

# MA 212: Differential Equations

## Spring 2020 Syllabus

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Note: This is NOT Moodle or Canvas

### Goals of this course:

1. To learn some techniques for solving differential equations. (This is a major goal.)
2. To gain experience in modeling real-world situations with calculus tools. (This is also a major goal.)
3. To enhance our understanding of mathematical structure. (This is a secondary goal.)

### Text:

A First Course in Differential Equations with Modeling Applications, 7th ed., by Dennis G. Zill, Brooks/Cole Publishing Company: 2001.

### Grading:

EXAMS -- Three examinations worth about 80 points each.

HOMEWORK -- Assigned regularly, used for class discussion often, and collected usually, adding about 150 points. See the "More about Homework" paragraph below for details about Homework.

FINAL EXAM -- Worth about 120 points, covering the last topics of the course and highlights from the rest of the course.

Note: Any students exempted from final exams (e.g. graduating seniors) will be required to take a third 1-hour exam, worth about 75 points. That exam will be given during class time on Thursday, April 26 (the last day of class).

TOTAL POINTS -- Approximately 500 points.

**Final grades:** Course grades will be assigned on a basis of 93% = A, 90% = A-, 87% = B+, 83% = B, 80% = B-, 77% = C+, 73% = C, 70% = C-, 60% = D, below 60% = F.

**Examination dates:** Tentatively our 3 exams are scheduled for Tuesday February 4, Thursday February 27, and Thursday April 2. THESE DATES ARE SUBJECT TO CHANGE, AND SUCH CHANGES WILL BE ANNOUNCED IN CLASS. YOUR ABSENCE FROM CLASS DOES NOT FREE YOU FROM THE RESPONSIBILITY OF ADAPTING TO ANY CHANGES.

**To class each day you should bring:** A calculator (preferably a scientific calculator, but no graphing calculator is needed), your completed homework page(s), and of course paper and pencil/pen. It will often be good to have your textbook with you, but that is not crucial. I'll never give you a pop assignment requiring use of the book.

**Missed assignments:**

EXAMS -- You are not entitled to make-up exams. You cannot just *choose* to miss an exam and expect the prof to allow you to make up that exam. You must be given permission to get a make-up exam. There are two types of potentially acceptable reasons for missing an exam:

- You have some kind of scheduling difficulty (e.g. you are on a sports team with a game on exam day, you have a doctor's appointment during an exam). Please do your best to reschedule your other event. Think of your 3 exams as 3 appointments you have with your prof that are not easily rescheduled. If you are not able to reschedule, please let the prof know as soon as possible about the conflict. There is a certain amount of flexibility in the class schedule, and the prof might be able to rearrange things, thus preserving your exam extra credit. But the prof needs several weeks notice to do that. If your conflict is due to an authorized school activity, please see the "Missing class for school activities" paragraph below.
- If you have some kind of emergency (illness, death in the family, etc.) that forces you to miss an exam, please contact the prof on the day of the exam so there is no confusion about your eligibility and need for a makeup exam. When you return to class, please bring a note from someone in authority verifying your emergency.

Makeup exams will be more difficult than the regular exam. In addition, if you do not do your best to follow the above guidelines, or if you miss an exam for a less than legitimate reason and your prof (out of the goodness of his heart) decides to give you some kind of make-up exam anyway, such make-up exams may be worth less value than the regular exam.

**Make-up exams (if you have been given permission) will be given during class time on Thursday, April 23.**

HOMEWORK -- Homework not handed in on time (which is always at the start of class time) loses 50% of its value. At the start of the next class session after it was due it loses the other 50% of its value.

FINAL EXAM -- Professors do not have the authority to give final exams at any time other than that assigned by the Registrar. Any student wishing to take a final exam at a time other than the one scheduled are required to file a petition with the Committee on Admissions and Academic Standing. This petition is available from the Registrar's Office.

