MAT-303 Syllabus

Jin-Cheng Guu

Summer 2021

Information

- **Title**: Calculus IV with Applications

- **Description**: Homogeneous and inhomogeneous linear differential equations; systems of linear differential equations; series solutions; Laplace transforms; Fourier series. Applications to economics, engineering, and all sciences with emphasis on numerical and graphical solutions; use of computers. May not be taken for credit in addition to AMS 361, MAT 305, or MAT 308.

- **Location**: Zoom (synchronous online).

- **Expectation**: Develop skills to solve many sorts of differential equations. Be self motivated, read a lot, work hard on problems.

Course Description

Course Goal

Differential Equation (DE) is a major subject in modern mathematics. Many working mathematicians nowadays still try to deal with the unknown cases. Despite the difficulties in general, there is a fraction of DE that is easier and well-known. We will learn to solve the problems in that category.

While DE has broad applications (e.g. theoretical and experimental physics, chemistry and biology, engineering, economics and finance..), we will not focus on them. Instead, we will focus on the technical part because motivated students can learn the former but fail the latter without suitable guide.

Textbook

The required textbook can be found on The Ordinary Differential Equations Project. It is licensed with a GNU Free Documentation License (GFDL). In particular, there is no cost to acquire the text and you can make as many copies as you like. The version we will be using is "Full Text, 2020 edition".

Important Times and Dates

- Lectures: MonWedThu 6:00-9:00pm (NY time)

- Midterm I: July 15th, Thu, 2021

- Midterm II: July 29th, Thu, 2021

- Final Exam: August 12th, Thu, 2021

Grades

Your grade will be calculated in the following way:

- Quizzes: 50 x 1%

- Midterms: $2 \times 10\%$

- Final Exam: 1 x 10%

- Participation: 20%

Quizzes consist of 50% of your final grade. Roughly three quizzes will be given per lecture. Each quiz worths 1%. Two midterms and a final will be given, adding up to 30%. For participation, with the maximum being 20%, you will receive 1% each time you come to the lecture fully – that means you show up and leave on time.

Agenda

We will meet from 6pm to 9pm (NY time) on Mondays, Wednesdays and Thursdays during the second summer session, 2021. Each lecture is divided into three parts. Each part takes an hour.

- Q & A (10 min)

- Lecture (15 min)

- Review (5 min)

- Q & A (5 min)

- Quiz (15 min)

- Rest (10 min)

You may ask questions during LECTURE and Q&A. Review time is reserved for yourself. After these, we will spend 15 minutes on a quiz. You are supposed to upload your work to blackboard by the end of each quiz, and save your paper work until the end of the term! **No delay is allowed**.

Contact

E-mail is the best way to reach me besides lectures and office hours. Please make sure that you mentioned the class number, your name, and your student ID in the email. The following is a format example.

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To      : jin-cheng.guu@stonybrook.edu
Subject: [MAT-303] <subject>
Content:
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+ Full Name - <fullname>
+ Student ID - <student ID>
+ <content>
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DSS NOTICE

If you have a physical, psychological, medical, or learning disability that may impact your course work, please contact Disability Support Services at (631) 632-6748 or at

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http://studentaffairs.stonybrook.edu/dss/
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They will determine with you what accommodations are necessary and appropriate. All information and documentation is confidential. Students who require assistance during emergency evacuation are encouraged to discuss their needs with their professors and Disability Support Services. For procedures and information go to the following website:

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https://www.stonybrook.edu/
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Academic Integrity

Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person's work as your own is always wrong. Faculty are required to report any suspected instances of academic dishonesty to the Academic Judiciary. Faculty in the Health Sciences Center (School of Health Technology and Management, Nursing, Social Welfare, Dental Medicine) and School of Medicine are required to follow their school-specific procedures. For more comprehensive information on academic integrity, including categories of academic dishonesty, please refer to the academic judiciary website at

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http://www.stonybrook.edu/uaa/academicjudiciary/
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Critical Incident Management Statement

Stony Brook University expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the Office of Judicial Affairs any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, or inhibits students' ability to learn. Faculty in the HSC Schools and the School of Medicine are required to follow their school-specific procedures.