

Course Syllabus

MATH 233: Linear Systems and Differential Equations

Class Time and Location: Lecture: M W, 10:00-11:50am in ROS A310.

Course Mode: In-person

Instructor Information

Instructor: Dr. Michael Cromer

Contact Information: Office Location: GOS 3308

Preferred Contact Info: mec2sma@rit.edu

Contact Policy and Preferences:

Office hours: (1) in-person M 12-1, T 10-12, W 9-10, (2) via Zoom: F 8-9, 2-3, or by scheduling personal appointments via email.

Instructor-Student Communication

Email and myCourses will be primary modes of communication. Starfish will be used primarily if individual improvement is needed.

Online Course

Material/Course Webpage:

myCourses.rit.edu

Course Description

Catalog Description

This is an introductory course in linear algebra and ordinary differential equations in which a scientific computing package is used to clarify mathematical concepts, visualize problems, and work with large systems. The course covers matrix algebra, the basic notions and techniques of ordinary differential equations with constant coefficients, and the physical situations in which they arise. **Prerequisites:** MATH-172, MATH-182, or MATH182A.

Course Materials

Required Texts and Resources

Advanced Engineering Mathematics, Sixth Edition, by Dennis G. Zill.
ISBN: 9781284105902

Additional (optional) textbook: Advanced Engineering Mathematics, Tenth Edition, by Erwin Kreyszig. ISBN 9780470084847

Programming language: This course will involve computer programming. The two preferred languages are Python and MATLAB. (1) Python is open-source, please download an appropriate compiler (e.g. Spyder); helpful video [link](#). (2) The program MATLAB is free for student download, using the instructions provided at this [link](#). Don't worry if you've never used Python or MATLAB. We'll go through it in class.

Technology requirements:

This course requires utilization of myCourses.
Online help: <https://mycoursesupport.spcollege.edu/>
<https://support.zoom.us/hc/en-us/sections/201728913-Joining-Starting>

ITS Service Desk

The ITS Service Desk is your point of contact for your RIT Computer Account, network, or technology-related issues. The Service Desk can:

- Troubleshoot your technology issues
- Create a [work request](#) ticket and connect you with ITS specialists

When you contact the ITS Service Desk by phone, e-mail, or in-person we create a **ticket** and share it with you. Your ticket allows you to track progress on your issue, communicate with us quickly, and refer back to the solution if you encounter the problem again. You can also leave us feedback on how we handled your problem.

- Phone Support: (585) 475-4357
- Web Form: help.rit.edu
- In Person: [Frank E. Gannett Hall, Room 1113](#)

Course Schedule

Week	Date	Topic/Activity	Readings/ Discussions	Assignments Due
1	1/18	Intro to DEs	1.1-1.3	
2	1/23, 1/25	1 st order DE, Sep of Variables	2.1-2.2	HW 1, Quiz 1
3	1/30, 2/1	Linear DE, Substitution Methods	2.3, 2.5	HW 2, Quiz 2
4	2/6, 2/8	Numerical, Review	2.6	Exam I, HW 3
5	2/13, 2/15	Matrices, Linear Systems	8.1-8.2	HW 4, Quiz 3
6	2/20, 2/22	GE & GJE, Matrix Rank	8.2-8.3	HW 5, Quiz 4
7	2/27, 3/1	Determinants, Matrix Inverse	8.4, 8.6	HW 6, Quiz 5
8	3/6, 3/8	Numerical, Review	8.13	Exam II, HW 7
9	3/13, 3/15	SPRING BREAK		
10	3/20, 3/22	Higher order linear DEs	3.1, 3.3	HW 8, Quiz 6
11	3/27, 3/29	MUC, Eigenvalues	3.4, 8.8	HW 9, Quiz 7
12	4/3, 4/5	Linear System of 1 st Order DEs	10.1-10.2	HW 10, Quiz 8
13	4/10, 4/12	Numerical, Review		Exam III, HW 11
14	4/17, 4/19	Linear Programming, Simplex	(K) 22.2-22.3	HW 12, Quiz 9
15	4/24, 4/26	Nonlinear system of DEs	11.1-11.2	HW 13, Quiz 10
16	5/1	Final exam review		

