

**MATH 37a: Differential Equations**  
**Summer 2024 (Session I)**  
**Instructor:** Vasiliy Nekrasov  
**Office:** Goldsmith 106  
**e-mail address:** vnekrasov@brandeis.edu

**Meeting Times & Recitations:**

Math 37a will meet M/T/W/Th, 1:50 - 4:00 pm in Goldsmith 317.

**Required Technology:**

We will have homework sets, for which students will upload solutions to Gradescope. Although the solutions may be typed via Latex, a scan of handwritten solutions is also acceptable. As a result, students may need a device with which to scan their assignments. If any of the aforementioned technology poses an issue, please let me know as soon as possible so that we can work out a solution that works for you.

**Learning Goals for Math 37a:**

1. Learn some key concepts of differential equations such as existence and uniqueness, equilibria, and bifurcations.
2. Study differential equations using both quantitative and qualitative methods
3. Implement numerical approximations to solve linear and some nonlinear equations.

**Prerequisite:**

Math 15a or 22a and Math 20a or 22b or equivalent. Students should be familiar with single and multi-variable calculus, along with linear algebra.

**Textbook:**

We will be working out of *The Ordinary Differential Equations Project*, by Thomas W. Judson.  
[https://www.simiode.org/resources/4022/download/2017-Judson-Ordinary\\_Differential\\_Equation\\_Project\\_\\_Text.pdf](https://www.simiode.org/resources/4022/download/2017-Judson-Ordinary_Differential_Equation_Project__Text.pdf).

The textbook is freely available online!

**LATTE:**

All course materials for Math 37a will be available online on LATTE. Log in at <http://latte.brandeis.edu> using your Unet username and password.

**What will we learn?:**

We will aim to cover parts of chapters 1-6 in the text.

**Note:** Some topics may be added or omitted as time permits.

Section	Topic
1.1 - 1.7	A First Look at Differential Equations
2.1 - 2.4	Systems of differential equations
3.2 - 3.9	Linear Systems
4.1 - 4.4	Second-order Linear Equations
5.1 - 5.4	Nonlinear Systems
6.1 - 6.4	The Laplace Transform

**Grades:**

The following will impact your grade:

Grade item	Weight
Homework	60 %
Midterm	20 %
Final	20 %

Your letter grade will be calculated using the following table:

Letter Grade	Percentage
A+	95+ %
A	91+ %
A-	88+ %
B+	85+ %
B	81+ %
B-	78+ %
C+	75+ %
C	71+ %
C-	68+ %
D+	65+ %
D	61+ %
D-	58+ %
E	58- %

**Resources to Help you Succeed****Office Hours:**

This is time that I have set aside explicitly to help you do the homework, review course material, and prepare for exams. Please make use of this resource! You don't have to have questions prepared; you can just show up. See LATTE for details.

**Accommodations:**

Brandeis seeks to create a learning environment that is welcoming and inclusive of all students, and I want to support you in your learning. If you think you may require disability accommodations, you will need to work with Student Accessibility Support (SAS) (781-736-3470 - access@brandeis.edu)

- brandeis.edu/accessibility.edu). You can find helpful student FAQs and other resources on the SAS website, including guidance on how to know whether you might be eligible for support from SAS.

If you already have an accommodation letter from SAS, please provide me with a copy as soon as you can so that I can ensure effective implementation of accommodations for this class. In order to coordinate exam accommodations, ideally you should provide the accommodation letter at least 48 hours before an exam.

**Academic Integrity:**

You are expected to follow the University's policy on academic integrity, which is distributed annually as section 4 of the Rights and Responsibilities Handbook (see <http://www.brandeis.edu/studentaffairs/srcs/rr/index.html>). Instances of alleged dishonesty will be forwarded to the Department of Student Development and Conduct for possible referral to the Student Judicial System. Potential sanctions include failure in the course and suspension from the University. If you have any questions about how these policies apply to your conduct in this course, please ask.

**Timely communication:**

Use your Brandeis email to reach out to me. I am usually able to respond quickly to most messages, within 24 hours, although during the weekends and over holidays it could take me longer. If I reach out to you, with a query or comment or in response to an email from you, I would appreciate it if you would acknowledge receipt of my message and/or respond with 24 hours, unless it's during weekend or over a holiday. Note that we will use your Brandeis email address, so you need to check it regularly.

All course announcements can be found in the [Course News & Announcements](#) page on Latte.

**Name/Pronouns:**

If your name and/or pronouns differ from those in your official Brandeis records, please let me know. Thanks!