator.

If you have a legitimate conflict with the test dates and times, please contact the instructor as soon as possible; do not wait until shortly before the test. You should talk to the instructor about your conflicts in person; it is not enough to leave him a message asking to call you back. The final exam will not be given early to accommodate travel plans. Missed exams will not be excused or allowed to be made up.

QUIZZES

There will be weekly quizzes that count for a total of 200 points (20%) of your overall grade. The quizzes will be given during recitation. A tentative schedule for the quizzes can be found at the end of this document. No makeup quizzes will be given under any circumstances. There will be a few weeks when there are no quizzes in recitation (including the first week of the semester). For those classes, your attendance will count as a full quiz grade. Thus, there will be a total of 14 quizzes during the semester (11 in class written quizzes, and 3 quizzes based on attendance).

GRADES

The course grade will be based upon your scores on the two exams, your attendance, your quizzes, and your score on the final exam. Exams will be curved and/or scaled at the instructors discretion. Final grades will not be curved or scaled. Your grade will be determined based on the following distribution:

Quizzes	200 points	20%
Attendance	50 points	5%
Exams	400 points(200 each)	40% (20% each)
Final Exam	350 points	35%
Total	**1000 points**	**100%**

For exams I am willing to replace your worst exam grade with the final exam and count the final in its place for 55% instead of 30% (provided the final exam result is better than your worst test grade).

HOMEWORK POLICY

There will be a homework assigned for every lecture period. The homework assignments will be posted on **GMU Blackboard** course management system. You will have to login to your account on `http://mymason.gmu.edu` to see the assignments. You are strongly encouraged to solve these problems, but please **do not** hand in solutions to them. Their sole purpose is to help you better prepare for the exams. Although these practice problems will not be graded, they can be a good indicator of how well you cope with the course material.

IN-CLASS RULES

There must be **no talking** in class. Please direct all your questions to the instructor. Cell phones must be **switched off** during lectures.

ACADEMIC INTEGRITY CODE

On Exams and Quizzes: No help given or received. All the exams are closed notes, closed books, not calculator and not electronic devices. This means that you are not allowed to use your notes and textbooks.

Definitions, policies, and procedures relating to academic integrity are published in the *Guide to Student Rights and Responsibilities*, copies of which are available from the Office of the Dean of Students. If you are not sure whether your activities constitute an Integrity Code violation, please consult the instructor **immediately**. A copy of the honor code can be found at http://oai.gmu.edu/the-mason-honor-code/

DISABILITIES

If you are a student with a disability and you need academic accommodations, please see me and contact the Office of Disability Resources at 703/993-2474. All academic accommodations must be arranged through that office.