****Subject to change***

Grading/Evaluation

Components of Evaluation

- Homework: There will be a total of 13 homework assignments that will be due most Fridays. All assignments will be submitted to dropbox on myCourses. No late homework will be accepted. The 2 lowest HW scores will be replaced by the 2 highest HW scores.
- Quizzes: Almost every week, a quiz will be given at the start of Wednesday's class. The quiz will contain problems very similar to problems from the homework assignment being turned that week. The 2 lowest quiz scores will be replaced by the 2 highest quiz scores.
- Project: There will be a final project to be completed outside of class that is accompanied by a written report. The topic of choice of the project will either be (1) Linear optimization, or (2) Chemical reactions. The necessary material will be discussed during weeks 14 & 15.
- Exam: There will be 3 exams. Tentative dates are: February 15, March 8, April 7. You will be allowed a self-developed, hand-written cheat sheet. You will be allowed one side of an 8x11 sheet a paper. You are allowed to work together on developing the sheet, however, you must provide an original version. At the end of the exam, you will staple your cheat sheet to the back of your exam.
- Final exam. The final exam will be held May 8. The final exam is cumulative and will contain some new material beyond the 1st 3 exams. You will be allowed a cheat sheet that follows the same guidelines as above, except you will be allowed to use both sides of single 8x11 sheet of paper. The Final exam score, if higher, will replace the lowest of the 3 in-class exam scores.

Graded Item	Total points
Homework	150
Quiz	100
Project	50
Exam (3)	300
Final Exam	150
Total	750

** There will be no extra credit. All grades are final (no rounding). Please do not ask what you can do to raise your grade during the last weeks of the semester (it's too late at that point).

Grade Scale

RIT's Grading Policy can be found here: <https://www.rit.edu/academicaffairs/policiesmanual/d050>

Based on the 100% total listed above, letter grades will be assigned as follows:

A : >=650	A- : 630-650	B+ : 615-630	B : 574-615	B- : 660-574
C+ : 546-560	C : 504-546	C- : 490-504	D : 420-490	F : < 420

Course Expectations

Instructor's expectations of students

- All assignments and the project will be submitted via the dropbox in myCourses.
- Homework is due on Fridays by 11:59pm. You may work together on homework, however, each submission should represent individual work.
- Quizzes will be held on Wednesdays at start of class.
- To assist others in identifying students when using myCourses, upload an appropriate profile picture to your myCourses account.
- Email / Communication policy (expectations of students)

Today's society has become very lax with communication. In an attempt to prepare you for the real world, I will not respond to emails that are written in a form that I cannot decipher or that come from unknown email addresses. Email messages that more closely resemble text messages to your BFF than an email to your professor will not be answered. Make your grandma proud and write a proper letter!

- Emails to professors, staff, your potential employers, etc. should always include the following:
 - To line – to whom are you writing? Address them professionally! Dr., Prof., etc. If you do not know, Mr. or Ms. is acceptable, but in college courses, Professor is more appropriate.
 - Class reference – of which class are you inquiring? Many of your professors teach more than one class! For a job? What is the job title?
 - Your question(s), statement(s), etc. – written in comprehensible English, please!
 - Your name – your professors, and others, would like to reply to you in a similar professional manner. Do NOT assume that the RIT email system will tell us who you are – it will not always. YOU tell us who YOU are!
 - Add an email signature to your RIT email client which is automatically added to all outgoing emails. At a minimum an email signature should contain your full name, College, Department, and Major, along with any other contact information you would like to share (e.g. cell phone number).
 - Check that your email profile contains your full name.

Time commitment

Since this is a 4-credit hour course, you should plan to spend 4 hours per week in class and an additional 8 to 12 hours on readings, research, discussions, assignments, etc. The rule-of-thumb is 2 to 3 hours per week outside the “classroom” for every credit hour per week in the classroom. If you do the math, it adds to 12–16 hours per week, total.

