

MA 231: Calculus for Life and Management Sciences B – Fall 2019

Instructor Information

Instructor: Eric Geiger

Email: edgeiger@ncsu.edu

Office: SAS 4117

Zoom: <https://ncsu.zoom.us/j/12341234> - opens in new window

Course Textbook

Calculus and Its Applications by Goldstein, Lay, Asmar, Schneider. 14th edition. 2013. Pearson. Cost: \$150

Course Learning Outcomes

To meet the following course objectives you should attend lectures, come to my office hours, read the relevant book chapters, participate in the Moodle forum, and work on practice problems in the book, homework, and other supplementary materials.

- Use the techniques of partial differentiation to explore the properties of a function of two or more variables;
- Set up and solve optimization problems in various contexts;
- Use least squares to fit linear and nonlinear functions to a given data set;
- Give examples of how and why different disciplines use differential equations and mathematical models;
- Create a mathematical model that describes a given problem from biology, economics, or business;
- Carry out numerical simulations and mathematical analysis of a model.

Course Website

We will be using the Moodle learning management system for this course ([Link to Moodle - opens in new window - http://wolfware.ncsu.edu](http://wolfware.ncsu.edu)). You will login using your Unity ID and password. After the beginning of the semester, you will find a link to our course site. Once in the site, you can Bookmark or add the site as a Favorite in your web browser so that you can return directly to that page.

Course Communications

Modes of communication in use for this course include email, office hours, and Moodle discussion forums.

- Emails will be responded to by the end of the next working day.
- Physical Office hours will be held in SAS 4117, Wednesdays before class, from 3pm until 5pm.
- Virtual Office hours will be held over Zoom at <https://ncsu.zoom.us/j/12341234> - [opens in new window](#) on Tuesdays from 11am until 1pm.
- If you would like to speak with me, and you cannot make it to my posted office hours, please email me to schedule a time that is convenient. Include several time slots that would work for you in your email.
- Moodle Discussion forums will be used to facilitate class discussion. Check these forums often and please feel free to reply to your fellow students' posts.
- Please be aware that **all** email communications for this course will be sent to your NCSU unity email. If you do not regularly use your ncsu.edu account, there are settings within Gmail that allow you to forward your email to another account.

Homework Policies

Homework will be done through WebAssign (webassign.ncsu.edu - [opens in new window](#)). To use WebAssign you will need to purchase an access code online via credit card. The access costs around \$30 per course.

Note that your end-of-semester WebAssign average will be the total number of points you earned divided by the possible number of points. This means some assignments with many possible points are worth a larger percentage of your grade.

If you have a homework question that the whole class may benefit from hearing the answer to, please post on the “Homework Questions and Hints” forum. I will check this forum often to respond to open questions. You should also check frequently to answer or ask questions.

If you have a homework question that is very specific to the work you have done (i.e. if you nearly finished your work but got stuck towards the end), you can email me with your question. Including a scan or photo of your work can help.

If I receive an email with a question more appropriate to the forum, I may copy and paste the question there without identifying the student who sent it.

Grade Calculations

There are 5 components to this course:

Homework - 20%

Homework is worth 15% of your grade.

Your WebAssign average is calculated as the points you earned at the end of the semester divided by the total points possible throughout the semester. It is NOT calculated on an assignment by assignment basis. This means some assignments are worth more than others, pay attention to how many points each one is.

Three One-Hour Tests - 60%

Each test is worth 20% of your grade for a total of 60%.

Final Exam - 25%

The final exam is worth 25% of your grade. Your lowest test grade can be replaced by your final exam grade if the final exam grade is higher. In this case your final exam will be worth 45% of your final grade.

Letter Grades

This course uses standard NC State Letter grading with no rounding:

- A+ 97-100
- A 93-96
- A- 90-92
- B+ 87-89
- B 83-86
- B- 80-82
- C+ 77-79
- C 73-76
- C- 70-72
- D+ 67-69
- D 63-66
- D- 60-62
- F 0-59

Make Up Tests

Should you need to miss an in-class test, a cumulative makeup test will be given during class time in the last week of the semester. Everyone will take the same makeup exam, regardless of which test you missed. The grade for the makeup exam will be used in place of the grade for the test you missed. Details about the makeup test will be sent to students eligible to take it later in the semester. Only students who missed a test are eligible to take the makeup exam.

Academic Integrity

Students are required to comply with the university policy on academic integrity found in the Code of Student Conduct found at <http://policies.ncsu.edu/policy/pol-11-35-01>. The NCSU Student Code of Conduct covers all work done in this course. Any suspected violations will be promptly reported. Academic dishonesty will result in an automatic failing grade for the course.

Technical Assistance

If you need technical assistance you can contact the NC State Office of Information Technology by following the link <http://help.ncsu.edu> - opens in new window, or by calling the number 919-515-4357. You can visit their office for walk-in help at 2620 Hillsborough St, Raleigh, NC 27607 during weekdays 8am – 7pm.

Accommodations for Disabilities

Reasonable accommodations will be made for students with verifiable disabilities. In order to take advantage of available accommodations, students must register with the Disability Resources Office at the following link <https://dro.dasa.ncsu.edu/> - opens in new window, or at the phone number 919-515-7653. For more information on NC State's policy on working with students with disabilities, please see the Academic Accommodations for Students with Disabilities Regulation at the following link <http://policies.ncsu.edu/regulation/reg-02-20-01> - opens in new window.

