MATH 309 - DIFFERENTIAL EQUATIONS Fall 2014 MWF 1:00pm - 1:50pm Bullock Science Center, Room 103W

Professor: Rachel BaylessOffice: Buttrick Hall 325Email: rbayless@agnesscott.eduOffice Hours: M 10:30-11:30, W 10:30-11:30Phone: x6231Th 2:00-3:00, and by appointment

TEXT: *Differential Equations*, Second Edition, by Paul Blanchard, Robert Devaney, and Glen Hall. [Note: This is **NOT** the current edition.]

EGRADE: http://aca-egrade.agnesscott.edu/classes/309AF14/

COMPUTER SOFTWARE: Maple 18 is a powerful computer algebra system that is available over the network in all computer labs. A student edition of Maple is also available for purchase from MapleSoft. If you are interested in purchasing Maple, then see me for details.

DESCRIPTION: The chapters and topics that will be covered are as follows:

Chapter 1 First-Order Differential Equations	\dots Sections 1-9
Chapter 2 First-Order Systems	\dots Sections 1-5
Chapter 3 Linear Systems	\dots Sections 1-8
Chapter 4 Forcing and Resonance	\dots Sections 1-5
Chapter 5 Nonlinear Systems	\dots Sections 1-6

Note: You should expect to spend about 3 hours outside of class for every hour spent in class.

COURSE GOALS: By the end of this semester you should:

- Be able to recognize special classes of differential equations and understand how to solve them;
- Be able to use computer graphics to analyze the behavior of differential equations;
- Understand and make use of differential equations in modeling;
- Be able to communicate mathematics effectively, both verbally and in writing.

ATTENDANCE/CLASSROOM POLICY/PARTICIPATION: You are expected to be in class each day prepared to learn. You are also expected to participate in class (ask questions, join class discussions, contribute to group work, etc...), and participation will be worth 5% of your final grade.

If you do not attend class, then you are still responsible for the material covered. Make-up homework and exams will not be given. While you are in class please **refrain from using cellphones**, **laptops**, **and other electronic devices**. These devices are distracting to me and your fellow students.

HOMEWORK: There will be a few different types of homework assigned in this class. You will have forum posts, Egrade problems, and additional problems.

- 1. Connections Forum: You are expected to post in the connections forum on MOO-DLE every Monday by 8:00am. Your post should include at least one connection between the material we covered during the previous week and your life/other courses. You may also reply to my posts or posts by your fellow students. The idea is that you'll read posts by your fellow students and engage in a discussion that may shed new light on material. The connections forum posts will be worth 5% of your final grade.
- 2. Egrade Assignments: You will be assigned Egrade homework problems to practice from each chapter. These problems will be due at 5:00pm on the last class day before each exam. For example, the first batch of Egrade assignments will be due on Monday, October 6. The Egrade assignments will count for 10% of your final grade.
- 3. Additional Problems: You will also be assigned additional problems to practice from each chapter. These will be odd numbered problems, and you are expected to check your work with the back of the book. These assignments will not be collected, but I'm happy to check your work. You are also encouraged to come talk to me about any questions.

WRITING PROJECTS: There will be a few projects assigned throughout the semester (roughly 1 per chapter). You are expected to complete these assignments in groups of 2-3. These projects will usually focus on a "real world" scenario which you will analyze mathematically. More information about the specific expectations for each individual project will be given when they are assigned. The projects will count for 30% of your final grade.

PROFICIENCY TESTS: While we will often use Maple to help solve differential equations, it is still important that you are able to do some of the easier techniques by hand and understand the concepts used in those techniques. To give you an opportunity to demonstrate your mastery of these techniques, you will need to pass two tests on DE Proficiency Skills on Egrade, one on first order equations (chapter 2 material), and the other on second order linear equations and linear systems (chapter 3 material). Each test will consist of 4

differential equations with initial values for you to solve, and you must get all 4 correct. You may retake the Proficiency test (with different problems) as many times as necessary before the due dates.

EXAMS: There will be 2 in-class exams throughout the session. No make-up exams will be given. Each exam is worth 15% of your final grade. The tentative dates for the exams are

1. Wednesday, October 8 2. Monday, November 24.

FINAL EXAM: The final exam is cumulative and worth 20% of your course grade. The final exam will be self scheduled.

GRADE POLICY: The scale used for this course is a ten point scale (90+ = A, 80-89 = B, 70-79 = C, and so on). Pluses and minuses will be given at my discretion. Your grade will be computed as follows:

Participation	5%
Connections Forum Posts	5%
Proficiency Tests	5%
Egrade Assignments	10%
Writing Projects	30%
Exam 1	15%
Exam 2	15%
Final Exam	15%

RESOURCES: Course materials, announcements, and homework assignments will be updated on MOODLE. It is your responsibility to check the MOODLE site regularly.

OFFICE HOURS/APPOINTMENTS: Please come to office hours. This is time set aside just for you, so take advantage of it. If your schedule conflicts with the preassigned times, or if you would prefer to meet with me one-on-one, then let me know, and we can find a time to meet by appointment. To schedule an appointment, simply send me an email. Sending me an email at least 24 hours ahead of time is ideal.

EMAILS: Please don't hesitate to email me with questions and/or to set up meetings. I will usually respond to an email within 24 hours. I do not always check my email in the evenings, so if you send me a message at night, then I'll usually reply the next business day.

COURSE EVALUATIONS: The completion of course evaluations is an expectation of students in this class. Near the end of the semester you will be notified by email and provided with a link to follow to complete the evaluations on line outside of class. Your feedback on the course is extremely valuable. You are responsible for completing an evaluation of the course at the end of the semester.

ACADEMIC HONESTY: The Agnes Scott College honor code embodies an ideal of character, conduct, and citizenship, and is an important part of the College's mission and core identity. This applies especially to academic honesty and integrity. Passing off someone else's work as your own represents intellectual fraud and theft, and violates the core values of our academic community. To be honorable, you should understand not only what counts as academic dishonesty, but also how to avoid engaging in these practices. You should:

- review each course syllabus for the professor's expectations regarding course work and class attendance.
- attribute all ideas taken from other sources; this shows respect for other scholars. Plagiarism can include portraying another's work or ideas as your own, buying a paper online and turning it in as if it were your own work, or not citing or improperly citing references on a reference page or within the text of a paper.
- not falsify or create data and resources or alter a graded work without the prior consent of your professor. This includes making up a reference for a works cited page or making up statistics or facts for academic work.
- not allow another party to do your work/exam, or submit the same or similar work in more than one course without permission from the course instructors. Cheating also includes taking an exam for another person, looking on another person's exam for answers, using exams from previous classes without permission, or bringing and using unauthorized notes or resources (i.e., electronic, written, or otherwise) during an exam.
- not facilitate cheating, which can happen when you help another student complete a take home exam, give answers to an exam, talk about an exam with a student who has not taken it, or collaborate with others on work that is supposed to be completed independently.
- be truthful about the submission of work, which includes the time of submission and the place of submission (e.g., email, online, in a mailbox, to an office, etc.).

You should understand that penalties result from dishonest conduct, ranging from failure of the assignment to expulsion from the college. You should speak with your professors if you need clarification about any of these policies.

Note: This syllabus is subject to change at my discretion.