**Regarding unexpected days off:** Occasionally circumstances (such as snowstorms) make it necessary for classes to be canceled. Under such circumstances, please pay attention to your email, as your prof will try to update you as soon as possible via email.

**Attendance:** Your presence is expected at all class sessions. Regular attendance is essential for proper understanding of the course topics. Though no grade is directly assigned based upon attendance, poor attendance will most certainly have an impact on your course average and grade. Attendance will be taken daily for the instructor's own records.

I'm not going to nag you about your attendance, but if I think missing class is becoming an issue for you, I may notify your advisor, the CAS, and the retention committee. Also, sometimes at the end of the semester I lower the grade lines, which boosts everyone's grade. If you have missed 4 or more classes, don't expect this boosting to happen to you. You'll get what you have earned, but you won't get any special favors from me!

**And remember:** Nowhere in a college setting does the course material grow and grow from class to class like it does in math and the sciences. Missing even 1 day in the semester can have a serious impact on your chance for success later in the course. *Your goal should be to miss zero classes during this semester.*

**Missing class for school activities:** If you have some other activity (a choir trip, drama presentation, athletic event, etc.) that requires you to miss class, these are the things you should know. First, none of these absences are considered "excused" until the sponsor of your activity has notified the Academic Dean's office about this event, and the Dean has notified the faculty. This is particularly important if these activities cause you to miss an exam, but it is probably a good thing to do this just for regular days, too, so your profs will have less worry about your commitment to the class. Secondly, most of these activities are known (by you and your sponsors, but not by your profs, necessarily) well in advance. It would be best for planning if you and your sponsors could notify your profs as soon as is reasonable about upcoming activities. (It might allow for schedule changes to be made.)

**More about Homework:**

1. Homework is always due as described on the homework page.
2. Homework should be done neatly, showing your work, your name or initials on each page, pages stapled together, no spiral notebook fuzz, etc.
3. Most of the homework sets are divided into Set A and Set B problems. Set A problems are usually easier, and usually have the answers in the back of the book. They will not be collected for grades. Set B problems usually do not have their answers in the back of the book. These will be collected for grades, and will be graded in a constructively critical fashion, trying to give you pointers and assistance on the topics. Set B problems will usually be worth 1 point each, though some problems will be worth more (if they are extra involved) and some may be worth less.
4. Because of the limited number of minutes we have together in class, we will not always be able to go over the homework together. Therefore, if you need help on problems, please pursue that help prior to class.
5. Two main reasons for assigning homework are to help you become comfortable with the course material and to give the prof an opportunity to give you feedback before the exam arrives. These objectives can only be attained (or approached) if each student does his/her own work. It is OK for students to work together, but make sure each person can do every problem. Copying work from one another in math class is considered plagiarism, just like everywhere else. Allowing your work to be copied is considered conspiracy to commit plagiarism. (Okay, I made that last one up. But students who allow their work to be copied will be dealt with as harshly as those who copy.)
6. You do the math: Missing one 5 point homework assignment (if we end up with 470 points) means losing a little over 1 percentage point off your final percentage. You're going to wish you had those points at the end of the semester!
7. After homework has been critiqued, any problems that caused the class significant difficulty will have solutions posted on the class website. It is your responsibility to look for help there.

**Some gifts to you:** As added incentive for you to conform to the framework of this course, the following bonuses will be given:

- 1) All students with perfect attendance during the semester will be given a 1 percentage point boost in their final percentage. (It's not much, but every little bit helps, right?)
- 2) All students that take both exams at the announced times will receive a 1 percentage point boost in their final percentage.
- 3) Any regular exam for which all students participate at the announced time (that is, for which no make-up exam needs to be written) will earn bonus points on that exam for each student. The number of bonus points given will be based upon the size of the exam.