What Students can expect of the instructor

- Grades will be posted on myCourses within 2 weeks of artifact submission, unless otherwise noted in the assignment. This is in accordance with the RIT Policy D05.0 Grades which states in part, “Faculty members must provide feedback for all submitted work within

two weeks of the submission deadline. Posting grades to RIT's Electronic Course Management System is required. The two-week posting requirement is waived in the case of deadline extensions, late submission of work, any extraneous circumstances, or when explicitly stated in the evaluation criteria."

(<https://www.rit.edu/academicaffairs/policiesmanual/d050>).

- Office hours will be held both in-person & virtually for the semester. Posting of office hours and the location can be found on myCourses and will be updated as needed. If those times do not work for you, you may always request an appointment via email.
- Email / Communication policy:

For this class, I will respond to your email within **24 hours** Monday through Friday. If you do not hear from me in that time frame, please resend your email, as things do get lost. Over the weekend, do not expect an immediate response. Now, it is quite likely that you will receive your response in less than 24 hours, but I do not guarantee it.

General Course Policies

Academic Integrity Statement

As an institution of higher learning, RIT expects students to behave honestly and ethically at all times, especially when submitting work for evaluation in conjunction with any course or degree requirement. RIT Online encourages all students to become familiar with the [RIT Honor Code](#) and with [RIT's Academic Integrity Policy](#).

Do not cheat. Avoid the appearance of cheating in this class. Do not allow others to cheat from you.

D.08.0 Student Academic Integrity Policy

IV. ACADEMIC INTEGRITY A breach of student academic integrity falls into three basic areas: cheating, duplicate submission and plagiarism

A. Cheating: Cheating is any form of fraudulent or deceptive academic act, including falsification of data, possessing, providing, or using unapproved materials, sources, or tools for a project, exam, or body of work submitted for faculty evaluation.

B. Duplicate Submission: Duplicate submission is the submitting of the same or similar work for credit in more than one course without prior approval of the instructors for those same courses.

C. Plagiarism: Plagiarism is the representation of others' ideas as one's own without giving proper attribution to the original author or authors. Plagiarism occurs when a student copies direct phrases from a text (e.g. books, journals, and internet) and does not provide quotation marks or paraphrases or summarizes those ideas without giving credit to the author or authors. In all cases, if such information is not properly and accurately documented with appropriate credit given, then the student has committed plagiarism.

If you are caught cheating on any assignment or exam, appropriate academic disciplinary action will be taken to the fullest extent allowed by the University. Refer to your "Students

Rights and Responsibilities” handbook for further guidance on the Academic Dishonesty policy at RIT.

<https://www.rit.edu/academicaffairs/policiesmanual/d080>.

Statement on Reasonable Accommodations

RIT is committed to providing academic adjustments to students with disabilities. If you would like to request academic adjustments such as testing modifications due to a disability, please contact the Disability Services Office (DSO). Contact information for the DSO and information about how to request adjustments can be found at <https://www.rit.edu/disabilityservices/>. After you receive academic adjustment approval, it is imperative that you see me during office hours so that we can work out whatever arrangement is necessary.

Course Copyright Policy

All course materials students receive or to which students have online access are protected by copyright laws. Students may use course materials and make copies for their own use as needed, but unauthorized distribution and/or uploading of materials without the instructor’s express permission is strictly prohibited. RIT Policy C03.2 Copyright Policy addresses this issue (<https://www.rit.edu/academicaffairs/policiesmanual/c032>). For example, uploading completed labs, homework, or other assignments to any study site constitutes a violation of this policy. Students who engage in the unauthorized distribution of copyrighted materials may be held in violation of the University’s Code of Conduct, and/or liable under Federal and State laws.