Course Evaluations

A formal evaluation is conducted by the University at the end of the semester and the goal is to achieve 100% class participation in this survey. Online class evaluations will be available for students to complete during the last two weeks of class. Students will receive an email message directing them to a website where they can login using their

Unity ID and complete evaluations. All evaluations are confidential; instructors will never know how any one student responded to any question, and students will never know the ratings for any particular instructor.

Trans-Inclusive Statement

In an effort to affirm and respect the identities of transgender students in the classroom and beyond, please contact me if you wish to be referred to using a name and/or pronouns other than what is listed in the student directory.

Basic Needs Security

Any student who faces challenges securing their food or housing or has other severe adverse experiences and believes this may affect their performance in the course is encouraged to notify the professor if you are comfortable in doing so. Alternatively, you can contact the Division of Academic and Student Affairs to learn more about the Pack Essentials program at the following link <https://dasa.ncsu.edu/pack-essentials/> - opens in new window.

Supporting Fellow Students in Distress

As members of the NC State Wolfpack community, we each share a personal responsibility to express concern for one another and to ensure that this classroom (as well as the campus as a whole) remains a healthy and safe environment for learning. Occasionally, you may come across a classmate whose personal behavior concerns or worries you, either for your classmate's well-being, for your well-being or for the well-being of others. When this is the case, I would encourage you to report the behavior on the link located on NC State's Students of Concern website at the following link <http://go.ncsu.edu/NCSUcares> - opens in new window.

Equal Opportunity and Non-Discrimination Policy

- NC State is a diverse community that holds a deep commitment to welcoming and supporting all people. All NC State community members are responsible for ethical conduct and for helping build our stature as an inclusive, ethical, and respectful institution.
- NC State hereby affirms these values along with a commitment to creating inclusive working and educational environments free from all forms of Discrimination, Harassment, and Retaliation.

- NC State recognizes and rewards individuals on the basis of relevant factors such as ability, merit and performance. Educational and employment decisions are to be based on factors that are germane to academic abilities or job performance.
- Discrimination, Harassment, and Retaliation are not only unlawful, they are incompatible with the principles of NC State.
- NC State provides equal opportunity and affirmative action efforts, and prohibits Discrimination, Harassment and Retaliation based upon a person’s race, color, religion, sex (including pregnancy), national origin, age (40 or older), disability, gender identity, genetic information, sexual orientation, or veteran status (individually and collectively, “Protected Status”) or participation in a Protected Activity.
- Read more by visiting the following link at <https://policies.ncsu.edu/policy/pol-04-25-05> - opens in new window with additional references at <https://oied.ncsu.edu/equity/policies/> - opens in new window

List of Other Policies

Students are responsible for reviewing the NC State University PRRs (policies, rules and regulations) that pertain to their course rights and responsibilities:

- Code of Student Conduct <https://policies.ncsu.edu/policy/pol-11-35-01/> - opens in new window
- Grades and Grade Point Average <https://policies.ncsu.edu/regulation/reg-02-50-03/> - opens in new window
- Credit-Only Courses <https://policies.ncsu.edu/regulation/reg-02-20-15/> - opens in new window
- Audits <https://policies.ncsu.edu/regulation/reg-02-20-04/> - opens in new window

Course Schedule

Refer to the table below for the course schedule. This is subject to change as the semester goes on. Class will meet Tuesdays and Thursdays at 6pm.

Date	Topic	Relevant Book Sections
8/21	Review of differentiation and antidifferentiation	n/a
8/26	Functions of several variables; Partial Derivatives	7.1, 7.2
8/28	Partial Derivatives	7.2

Date	Topic	Relevant Book Sections
9/4	Maxima and Minima	7.3
9/9	Maxima and Minima; Least Squares	7.3, 7.5
9/11	Least Squares; Lagrange Multipliers	7.5, 7.4
9/16	Lagrange Multipliers	7.4
9/18	Review for Test 1	n/a
9/23	Test 1	n/a
9/25	Double Integrals	7.6
9/30	Double Integrals; Taylor Polynomials	7.6, 11.1
10/2	Taylor Polynomials	11.1
10/7	Newton Method; Geometric Series	11.2, 11.3
10/9	Geometric Series and Applications	11.3
10/14	Taylor Series	11.5
10/16	Taylor Series	11.5
10/21	Review for Test 2	n/a
10/23	Test 2	n/a
10/28	Exponential Growth/Decay; Differential Equations	5.1, 5.2, 5.4, 10.1
10/30	Differential Equations; Separation of Variables	10.1, 10.2
11/4	Separation of Variables	10.2
11/6	Qualitative Theory	10.5
11/11	Qualitative Theory; Logistic Model	10.5, 5.4
11/13	Models	10.6

Date	Topic	Relevant Book Sections
11/18	Models	10.6
11/20	Review for Test 3	n/a
11/25	Test 3	n/a
12/2	Euler's Method	10.3
12/4	Review for Final	n/a
12/10	Review for Final	n/a