

APMA 0330: Methods of Applied Mathematics I (Summer 2018)

Class Time:	MWF 12:15 - 2:55 pm
Instructor:	Jason Bramburger, jason_bramburger@brown.edu
Office:	170 Hope Street, Room 206
Office Hours:	MTWR: 11:00 am–12:00 pm, or by appointment
Course Website:	Canvas
Teaching Assistant:	None
TA Office Hours:	None

Course Objectives and Learning Goals

This course will cover mathematical techniques involving ordinary differential equations (ODEs) used in the analysis of physical, biological, and economic phenomena. The course emphasizes established methods and their applications rather than rigorous foundation. Topics include: first and second order differential equations, an introduction to numerical methods, series solutions, and Laplace transformations. By the end of the course, you will be able to

- apply various techniques for determining the solutions of ODEs;
- interpret the solutions of ODEs in the context of real-world examples;
- solve ODEs with numerical techniques;
- identify areas where ODEs could be applied in the real-world.

Textbook

There is no required textbook, but the following is a list of optional resources that will complement the course material:

- Elementary Differential Equations And Boundary Value Problems, W. E. Boyce and R. C. Di Prima, Published by John Wiley & Sons Inc, 2012.
- Applied Differential Equations: The Primary Course, V. Dobrushkin, published by CRC Press, 2015.

Prerequisites

- Intermediate Calculus: MATH 0100/0170/0180/0190/0200/0350, or
- Minimum score of 4 in ‘AP Calculus BC’, minimum score of 5 in ‘AP Calculus AB’ or minimum score of WAIVE in ‘Graduate Student PreReq’

Time Expectations

Class time (8 hours/week)	48	hours
Reviewing Class (8 hours/week)	48	hours
Homework (10 hours/week)	60	hours
Midterms (8 hours/midterm)	16	hours
Final Exam	8	hours
Total	180	hours

Assessment

Homework	40%
Midterm Exam 1	30%
Final Exam	30%

Homework

Assignments will be available on Canvas every Wednesday, and are due the following Wednesday at the *beginning* of class (9 AM). Late assignments will not be accepted without a legitimate excuse and prior approval. Students

are encouraged to collaborate on homework assignments, but assignments must be written up separately and individually. Homework assignments must take the form of a single, *stapled* packed with your name and neatly written (or typed) solutions labeled with problem numbers. Solutions must show all work, not just the final answer. Assignments that do not meet these requirements will be subject to point deductions.

Exams

Midterm exams will be given in class, using the full time slot. Midterms will not be given at any other times than these scheduled times, except in cases of illness or emergency. If a serious conflict arises, you need to contact me as soon as possible prior to the midterm, and documentation verifying the excuse will be required. The midterm will be held on **July 20, 2018**.

The **final exam** will be cumulative and held during the time scheduled by the registrar. You must see a Dean in the Dean of the College's office for final exam excuses.

Anticipated Grading Scale

A	90-100%
B	80-89%
C	70-79%

Grading scale is subject to change. However, the minimum grade cutoffs will not be raised.

Class Time

You are *highly* encouraged to attend all classes. The summer course schedule is fast-paced, and missing even 2 classes corresponds to missing over a week of material covered during the regular fall/spring semesters. I am required to take and report daily class attendance. Class time will include lectures and active learning problem-based sessions, and will give you the opportunity to implement the material first hand. Math is best learned by doing! The problem-based sessions will enhance conceptual understanding of the material, and promote effective communication skills.

Accommodations for Students with Disabilities

If you need accommodations for classes, assignments, or exams, please contact me and Student and Employee Accessibility Services. Website: <https://www.brown.edu/campus-life/support/accessibility-services/>.

Diversity and Inclusion Statement

I strive to create a learning environment for you that supports a diversity of thoughts, perspectives, and experiences, and honours your identities. To help accomplish this:

- If you have a name and/or set of pronouns that differ from those that appear in your official Brown records, you are encouraged to let me know.
- If you feel your performance in the course is being impacted by your experiences outside of class, please come talk with me.
- I am still in the process of learning about inclusion, diverse perspectives, and identities. If something was said in class (by anyone, including me) that made you feel uncomfortable, please talk to me about it.
- As a participant in course discussion and problem-based sessions, you should strive to honour the diversity of your classmates.

Additional Course Policies

- No cell phones or computers allowed during class time.
- All announcements will be posted on the Canvas webpage. Be sure your Canvas notifications are turned on, and you check the webpage periodically.
- I am here to facilitate your learning; let me know if you have questions! I can always be reached by e-mail, and can schedule additional office hours.