

MATH4410: Differential Equations  
MWF 1 and 2 PM  
Spring, 2021  
Rob Gross

OFFICE HOURS: Monday, Wednesday, and Friday, noon–1, and by appointment via Zoom

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CLASS HOME PAGE: <http://fmwww.bc.edu/gross/MATH4410>

or

<http://sites.bc.edu/rob-gross/math4410>

TEXT: *Elementary Differential Equations*, tenth edition, by William E. Boyce and Richard C. DiPrima

**Academic Calendar:** Please note that there is only one long break in our schedule between now and the last day of our class on May 5. We will not meet on Wednesday, March 3, but will instead meet on the following day, Thursday, March 4. Our only true holiday is Good Friday, April 2.

**Prerequisites:** The prerequisites for MATH4410 are multivariable calculus, typically MATH2202, and linear algebra, typically MATH2210. The course will rely heavily on some of the material from those classes.

This course is an elective intended primarily for the student who is interested in seeing applications of mathematics. Among the topics covered will be first order linear and nonlinear equations, higher order linear equations, linear systems, and Laplace transforms. If time permits, we will cover stability of solutions of systems of differential equations.

**Homework:** Homework will be assigned weekly, except for those weeks with examinations. It will be due at 5PM (Boston time) on Fridays. Late homework will generally not be accepted, because solutions will typically be made available the day that the assignment is due. Homework answers must be typed and submitted as a PDF file. *Handwritten assignments are not acceptable.* The goal is to make life as simple as possible for our grader.

Microsoft Office, Google Docs, or similar word processors are acceptable, but not the best way to type mathematics. I strongly suggest that you install some version of  $\LaTeX$  on your computer and learn how to use it. Macintosh users can download Mac $\TeX$  at <http://www.tug.org/mactex>. Windows users can download Mik $\TeX$  at <http://miktex.org>.

There is plentiful documentation included in either of those downloads, but it is buried deep in various folders. One helpful guide is *The Not So Short Introduction to  $\LaTeX 2_{\epsilon}$* , available at <http://tobi.oetiker.ch/lshort/lshort.pdf>. The Wikipedia entry for  $\LaTeX$  has links to many other introductory articles, including an excellent Wikibook at <http://en.wikibooks.org/wiki/LaTeX>. A graphical interface called LyX is available at <http://www.lyx.org>.

**Examinations:** There are three take-home examinations, tentatively planned to be distributed on Friday, February 26; Friday, March 26; and Friday, April 30. The examinations will be due on the following Mondays at noon (Boston time), and must be submitted as typed PDF files.

The final examination will be a take-home examination due on Thursday, May 13 at noon (Boston time).

**Grading:** The three examinations count for 18%, 20%, and 22% of your grade, respectively. The final examination counts for 30% of your grade. Homework and class participation counts for the remaining 10% of your grade.

**Academic Integrity:** You may discuss ideas when working on homework assignments, but you should write up your solutions individually. Sharing inspiration is good; copying someone else's work is plagiarism. Any violations of the College's policy on academic integrity will be dealt with severely. For more information,

<http://www.bc.edu/integrity>

**Recording:** This class will be recorded to assist students enrolled in the class who are in another time zone or who miss class because of illness or technological problems. These recordings are a resource for all students who would like to review the material covered in class. All recordings will be protected by a password and will only be available for viewing by members of this course. Students may not record or stream video or audio, or share portions of any recorded video or audio of the class with anyone outside the class except with the written permission of the instructor and such other permissions as may be required by law or University policies.

**Wellness:** This semester will likely be very difficult for some students, because of the intense academic schedule. If you are feeling stressed, having difficulties managing your time or sleep, or making bad choices about alcohol or food, the Office of Health Promotion offers wellness coaching appointments to support your health and well-being. Please use the OHP website to schedule a virtual meeting with a staff member or wellness coach, and to find health and wellness information.

University Counseling Services is available for all BC students. The services will focus on both mental health and physical health in the context of COVID-19 and physical distancing requirements. UCS will be providing video- and phone-based telehealth services to students for most traditional services and offers less formal support groups as well.

Be well.

### **Note**

If you are a student with a documented disability seeking reasonable accommodations in this course, please contact Kathy Duggan (617-552-8093, [dugganka@bc.edu](mailto:dugganka@bc.edu)) at the Connors Family Learning Center regarding learning disabilities and ADHD, or the Disability Services Office, (617-552-3470, [disabsrv@bc.edu](mailto:disabsrv@bc.edu)) regarding other types of disabilities, including temporary disabilities. Advance notice and appropriate documentation are required for accommodations.