Elementary Differential Equations: Tentative Schedule

		Date	Activity	Textbook Section	Brief Description
1.		Tues. Aug. 29, 2017	Lecture 1	1.1	Some Basic Math. Models; Direction Fields
2.		Thurs. Aug. 31, 2017	Lecture 2	1.2	Solutions to Some Diff. Equations
				1.3	Classification of Diff. Eqns
3.		Tues. Sept. 5, 2017	Lecture 3	2.1	Linear Equations, Integration Factors
4.		Thurs. Sept. 7, 2017	Lecture 4	2.2	Separable Equations
5.		Tues. Sept. 12, 2017	Lecture 5	2.3	Modeling with 1st Order Eqs.
6.		Thurs. Sept. 14, 2017	Lecture 6	2.4	Differences between Linear and Nonlinear Eqs.
7.		Tues. Sept. 19, 2017	Lecture 7	2.6	Exact Eqs and Integration Factors
8.		Thus. Sept. 21, 2017	Lecture 8	3.1	Homogeneous Eqns with Constant Coefficients
9.		Tues. Sept. 26, 2017	Lecture 9	3.2	Solutions of Linear Homogeneous Eqns; the Wronskian
10.		Thurs. Sept. 28, 2017	Exam	Exam 1	On Sections 1.1 - 1.3, 2.1 - 2.4, 2.6, 3.1 - 3.2
11.		Tues. Oct. 3, 2017	Lecture 10	3.3	Complex Roots of Char. Eqns
12.		Thurs. Oct. 5, 2017	Lecture 11	3.4	Repeated Roots; Reduction of Order
13.		Thurs. Oct. 12, 2017	Lecture 12	3.5	Nonhomogeneous Eqns; Method of Undetermined Coef.
14.		Tues. Oct. 17, 2017	Lecture 13	3.6	Variation of Parameters
15.		Thurs. Oct. 19, 2017	Lecture 14	4.1	General Theory of nth order Linear Equations
16.		Tues. Oct. 24, 2017	Lecture 15	4.2	Homogeneous Eqns with Constant Coefs.
17.		Thurs. Oct. 26, 2017	Lecture 16	4.3	Method of Undetermined Coefs.
18.		Tues. Oct. 31, 2017	Lecture 17	4.4	Method of Variation of Parameters
19.		Thurs. Nov. 2, 2017	Exam	Exam 2	On Sections 3.3 - 3.6, 4.1 - 4.4
20.		Tues. Nov. 7, 2016	Lecture 18	5.1	Power Series
				5.2	Series Solutions Near Ordinary Points Pt. 1
21.		Thurs. Nov. 9, 2017	Lecture 19	5.3	Series Solutions Near Ordinary Points Pt. 2
22.		Tues. Nov. 14, 2017	Lecture 20	5.4	Euler Equations
23.		Thurs. Nov. 16, 2017	Lecture 21	5.5	Series Solutions Near Reg. Point
24.		Tues. Nov. 21, 2017	Lecture 22	5.7	Bessel's Equations
25.		Tues. Nov. 28, 2017	Lecture 23	6.1	Definition of Laplace Transform
26.		Thurs. Nov. 30, 2017	Lecture 24	6.2	Solution of Initial Value Problems
27.		Tues. Dec. 5, 2016	Lecture 25	6.3	Step Functions
28.		Thurs. Dec. 7, 2017	Lecture 26	6.4	Diff. Eqns with Discont. Forcing Funct.
29.		Thurs. Dec. 14, 2017	Final	Exam	Final Exam 7:30am - 10:10am

Elementary Differential Equations: Tentative Recitation Schedule

	Date	Activity	Textbook Section	Brief Description
Rect. 1	Aug. 29	Review		Review of Calculus Material
Rect. 2	Sept. 5	Quiz 1	1.1, 1.2, 1.3	Homework Review and Quiz 1
Rect. 3	Sept. 12	Quiz 2	2.1, 2.2	Homework Review and Quiz 2
Rect. 4	Sept. 19	Quiz 3	2.3, 2.4	Homework Review and Quiz 3
Rect. 5	Sept. 26	Quiz 4	2.6, 3.1	Homework Review and Quiz 4
Rect. 6	Oct. 3	Review	Exam 1	Exam 1 Returned and Reviewed
Rect. 7	Oct. 17	Quiz 5	3.2 - 3.5	Homework Review and Quiz 5
Rect. 8	Oct. 24	Quiz 6	3.6, 4.1	Homework Review and Quiz 6
Rect. 9	Oct. 31	Quiz 7	4.2, 4.3	Homework Review and Quiz 7
Rect. 10	Nov. 7	Review	Exam 2	Exam 2 Returned and Reviewed
Rect. 11	Nov. 14	Quiz 8	4.4, 5.1 - 5.3	Homework Review and Quiz 8
Rect. 12	Nov. 21	Quiz 9	5.4, 5.5	Homework Review and Quiz 9
Rect. 13	Nov. 28	Quiz 10	5.7	Homework Review and Quiz 10
Rect. 14	Dec. 5	Quiz 11	6.1, 6.2	Homework Review and Quiz 11