Starfish

This course participates in the RIT Starfish academic alert system, which is designed to promote student success through communication between students, instructors, and advisors. I will send a whole-class status update to all students before the semester midpoint. When I am concerned about an individual student’s academic performance, I may raise an academic alert to notify the student as well as their advisor(s). On the other hand, when a student is doing well, I may send a “kudos” message. If you receive an academic alert email, it is your responsibility to contact me as soon as possible to discuss the issue, its potential impact on your success in the course, and identify people and resources to help you move forward. For more information about the Starfish system, visit <http://www.rit.edu/starfish>.

Statement on Title IX

Title IX violations are taken very seriously at RIT. RIT is committed to investigate complaints of sexual discrimination, sexual harassment, sexual assault and other sexual misconduct to ensure that appropriate action is taken to stop the behavior, prevent its recurrence, and remedy its effects. Please view the [Title IX Rights and Resources at RIT](#); you can find additional syllabus language that you can modify as need on its Syllabus Language subpage.

Policies Specific to this Course

Course Modality

In-person. Most course materials (lecture notes, homework, exams, dropbox, solutions) will be stored on myCourses.

Technology in the classroom

Cell phone use is not permitted during class time. Laptops/tablets may be used solely for notetaking purposes, but only with permission from instructor.

Attendance in the learning space (in-person, online, etc.)

RIT does not have a requirement for attendance in courses, however, it is reasonable for faculty to describe how attendance in class (either in person or remotely; synchronously or asynchronously) is critical for success in the courses.

(<https://www.rit.edu/academicaffairs/policiesmanual/d040>).

I expect that students in my course will engage with the modality of my course as outlined, barring any unforeseen issues such as illness, quarantine, etc. Attending and engaging in class time with me and your peers is important for your learning the materials. In this class, attendance expectations can be met by attending in-person sessions, attending my office hours, and others to be defined as needed throughout the semester. If you have questions about your attendance and participation in this course, please contact me.

Internet Connection (Required)

For this course, a reliable and consistent internet connection is required.

All students, faculty, and staff are responsible for familiarizing themselves with the RIT [Computer Policy](#).

For this course, at least some learning materials will be provided in myCourses. As such, your access to a strong internet connection regularly is imperative to your success. Access to a reliable Internet connection is required for this course. A problem with your Internet access may not be used as an excuse for late, missing, or incomplete coursework. If you experience problems with your Internet connection while working on this course, it is your responsibility to find an alternative Internet access point, such as a public library or Wi-Fi ® hotspot.

Online Safety

RIT is committed to educational access for all. Our students come from all walks of life and have diverse life experiences. As with any other online community, the lack of physical interaction in an online classroom can create a false sense of anonymity and security. While one can make new friends online, digital relationships can also be misleading. Good judgment and decision making are critical when choosing to disclose personal information with others whom you do not know, which will likely include individuals within our class for you.

Diversity, Inclusion, and Respect

RIT has put forth [Policy P05.0 Diversity Statement](#) for all community member. RIT through its policies and practices is responsible for building an inclusive environment where membership in the community allows for faculty, staff and students to reach their fullest potential, both professionally and personally. RIT is committed to the development, administration and interpretation of policies and procedures in a way that is consistent with our commitment to diversity and is in compliance with federal, state and local laws. RIT's policies and procedures are administered in a way that supports fair treatment for all faculty, staff, students, and the RIT community at large.

Counseling and Psychological Services

Many students at RIT face personal challenges or have psychological needs that may interfere with their academic progress, social development, or emotional wellbeing. The university offers a variety of confidential services to help you through difficult times, including individual and group counseling, crisis intervention, consultations, online chats, and mental health screenings. These services are provided by staff who welcome all students and embrace a philosophy respectful of clients' cultural and religious backgrounds, and sensitive to differences in race, ability, gender identity and sexual orientation.

Located on the second floor of the August Center building (above the Student Health Center), [Counseling and Psychological Services](#) provides confidential and personalized services to meet the mental health needs of currently enrolled, undergraduate and graduate students on the Henrietta campus.

