

NCSU DEPARTMENT OF MATHEMATICS  
MA 131 Spring 2021

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

**Instructor:** Dr. J. Rodriguez

**Office:** SAS 4212

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**Office Hours:** MWF 10:30-11:30 am by Zoom

**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 is not allowed for more than one of MA 121, 131, and 141.

**Textbook**

The textbook for this course is *Calculus and Applications* by Goldstein, Lay, Schneider and Asmar, 14<sup>th</sup> edition. There is also a supplement which is available on the course Moodle page.

The book is available in hardcover and also online as an e-text. The Bookstore provides free access to the e-text until February 1. In order to have access to the e-text after this date students must buy access to the e-text on or before February 1. The cost is \$49.25. Links for accessing the e-text will be found on the course Moodle page.

**Lecture Videos**

Lecture videos by Dr. Burns-Williams can be found at

<https://mediasite.wolfware.ncsu.edu/online/Channel/0db09fb1f64343acac67b454620b95e05f/browse/null/oldest/null/0>

**Homework**

All homework assignments that will be graded will be submitted through WebAssign. Students may purchase access to WebAssign at <http://webassign.ncsu.edu>.

The WebAssign homework grade will be computed as follows:

(points earned all semester) / (total points available for all assignments)

It is encouraged to avoid procrastinating on assignments since the system might go down at any time. Working well ahead of the schedule is encouraged.

Note: Difficulties with computer accounts do not exempt students from doing the assignments. Students are responsible for all WebAssign assignments in this course. If a student has difficulties with his/her computer account, they are responsible for getting this problem taken care of within a reasonable period of time and notifying the instructor of these difficulties.

## 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.
Regular Tests	60%	There will be 3 tests given throughout the semester. The test dates are: 1) Friday, February 19, 2021 2) Friday, March 26, 2021 3) Monday, April 19, 2021 The tests will be conducted online.
Final Exam	20%	The final exam will be given online on Friday, May 7, 2021 from 8:30 am to 11:00 am.

## 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>  
The [NCSU Student Code of Conduct](#) covers all work done in this course.

## 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. Communication will take place using Moodle and email.

Week lectures should be watched	Lecture number and date of recording	Text Sections and Topics Covered
1	1 (8/16)	Overview of the class
		Supplement: Section 10.1
		Define difference equation
2	2 (8/17)	Supplement: 10.1 Difference Equations – continued
		Solutions to difference equations
	3 (8/18)	Simple interest vs compound interest
2	4 (8/23)	10.3 Graphing Difference equations – types of graphs
	5 (8/24)	10.3 continued – examples
		Steps to use when graphing a difference equation
	6 (8/25)	10.3 example
3		10.4 Word Problems
	7 (8/28)	10.4 – more examples
	8 (8/30)	WebAssign: Diff Equations #6
		Textbook: 1.1 Lines -slopes, graphs, writing equations
	9 (8/31)	1.2 Equations of tangent lines to a curve at a point
4	10 (9/1)	1.3/1.4 Limits
	11 (9/6)	1.4 Calculating limits
		Limit definition of the derivative of a function
	12 (9/7)	1.4 continued

		limits to infinity
		WebAssign: Derivatives and Tangent Lines #5 hint
	13 (9/8)	1.5 Differentiability and Continuity
		1.6 Rules for Differentiation - the shortcuts!
5	14 (9/11)	WebAssign: Limits, Continuity, Differentiability #1 Hint
		1.7 More About Derivatives
		1.8 Derivatives as a rate of change
		Average Rate of change
	15 (9/13)	1.8 - continued
		Review of Topics for Test 1
		<b>TEST 1</b>
6	16 (9/18)	2.1
		2.2 Sketching
	17 (9/20)	2.2 – 2.4 Derivative Rules – continued
		Second Derivative Rule
	18 (9/21)	2.2-2.4
		Locate Relative Extreme Values and Points
		Steps for Graphing a functions
	19 (9/22)	2.2-2.4 More Curve Sketching examples
7	20 (9/25)	2.5 Optimization
	21 (9/27)	2.5 More Optimization
	22 (9/28)	3.1 Product and Quotient Rules
	23 (9/29)	3.1 continued
		3.2 Chain Rule
8	24 (10/2)	3.2 More examples using the Chain rule
	25 (10/4)	4.1 Exponential Functions
		4.2 Derivatives of Exponential Functions
	26 (10/9)	4.3 Exponential Functions
		4.4-4.6 Logarithms
	27 (10/11)	Practice Day:
		Derivatives of Logarithms

		Using product/quotient rules to find derivatives of functions that
		contain exponential and log functions
		Finding relative max/min and critical values
9	28 (10/12)	Test 2: Review Part I of Finding Derivatives
	29 (10/16)	Test 2: Review Part II
		<b>TEST 2</b>
10	30 (10/20)	5.1 Differential Equation
	31 (10/23)	6.1 Antidifferentiation
		Indefinite Integral
	32 (10/25)	6.1-continued: Indefinite integral formulas
	33 (10/26)	6.2 Definite Integral
11	34 (10/27)	6.3 Area Under a Curve
	35 (10/30)	6.3 Riemann Sums
	36 (11/1)	Meaning of Definite Integral of functions that are not positive
		Review of graphing quadratics
		6.4 Area Between Curves
	37 (11/2)	6.4 Area Between Curves – continued
12	38 (11/3)	6.5 Application of the Definite Integral:
		Average Value of a Function
		Volume of a solid of revolution
	39 (11/6)	9.1 Integration Technique: Substitution (Indefinite integral)
	40 (11/8)	Review Day: Find Derivatives and Integrating using Substitution
		Also, answered some WebAssign questions
	41 (11/10)	9.3 Integration Technique: Substitution (Definite Integrals)
13	42 (11/13)	9.4 Approximation of Definite Integrals
	43 (11/15)	Test 3 Review Day 1: More integration Problems 9.1, 9.3, 9.4
	44 (11/16)	Test 3 Review Day 2: Chapter 4, 5.1, Chapter 6
		<b>TEST 3</b>
14	45 (11/27)	6.5 Solids of Revolution revisited...more examples

	46 (11/29)	9.6 Improper Integrals
	47 (11/30)	Discussion of Final Exam format

### **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).

### **Course Communications**

Modes of communication in use for this course include email, office hours by Zoom, and Moodle. Communication is key. If you are having difficulties that relate to this class, please contact me as soon as possible.

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 e-mail to another account. For more information, please see <http://google.ncsu.edu/what-best-way-forward-my-nc-state-gmail-non-nc-state-e-mail-address>.

### **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/>

## Syllabus language for changes due to 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.
- **Course Meeting Schedule:** Your course might not have a traditional meeting schedule in Fall 2020. Be sure to pay attention to any updates to the course schedule as the information in this syllabus may have changed. Please discuss any questions you have with the 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](#)).
- **Electronically Hosted Components:** Please be advised this course is being recorded for current and potential future educational purposes. By your continued participation in this recorded course, you are providing your permission to be recorded.



## 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.

## Grading/Scheduling Changing Options Related to COVID-19

If the delivery mode has a negative impact on your academic performance in this course, the university has provided tools to potentially reduce the impact:

- **Enhanced S/U Grading Option:** [Enhanced Satisfactory/ Unsatisfactory Grading Option](#)
- **Late Drop:** [Enhanced Late Drop Option](#)

In some cases, another option may be to request an incomplete in the course. Before using any of these tools, discuss the options with your instructor and your academic advisor. Be aware that if you use the enhanced S/U, you will still need to complete the course and receive at least a C- to pass the course.

## 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](#)