

# Math 307 - Differential Equations

## Course Syllabus

### Spring 2017

Instructor : Dr. Edward Burkard  
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Office : Copley 234  
Office Hours : MWF 15:00-16:00, TR 10:30-11:30  
drop in and by appointment  
Course Webpage : <http://faculty.rmc.edu/edwardburkard/?page=Teaching/307S17>  
Class Time : TR 15:00-16:30  
Class Location : Copley 200

## 1. COURSE DESCRIPTION

**1.1. From the Catalog.** An introduction to the theory and application of differential equations, including the development of mathematical models of scientific phenomena. Qualitative, numerical, and analytic tools will be used to analyze these models, and technology will also play a significant role. Topics include modeling via differential equations, analytic and numeric techniques, existence and uniqueness of solutions, equilibria, changing variables, systems of equations, phase planes, and qualitative analysis.

**1.2. Description for this Class.** This will be an introduction to differential equations. Topics will include first order differential equations; numerical methods for first order differential equations; second order linear differential equations; applications of first and second order equations to topics such as mixing problems, orthogonal trajectories, spring problems, and RLC circuits; boundary value problems; Fourier series; and a brief introduction to partial differential equations by studying the linear heat and wave equations.

## 2. TEXTBOOK

The textbook for this class is *Elementary Differential Equations with Boundary Value Problems*, by William Trench. The textbook is available for free here:

<http://digitalcommons.trinity.edu/mono/9/>

and a student solution manual is available for free here:

<http://digitalcommons.trinity.edu/mono/10/>.

From the text, we will cover chapters 1-6, 11, and 12. We will also likely cover section 7.4.

## 3. GRADE AND COURSE STRUCTURE

Your grade will be determined as follows:

Item	Homework	Quizzes	Take-Home Exams	Final
Percentage	22%	24%	30%	24%

Your grade will be determined by the percentage of the total points you've obtained. The grade scale will be no stricter than

Letter	A	B	C	D	F
Cutoff	92%	82%	72%	57%	0%

with +’s and –’s to be used as needed for the final grade only. That is, getting at least 92% will guarantee an A, getting at least 82% will guarantee a B, getting at least 72% will guarantee a C, and getting at least 57% will guarantee a D.

**3.1. Homework.** Homework will be assigned every class day to help you practice for quizzes and exams. There will be several problems assigned each, but only 1-3 will be required to be turned in from each assignment. Assigned problems will be collected the Thursday of the week after they’re assigned. For example, problems assigned during week 1 (Feb. 7 and 9) will be due on Thursday of week 2 (Feb. 16). 12 homework assignments will be collected, each worth 2%, and the lowest score will be dropped. Written homework assignments should show all of your work, not just a final answer. Answers with no supporting work will not be given credit. Submitted assignments should be neatly written and well-organized, this includes removing the frayed edge of pages torn out of a notebook.

**3.2. Quizzes.** Every Thursday, there will be a quiz which will be given at the beginning of class. Quizzes will consist of one or two problems pertaining to the material since the last quiz and the problems will be chosen from the assigned homework for that material. There will be 13 quizzes, each worth 2% of the final grade and the lowest will be dropped. This means long quizzes account for 24% of the final grade. A missed quiz can only be made up with an excused absence.

**3.3. Exams.** There will be 3 take-home exams for this class. The exams will be given on a Thursday and will be due by the next class meeting. You may turn in the exams by handing me a hard copy or a scanned copy. Because you may turn in a digital copy, exams **WILL NOT** be accepted past the start of class on the due date, with exceptions only in extreme circumstances. The exams will tentatively be given on March 9th, April 13th, and May 4th. Each take-home exam will account for 10% of the overall grade. You should work by yourself on the take-home exams and you should turn in your own work. Plagiarism will not be tolerated. Your submitted work should be neatly written and well-organized.

The final is worth 24% of the overall grade. Most final exam problems will closely resemble those of the homework and quizzes. The final is on Friday, May 19th from 8:30am-11:30am.

## 4. DISABILITY

Randolph-Macon College is committed to providing access to programs and services for qualified students with disabilities. If you are a student with a disability and require accommodations to participate and complete requirements for this course, notify me immediately and contact the Disability Support Services Office (DSS@rmc.edu or 804-752-7343) for verification of eligibility and determination of specific accommodations.

## 5. CODE OF ACADEMIC INTEGRITY

Your compliance with the Code of Academic Integrity is assumed at all times in this class. This includes, but is not limited to, submitting your own work (even if you work together on assignments) and not cheating on exams. Please make sure you have read

and understand this, which can be found here: [http://issuu.com/rmcstudentlife/docs/code\\_of\\_student\\_conduct\\_-\\_4-14-2016/15?e=6746978/34912731](http://issuu.com/rmcstudentlife/docs/code_of_student_conduct_-_4-14-2016/15?e=6746978/34912731)

## 6. CONDUCT

You are expected to act in a respectable manner. If you are disruptive, you will be asked to leave, and you will forfeit your attendance points for the day. If you have a cell phone, please turn it off (or at least place it on silent) during class time. Lectures being interrupted by cell phones going off is disrespectful to everyone in the classroom.

Material in the syllabus is tentative, and I reserve the right to change any information in this syllabus in the event of an unforeseen event.