

NCSU DEPARTMENT OF MATHEMATICS

MA 131-002 Fall 2021

**MA 131:** Calculus for Life and Management Sciences A

**Instructor:** Dr. j. Rodriguez

**Office:** 4212 SAS Hall

**Office Hours:** MWF 9:30 to 10:30 AM

**Course Description**

First order finite difference models; derivatives - limits, power rule, graphing, and optimization; exponential and logarithmic functions - growth and decay models; integrals - computation, area, total change; applications in life, management, and social sciences. Credit not allowed for more than one of MA 121, 131, and 141.

**Textbook**

The textbook, *Calculus and Applications*, 14th ed., by Goldstein, Lay, Schneider, and Asmar, is available in hardcover and also online as an e-text.

There is also a required supplement, available on the Moodle page.

**Homework**

All homework assignments for MA 131 are submitted through WebAssign.  
(<http://webassign.ncsu.edu>)

Working well ahead of the schedule is encouraged, because deadlines will not be extended.

WebAssign is purchased online by each student at <http://webassign.ncsu.edu>

**Calculators:** Calculators may not be used on tests or the final exam.

**Grades**

This course uses standard NCSU letter grading, with no rounding.

$90 \leq A^- < 93$

$93 \leq A < 97$

$97 \leq A^+ \leq 100$

$80 \leq B^- < 83$

$83 \leq B < 87$

$87 \leq B^+ < 90$

$70 \leq C^- < 73$

$73 \leq C < 77$

$77 \leq C^+ < 80$

$60 \leq D^- < 63$

$63 \leq D < 67$

$67 \leq D^+ < 70$

$0 \leq F < 60$

Grade Component	Weight	Details
WebAssign Homework	20%	Homework will be done through WebAssign and will be due frequently.
In-Class Tests	60%	There will be 3 tests during the semester, given during class.
Final Exam	20%	A comprehensive final exam will be given on Wednesday, December 8, from 12:00 noon to 2:30 PM.

### Missed Tests

If a student misses a test for a reason which I consider valid, the grade of the final exam will be used as the grade of the test missed.

### 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>

### 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.

### 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 (<https://dro.dasa.ncsu.edu/>), 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 <http://policies.ncsu.edu/regulation/reg-02-20-01>.

## Schedule

This schedule is tentative and subject to slight modifications depending on how the course progresses, which will be communicated in class and through Moodle.

Dates	Sections and Topics Covered
August 16-20	Overview of the class
3 mtgs	Supplement: Sections 10.1-10.2
	Difference equations and applications.
August 23-27	Supplement: Sections 10.3-10.4
3 mtgs	Graphing Difference Equations; Word Problems
August 30-September 3	Supplement: Section 10.4 continued
3 mtgs	Text: Sections 1.1 – 1.4 tangent lines, limits.
September 7-10	1.4 Calculating limits
2 mtgs	1.5 Continuity and Differentiability
September 13-17	1.6 Derivative Rules
3 mtgs	1.7 More About Derivatives
	<b>Test #1, Friday the 17th</b>

September 20-24	1.8 Derivative as rate of change; average rate of change
3 mtgs	2.1, 2.2 Curve Sketching and 1 <sup>st</sup> and 2 <sup>nd</sup> derivative tests
	2.3-2.4 More Curve-Sketching
September 27-October 1	2.5 Optimization (2 days)
3 mtgs	3.1, 3.2 Product and Quotient Rules; Chain Rule
October 6-8	4.1, 4.2 Exponential Functions
2 mtgs	4.3 Derivatives of Exponential Functions
October 11-15	1.5 revisited and catch-up or review
	<b>Test #2 on Friday, October 15th</b>

October 18-22	4.4, 4.5, 4.6 Natural Logarithms and Derivatives (2 days)
3 mtgs	5.1 Exponential Growth & Decay
October 25-29	6.1 Antidifferentiation
3 mtgs	6.2 Definite Integral
	Area and the Definite Integral
November 1-5	6.4 Areas in the Plane
3 mtgs	6.5 Other Applications of Definite Integrals
November 8-12	9.1, 9.3 Integration by Substitution (2 days)
3 mtgs	
	<b>Test #3 on Friday, November 12th</b>
November 15-19	
3 mtgs	9.4 Approximation of Definite Integrals
	9.6 Improper Integrals
November 22 Mon.	
1 mtg	Catch-up; Wrap-up; Review
November 29 Mon.	
1 mtg	Review and Discussion of Final Exam

### Optional Lecture Videos

If you wish, you may watch lecture videos by Dr. Burns-Williams at

<https://mediasite.wolfware.ncsu.edu/online/Channel/Odb09fb1f64343acac67b454620b95e05f/browse/null/oldest/null/0>

### Course Website

We will be using the Moodle learning management system (<http://wolfware.ncsu.edu>) for this course. You will log in using your Unity ID and password. (Refer to online information at <http://oit.ncsu.edu/unityid> or contact (919) 515-HELP or [HELP@ncsu.edu](mailto:HELP@ncsu.edu) for assistance with your Unity ID). After the beginning of the semester, you will see 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**

I will communicate through email, office hours, and Moodle.

