

**Math 131 Calculus for Life and Management Sciences A**  
**Section 005**  
**Fall 2017**  
**3 Credit Hours**

**Instructor:** Jo-Ann Cohen  
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**Office Hours:** Monday, Wednesday: 10:30-11:30 a.m.  
Tuesday, Thursday: 3:15-4:15 p.m.  
and by appointment

**Course Meeting Times:** Tuesdays and Thursdays from 4:30 p.m. to 6:20 p.m. in Daniels 216

**Math Multimedia Center:** The Math Multimedia Center has free walk-in tutoring (no appointments) M-T from 8 a.m. to 6 p.m. and F from 8 a.m. to 5 p.m. in SAS 2105.

**Prerequisite:** C- or better in MA 107 or MA 111, or 520 or better on the SAT Subject Test in Mathematics Level 2 or the NCSU Math Skills Test, or 2 or better on an AP Calculus exam. Credit is not allowed for both MA 131 and MA 121 or MA 141.

**General Education Program Category:** Mathematical Sciences

**Required Texts/Materials:**

1. **Calculus and its Applications**, Goldstein, Lay, Schneider, and Asmar, 14<sup>th</sup> ed.
2. **WebAssign access** (available for \$32.95 at <http://webassign.ncsu.edu>)
3. **MA 131 Supplement** (online free download through WebAssign)

**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.

**Learning Outcomes:** Students should be able to:

- construct and analyze mathematical models for financial and biological problems
- apply limit theorems to evaluate limits, including ones involving infinity
- apply the power rule, product rule, quotient rule and the chain rule to functions to find derivatives
- use derivatives in practical applications such as distance, velocity and acceleration, or growth of populations
- use first and second derivative tests to optimize functions, find critical points, inflection points, extreme points, and use these to determine the shape of the graph
- conceptualize and visualize representations of limits, continuity, differentiability, and tangent line approximations for a function at a point
- integrate elementary functions; use Riemann Sums to estimate areas under the curve; apply the Fundamental Theorem of Calculus to evaluate definite integrals.

**Course Structure and Rules of Engagement:** The lectures will be interspersed with small group activities. The course will be structured so that there is a lot of student interaction. In this class we will share ideas and learn from each other. It will be important for each student to “try” on new ideas, even if you are not sure that you are correct. While it is ok to disagree with your colleagues about the mathematics, it is not ok to make personal attacks.

**Email:** All email announcements and correspondence will be sent to your official ncsu.edu email address.

**Course Schedule:**

<b>Sections</b>	<b>Topics</b>	<b>Tentative Dates</b>
10.1-10.4 (supplementary text)	Difference equations and applications	Aug 17-29
1.1-1.4 (main text)	Limits and Derivatives	Aug 29- Sept 5

**Test #1 on Thursday, September 7<sup>th</sup>**

1.5-1.8	Differentiability, continuity, and rates of change	Sept 12-14
2.1-2.7	Applications of the derivative	Sept 19-28

**Test #2 on Tuesday, October 3<sup>rd</sup>**

3.1-3.2	Rules of differentiation	Oct 10-12
4.1-4.6	Exponential and logarithmic functions	Oct 12-19
5.1-5.2	Applications to population growth and compound interest	Oct 19-24

**Test #3 on Thursday, October 26<sup>th</sup>**

6.1-6.5	The definite integral	Oct 31-Nov 9
9.1, 9.3-9.4	Integration by substitution, evaluation of integrals	Nov 14-16

**Test #4 on Tuesday, November 21<sup>st</sup>**

9.5-9.6	Applications of integration, improper integrals	Nov 28
	Review for Final	Nov 30

Note that the above schedule is subject to change.

**Grading:**

1. Homework Assignments	20%
2. Four Hourly Exams	60%
Thursday, September 7 <sup>th</sup>	
Tuesday, October 3 <sup>rd</sup>	
Thursday, October 26 <sup>th</sup>	
Tuesday, November 21 <sup>st</sup>	
3. Final Exam	20%
December 7, 2017, 1:00-4:00 p.m. in Daniels 216	

<b>Grading Scale:</b>	$97 \leq A+ \leq 100,$	$93 \leq A < 97,$	$90 \leq A- < 93,$
	$87 \leq B+ < 90,$	$83 \leq B < 87,$	$80 \leq B- < 83,$
	$77 \leq C+ < 80,$	$73 \leq C < 77,$	$70 \leq C- < 73,$
	$67 \leq D+ < 70,$	$63 \leq D < 67,$	$60 \leq D- < 63,$
	$0 \leq F < 60$		

**Homework and Tests:** Homework will primarily consist of online problems using WebAssign. You are expected to check WebAssign regularly for the due dates. All WebAssign assignments will count towards the homework grade. (WebAssign homework may be weighted based upon the length of assignment.) On occasion, I may also assign homework problems that I will ask you to hand in at the start of the next class period. Those problems will count towards your homework grade as well.

