

NCSU DEPARTMENT OF MATHEMATICS
MA 131 Fall 2020

MA 131: Calculus for Life and Management Sciences A

Instructor:

Office:

Office Hours:

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

Note: You should receive info from the NCSU bookstore about 'All-In' access to the text. Put the relevant info here and in moodle.

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

Lack of planning does not constitute an extension of the assignment. Do NOT procrastinate on any assignment because the system might go down at any time. Working well AHEAD of the schedule is encouraged.

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

Note: Difficulties with computer account does 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 so that extensions can be given on assignments if necessary.

Grades

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

$90 \leq A- < 93$

$93 \leq A < 97$

$97 \leq A+ \leq 100$

$80 \leq B- < 83$

$83 \leq B < 87$

$87 \leq B+ < 90$

$70 \leq C- < 73$

$73 \leq C < 77$

$77 \leq C+ < 80$

$60 \leq D- < 63$

$63 \leq D < 67$

$67 \leq D+ < 70$

$0 \leq F < 60$

Feel free to modify the weights below by decreasing HW % and increasing final exam % or other arrangements.

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 exams given during class throughout the semester.
Final Exam	20%	The final exam will be given on

You could drop the lowest test grade (not the final).

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.

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.

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 (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
		10.4 Word Problems
3	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
10 (9/1)	1.3/1.4 Limits	
4	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
		TEST 1
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
		TEST 2
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
		TEST 3
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 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

Modes of communication in use for this course include email, office hours, and Moodle. Communication is KEY--if you are having difficulties that relate to this class, please talk to me AS

SOON AS POSSIBLE so we can work together.

- 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.

- I will do my best to respond to weekday e-mails and posts within 24 hours. Email messages or posts left after 4 pm Friday will be responded to by Monday evening.

- If you would like to speak with an instructor in person and you can't make it to the 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.

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>

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If you have a question that the whole class may benefit from hearing the answer to, please post on the "Course Content Q&A" forum. I will check this forum to respond to open questions. You should also check frequently to answer or ask questions.

If you have a 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.

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.

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/>