## **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 <https://dasa.ncsu.edu/pack-essentials/>

## **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 (<http://go.ncsu.edu/NCSUcares>).

## **List of Policies**

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

- Equal Opportunity and Non-Discrimination Policy Statement <https://policies.ncsu.edu/policy/pol-04-25-05/> with additional references at <https://oied.ncsu.edu/equity/policies/>
- Code of Student Conduct <https://policies.ncsu.edu/policy/pol-11-35-01/>
- Grades and Grade Point Average <https://policies.ncsu.edu/regulation/reg-02-50-03/>
- Credit-Only Courses <https://policies.ncsu.edu/regulation/reg-02-20-15/>
- Audits <https://policies.ncsu.edu/regulation/reg-02-20-04/>

## **COVID-19**

Due to the Coronavirus pandemic, public health measures have been implemented across campus. Students should stay current with these practices and expectations through the [Protect the Pack](https://www.ncsu.edu/coronavirus/) website (<https://www.ncsu.edu/coronavirus/>). The sections below provide expectations and conduct related to COVID-19 issues.

## Health and Participation in Class

We are most concerned about your health and the health of your classmates and instructors/TAs.

- If you test positive for COVID-19, or are told by a healthcare provider that you are presumed positive for the virus, please work with your instructor on health accommodations and follow other university guidelines, including self-reporting ([Coronavirus Self Reporting](#)): Self-reporting is not only to help provide support to you, but also to assist in contact tracing for containing the spread of the virus.
- If you feel unwell, even if you have not been knowingly exposed to COVID-19, please do not come to class.
- If you are in quarantine, have been notified that you may have been exposed to COVID-19, or have a personal or family situation related to COVID-19 that prevents you from attending this course in person (or synchronously), please connect with your instructor to discuss the situation and make alternative plans, as necessary.
- If you need to make a request for an academic consideration related to COVID-19, such as a discussion about possible options for remote learning, please talk with your instructor for the appropriate process to make a COVID-19 request (a university-level form can be found [here](#)).

## Health and Well-Being Resources

These are difficult times, and academic and personal stress are natural results. Everyone is encouraged to [take care of themselves](#) and their peers. If you need additional support, there are many resources on campus to help you:

- Counseling Center ([NCSU Counseling Center](#))
- Health Center ([Health Services | Student](#))
- If the personal behavior of a classmate concerns or worries you, either for the classmate's well-being or yours, we encourage you to report this behavior to the NC State CARES team: ([Share a Concern](#)).
- If you or someone you know are experiencing food, housing or financial insecurity, please see the Pack Essentials Program ([Pack Essentials](#)).

## Community Standards related to COVID-19

We are all responsible for protecting ourselves and our community. Please see the [community standards](#) (released on 7/28/2020) and Rule 04.21.01 regarding Personal Safety Requirements Related to COVID-19 [RUL 04.21.01 – Personal Safety Requirements Related to COVID-19 – Policies, Regulations & Rules](#).

## Course Expectations Related to COVID-19:

- **Face Coverings:** All members of the NC State academic community are required to follow all university guidelines for personal safety with face coverings, physical distancing, and sanitation. Face coverings are required in class and in all NC State buildings. Face coverings should be worn to cover the nose and mouth and be close fitting to the face with minimal gaps on the sides. In addition, students are responsible for keeping their course/work area clean. Please follow the cleaning guidelines described by the university.
- **Course Attendance:** NC State attendance policies can be found at: [REG 02.20.03 – Attendance Regulations – Policies, Regulations & Rules](#) . Please refer to the course's attendance, absence, and deadline policies for additional details. If you are quarantined or otherwise need to miss class because you have been advised that you may have been exposed to COVID-19, you should not be penalized regarding attendance or class participation. However, you will be expected to develop a plan to keep up with your coursework during any such absences. If you become ill with COVID-19, you should follow the steps outlined in the health and participation section above. COVID 19-related absences will be considered excused; documentation need only involve communication with your instructor.
- **Classroom Seating:** To support efficient, effective contact tracing, please sit in the same seat when possible and take note of who is sitting around you; instructors may also assign seats for this purpose.
- **Technology Requirements:** This course may require particular technologies to complete coursework. Be sure to review the syllabus for these expectations, and see the [syllabus technology requirements](#) for your course. If you need access to additional technological support, please contact the Libraries' Technology Lending Service: ([Technology Lending](#)).

## Course Delivery Changes Related to COVID-19

Please be aware that the situation regarding COVID-19 is frequently changing, and the delivery mode of this course may need to change accordingly, including from in-person to online. Regardless of the delivery method, we will strive to provide a high-quality learning experience.

## Other Important Resources

- Keep Learning: [Keep Learning](#)
- Protect the Pack FAQs: [Frequently Asked Questions | Protect the Pack](#)
- NC State Protect the Pack Resources for Students: [Resources for Students | Protect the Pack](#)
- NC State Keep Learning, tips for students opting to take courses remotely: [Keep Learning](#)

### Tips for Remote Learning

- Introduction to Zoom for students:

<https://youtu.be/5LbPzzPbYEw>

- **Learning with Moodle, a student's guide to using Moodle:**

<https://moodle-projects.wolfware.ncsu.edu/course/view.php?id=226>

- NC State Libraries [Technology Lending Program](#)