

MATH 1555: Calculus for Life Sciences

Georgia Institute of Technology
Spring 2019

Instructor:	Stephen McKean	Time:	MWF 8:00 – 8:50
Email:	mckean@math.gatech.edu	Place:	Weber SST III 2
TA for A1:	Guangyu Cui	Time:	TH 8:00 – 8:50
Email:	gcui8@gatech.edu	Place:	Skiles 268
TA for A2:	Wilson Ly	Time:	TH 8:00 – 8:50
Email:	wly3@gatech.edu	Place:	Skiles 269
TA for A3:	Cameron Chong	Time:	TH 8:00 – 8:50
Email:	cmrnchong@gatech.edu	Place:	Skiles 270

Course Page: All assignments, grades, and announcements will be posted on [Canvas](#), so please check the course page regularly.

Office Hours:

- Stephen: Tuesdays from 11:00am to 12:00pm in CULC 250, Wednesdays from 4:30pm to 5:30pm in CULC 250, or by appointment in Skiles 137.
- Guangyu: Mondays from 4:00pm to 5:00pm in CULC 280, or by appointment.
- Wilson: Tuesdays from 11:00am to 12:00pm in Skiles 230, or by appointment.
- Cameron: Tuesdays from 2:00pm to 3:00pm in Skiles 230, or by appointment.

Required Textbook: *Modeling the Dynamics of Life* by Frederick Adler. I'll be writing the homework problems, so either the 2nd or 3rd edition of the textbook is fine. The ebook is about \$30.

Calculators: You may use a non-programmable scientific calculator on quizzes and exams, but **no graphing calculators are allowed**. Your calculator must not be able to take derivatives or integrals for you. Using an unapproved calculator will result in a 0 on the quiz or exam. In order to prepare for quizzes and exams, you should avoid using an unapproved calculator on the homework if at all possible.

Objectives: This course will provide an overview of integral calculus and differential equations in the context of mathematical biology. We will focus on applications, modeling, and computation.

Prerequisites: MATH 1501, 1550, or 1551. You should be familiar with limits and basic differentiation techniques. If you'd like to review this material, [Khan Academy](#) has useful tutorials. Also feel free to meet with me or your TA if you are struggling with background material.

Grading Policy: Final grades will be determined by the following grading scale.

- **Participation (5%):** Participation grades will be determined by recitation attendance. Attending both lecture and recitation is essential to learning the material.
- **Homework (15%):** Written homework assignments will be due at the beginning of recitation (see the schedule below). The lowest homework grade will be dropped. **Late assignments will not be graded.** You are encouraged to work together on assignments, but you must write up and turn in your own solutions.

- **Quizzes (15%):** On weeks without a written homework assignment or midterm, there will be a quiz during the first 15 minutes of recitation. The quiz problems will be similar to the written homework problems. The lowest quiz grade will be dropped.
- **Midterms (35%):** There will be three 50-minute midterms, which will take place in recitation. The best two midterm scores will each account for 15% of the final grade, and the lowest midterm score will account for 5% of the final grade.
- **Final exam (30%):** There will be a cumulative final exam for this course. Every student is required to take the final exam in order to receive a passing grade for the course. **The final exam will be from 8:00am to 10:50am in Weber SST III 2 on Monday, April 29th.**
- **Paper (5% extra credit):** Students have the opportunity to write a 5 page paper about the mathematical modeling of some topic from biology, neuroscience, or psychology. Students wishing to complete the extra credit paper must discuss their topic choice with me by **April 1st**. The paper is due by **April 19th**.
- **CIOS survey:** If 85% of a given section completes the CIOS survey before the final exam (April 29th), then that entire section will have 5 points added to their lowest midterm score.

Letter grades will be determined based on the following intervals.

F: [0%, 60%), **D:** [60%, 70%), **C:** [70%, 80%), **B:** [80%, 90%), **A:** [90%, 105%]

Important Dates:

Homework 1	Thursday, January 10 th
Quiz 1	Thursday, January 17 th
No class (MLK Day).....	Monday, January 21st
Homework 2	Thursday, January 24 th
Midterm 1	Thursday, January 31 st
Homework 3	Thursday, February 7 th
Quiz 2	Thursday, February 14 th
Homework 4	Thursday, February 21 st
Midterm 2	Thursday, February 28 th
Homework 5	Thursday, March 7 th
Withdrawal deadline.....	Wednesday, March 13th
Quiz 3	Thursday, March 14 th
No class (Spring Break).....	March 18th to March 22nd
Homework 6.....	Thursday, March 28 th
Paper topic deadline.....	Monday, April 1 st
Midterm 3	Thursday, April 4 th
Homework 7.....	Thursday, April 11 th
Quiz 4.....	Thursday, April 18 th
Paper due	Friday, April 19 th
Final instructional days	April 22nd and April 23rd
Final Exam	Monday, April 29 th

Tentative Course Outline:

January: Derivatives and dynamical systems
February: Integrals and differential equations
March: Autonomous differential equations
April: Applications and review

Academic Integrity: All students are expected to comply with the [Georgia Tech Academic Honor Code](#). Any evidence of cheating or other violations of the Georgia Tech Academic Honor Code will be submitted directly to the Dean of Students. Cheating includes, but is not limited to:

- Using a phone, smart watch, unapproved calculator, books, or notes during any of the quizzes or tests.
- Copying directly from any source, including friends, classmates, tutors, internet sources (like Wolfram Alpha or Stack Exchange), or a solutions manual.
- Allowing another person to copy your work.
- Taking a test or quiz in someone else's name, or having someone else take a test or quiz in your name.
- Asking for a regrade of a paper that has been altered from its original form.

Make-up Exams: Make-up quizzes and exams are allowed for reasons associated to institute activities, which must be accompanied by an official institute letter of consideration. Any other make-up quizzes and exams must be approved by me **before** the original quiz or exam is administered. Make-up quizzes and exams must be administered at a time convenient to both myself and the student, before all other students receive their graded tests back.

Regrades: All quizzes and exams will be scanned before they are graded. Quizzes and exams will be graded and returned to students within one week. If a student has concerns about the grading of a particular problem, a request for regrade must be sent to me by email within two weeks of the original quiz or exam date. This request should include a list of the problems to be regraded, as well as specific concerns about how each of those problems were graded.

Students with Disabilities and/or in need of Special Accommodations: Georgia Tech complies with the regulations of the Americans with Disabilities Act of 1990 and offers accommodations to students with disabilities. If you are in need of classroom or testing accommodations, please make an appointment with the [ADAPTS Office](#) to discuss the appropriate procedures.