Students with three or fewer absences over the course of the semester will have their lowest hourly test grade dropped.

Note to students who have used WebAssign in the past: A recent code change in WebAssign affects how you will log in to WebAssign. If you have always used the NC State WebAssign portal (<http://webassign.ncsu.edu>), then nothing will change for you. However, if you have used one of the other generic log in portals you will need to reset your bookmark to the address listed above and log in there instead. Your log in credentials remain exactly what they've always been (in other words, you will continue to use your unity id and password).

**Calculators/Laptops/Cellphones:** You will not be permitted to use a calculator on the hourly tests or the final exam. The use of laptops, cellphones, and other electronic devices is restricted during class to classroom activities such as computations. (It is not ok, for example, to surf the web or text or...) But if you have an emergency and need to keep your phone on during class, please let me know before class.

**Requirements for Credit-Only (S/U) Grading:** In order to receive a grade of S, students are required to take all exams, complete all assignments, and earn a grade of C- or better. Conversion from letter grading to credit only (S/U) grading is subject to university deadlines. Refer to the Registration and Records calendar for deadlines related to grading. For more details refer to <https://policies.ncsu.edu/regulation/reg-02-20-15/>.

It is important that you consult with your advisor to see if the course will count towards your graduation requirements before taking this course as credit-only.

**Incomplete Grades:** Incomplete grades will be handled on an individual basis. Note, however, that if an extended deadline is not authorized by an instructor or department, an unfinished incomplete grade will automatically change to an F after either (a) the end of the next regular semester in which the student is enrolled (not including summer sessions), or (b) the end of 12 months if the student is not enrolled, whichever is shorter. Incompletes that change to F will count as attempted courses on transcripts. The burden of fulfilling an incomplete grade is the responsibility of the student. The university policy on incomplete grades is located at <https://policies.ncsu.edu/regulation/reg-02-50-03/>.

**Attendance Policy/Absence Policy/Late Assignments/Make-up Work:** You are expected to attend all classes on time. Late assignments and make-up work will only be allowed for excused absences. As noted above, students with three or fewer absences over the course of the semester will have their lowest hourly test grade dropped. For complete attendance and excused absence policies, please see <https://policies.ncsu.edu/regulation/reg-02-20-03/>.

**Academic Integrity/Honesty:** It is my understanding and expectation that your signature on any test or assignment means that you have neither given nor received any unauthorized aid. Students are required to comply with the university policy on academic integrity/honesty found in the Code of Student Conduct (<https://policies.ncsu.edu/policy/pol-11-35-01/>).

**Electronically-Hosted Course Components:** The following statement is required by the University: Students may be required to disclose personally identifiable information to other students in the course, via electronic tools like email or web-postings, where relevant to the course. Examples include online discussions of class topics, and posting of student coursework. All students are expected to respect the privacy of each other by not sharing or using such information outside the course.

**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 Services Office at Suite 2221, Student Health Center, Campus Box 7509, 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 (REG02.20.01) (<https://policies.ncsu.edu/regulation/reg-02-20-01/>).

**Non-Discrimination Policy:** NC State University provides equality of opportunity in education and employment for all students and employees. Accordingly, NC State affirms its commitment to maintain a work environment for all employees and an academic environment for all students that is free from all forms of discrimination. Discrimination based on race, color, religion, creed, sex, national origin, age, disability, veteran status, or sexual orientation is a violation of state and federal law and/or NC State University policy and will not be tolerated. Harassment of any person (either in the form of quid pro quo or creation of a hostile environment) based on race, color, religion, creed, sex, national origin, age, disability, veteran status, or sexual orientation also is a violation of state and federal law and/or NC State University policy and will not be tolerated. Retaliation against any person who complains about discrimination is also prohibited. NC State's policies and regulations covering discrimination, harassment, and retaliation may be accessed at <https://policies.ncsu.edu/policy/pol-04-25-05/> or <https://oied.ncsu.edu/equity/policies/>. Any person who feels that he or she has been the subject of prohibited discrimination, harassment, or retaliation should contact the Office for Equal Opportunity (OEO) at 919-515-3148.

**List of Policies:** Students are responsible for reviewing NC State 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/>
- Accommodations <https://policies.ncsu.edu/regulation/reg-02-20-01/>
- Attendance Policy <https://policies.ncsu.edu/regulation/reg-02-20-03/>