**How to get help in this course:**

1. Help yourself! Do your homework, rework the problems we did in class, do the Set A problems, find another Diff Equations book (in the library?) and try more problems. Practice is the major strategy for success in this course.
2. Form or get into a study group.
3. Email Prof H for hints. I can't give hints on every problem, and I can't give hints on Thursday morning for homework due Thursday morning, but I'll do what I can within reason.
4. Arrange a meeting with Prof H. This is the easy way out, and it should not be your first option. You must put some effort into solving your problems first. (This does not mean I don't want you to come and see me. I just don't want to do your homework for you.)

# Other Miscellaneous Policies and Statements

For State Department of Education purposes, this course will fulfill:

- Introductory Level Requirements for Abstract Algebra.
- High Level Requirements for Trigonometry.
- High Level Requirements for Calculus through differential equations.
- High Level Requirements for Applied mathematics or mathematics modeling.

## Eastern Nazarene College Academic Integrity Policy

A cornerstone of academia is a commitment to academic integrity. In a scholarly community, the importance of having respect for one's own work and the work of others is essential; building a sense of trust among members of such a community is crucial as individuals create, share, and apply scholarly work. The importance of academic integrity is heightened within a Christian community of scholars in that we are also accountable to God for any behavior of a dishonest nature. In consultation with administrators, faculty and students, Eastern Nazarene College has set forth basic standards of academic integrity.

### BASIC STANDARDS OF ACADEMIC INTEGRITY

At Eastern Nazarene College, integrity and honesty are expected and required in all activities associated in any way with academic course work. While it is not prudent or practical to attempt to specify an exhaustive list of unacceptable behavior related to academic integrity, examples of unacceptable behavior include, but are not limited to, the following:

- Cheating (e.g., using any unauthorized materials or devices during an examination, allowing other students to submit your work under their name, changing responses on an exam after it has been graded, etc.).
- Plagiarism, which is presenting the work of others as your own, either directly or by implication (e.g., not giving credit to the original source for any thoughts, ideas, quotations, charts, etc. included in one's own work, etc.).
- Falsifying information (e.g., reporting of undocumented data, fabricating a set of data, fabricating volunteer hours required for a course, etc.).
- Stealing and/or distributing exams which have not been authorized for release or included in syllabi, and discussed in individual classes at the beginning of each semester.

Students and faculty should consult the Registrar's Office for the procedures for appealing and reporting academic dishonesty. It can also be found on the college web site at:

[www1.enc.edu/registrar/academic-policies/](http://www1.enc.edu/registrar/academic-policies/).

# Other Miscellaneous Policies and Statements, cont.

## Eastern Nazarene College Class Attendance Policy

Students are expected to attend ALL class sessions. Students are reminded of the importance of regular attendance at class. It is strongly advised that a student take care to see that his/her absences not exceed the equivalent of 150 minutes of classes in a semester course without penalty. These 150 minutes should be reserved for such things as illnesses, funerals, school related events, etc.

The first absence after these 150 minutes will result in the student's name being reported to his/her academic advisor and the Center for Academic Services (CAS). The second additional absence will result in the student's name being reported to the Provost. The third additional absence will result in the student failing the course unless they withdraw or gain permission from the Provost to reenter the class after a meeting of the student, professor, advisor and Provost.

Extensive absences for whatever reason may lead to the advisability of withdrawal from courses or Academic suspension for the remainder of the semester by the Provost's Office. Students are advised to consult the section of the catalog on withdrawal when they contemplate dropping out of courses or withdrawing from college.

*Note: Individual classes may have additional or more stringent attendance policies. Policies stated in the class syllabus must be followed and students are strongly advised to carefully review the attendance policies in each of their classes.*

## Estimated Student Engagement Time (hours)

<b>In-Class Instruction</b>	<b>40.80</b>
<b>Out-of-Class Work &amp; Other Academic Activities</b>	<b>73.50</b>
Media Viewing	0.90
Reading	15.00
Homework	30.00
Exam Prep	20.00
Exam Completion	7.50
	<b>===.==</b>
<b>Total Student Engagement Time</b>	<b>114.30</b>
<b>Target Amount (3-cr course)</b>	<b>112.50</b>