Our mission is to enhance the RIT student potential for learning and success and to promote the emotional health and well-being of the campus community through:

1. Providing responsive, empirically-based, and culturally competent mental health services that include:
 - Short-term individual psychotherapy
 - Group counseling and psychotherapy
 - Urgent Care crisis intervention
 - Assessment and evaluation
 - Psychiatric services
2. Providing graduate clinical training in counseling, psychotherapy and college mental health
3. Providing campus-wide consultation and education

Campus Location: 2100 August Center, second floor (Currently, all appointments are conducted via phone or Zoom)

Phone:

During Business Hours: 585-475-2261

After Business Hours, Weekends/Holidays: 855-436-1245

Fax: 585-475-6548

Email: caps@rit.edu

NOTE: DO NOT USE E-MAIL IN AN EMERGENCY SITUATION, since you cannot be assured that a counselor will open it at your time of need.

Emergency Contacts:

For urgent matters during business hours, contact Counseling and Psychological Services at 585-475-2261.

For urgent matters that cannot wait for business hours, call 1-855-436-1245 to speak with a mental health provider or call Public Safety at 585-475-3333.

National Suicide Hotline: **1 800 273-8255**

Crisis Text Line: Text **HOME** to **741741**

Changes to the syllabus

I have provided this syllabus as guide to our course and have made every attempt to provide an accurate overview of the course. However, as instructor, I reserve the right to modify this document during the semester, if necessary, to ensure that we achieve course learning objectives. You will receive advance notice of any changes to the syllabus through myCourses/email.

Continuity of Learning (Course-level)

In the event that there is a disruption in our learning, I will communicate all changes to you as quickly as possible. If a personal interruption removes me from the in-person or online classroom space, you will be informed of this directly via email and on myCourses. In this communication, any changes in the learning structure will be carefully outlined, as will all necessary steps moving forward, for you and for me. Communication is key, and it will be important for you to check your RIT email and myCourses regularly this semester so that you are always “in the know”.

Continuity of Learning (Student-level)

The RIT Safety Plan includes a section specifically for students, including accommodations, travel, health, etc. <https://www.rit.edu/ready/rit-safety-plan#for-students>. This site will be updated as needed to provide important information regarding your requirements for being on campus and staying healthy.

In the event that there is a disruption in your ability to learn with us, communication is key. The faster you can communicate these disruptions with me, the easier it is to keep you on a successful path in this course. If your absence from class is due to personal illness, please contact the Disability Services Office (<https://www.rit.edu/disabilityservices/>) as soon as possible. You may also reach out to your Academic Advisor who can assist you in making all of the necessary contacts with DSO, your instructors, etc.

Changes to the University Calendar

In the event that there is a significant change to the University calendar, this syllabus will be modified to meet those changes, if necessary. Modifications will be shared immediately with our class via myCourses and communications directly from me.

Resources

Everyone in the RIT Community is dedicated to your success. With this, you need to avail yourself of help when you need it! I am, and all of your faculty are, your first stop. What can we do to help you in the course, or with navigating RIT? Your Academic Advisor should be on speed dial! They are an amazing wealth of information for you and can help you with everything professional, personally, and beyond!

In some cases you already know that you need very specific help. Have trouble with time management, note taking in class, just getting your academic self together? Check out all of the resources the RIT Academic Success Center has to offer! <https://www.rit.edu/studentaffairs/asc/> From workshops to individual coaching, they have only your success in mind.

Each College has a librarian who would love to meet you and talk about what you need to succeed (<https://library.rit.edu/staff>). These are just some of the places on campus that are ready and willing to help you any time. The RIT Student Life website includes descriptions of all of the departments on campus available to help you (<https://www.rit.edu/studentlife/departments>). If you still need more resources ... ask me or your Academic Advisor and we will help you pinpoint that resource. Of course asking more than two hours before you need to submit your assignment is always preferred!

Concluding statement

Most importantly, please be assured that I want students to learn and to receive the good grades they have earned and deserve. Please make an appointment with me should you have undue difficulty with your work in this course.