MATH 161 Syllabus

Course: MATH 161 Calculus II, Fall 2015, 3+1 credits (lecture + lab/recitation).

How to Read the Syllabus: If you are short on time or don't like reading long things, make sure you understand at least the grading scheme in this class. Go down to *Grading Scheme* and read the comments underneath.

Course Coordinator: Anton Betten, Weber 207, email betten@math.colostate.edu

Office Hours: Held in Weber 17. The schedule will be posted on Canvas.

Prerequisite: MATH 160, MATH 124.

Textbook: Weir and Hass. *Thomas' Calculus*, 13th Edition, Pearson Education Inc, 2014 (www.pearsoned.com) or *Thomas' Calculus, Custom Edition for CSU*, Pearson Learning Solutions, 2014.

Calculator TI-84 or equivalent required. No symbolic calculators on exams, so nothing above TI-84 on exams (no TI-89, sorry). It is your obligation to provide an acceptable calculator for the exams. Do not expect that we will have a spare calculator for you.

Course Content: Explicit computations of values by means of numerical approximation and estimation of errors. Working with electronic tools: calculators and mathematical software. Transcendental functions. Definitions, properties, and numerical approximations. Sequences, convergence, series, inverse functions, exponentials and logarithms, refined integration techniques, proper and improper integrals, power series and Taylor series, convergence issues and error bounds, parametric curves, polar coordinates, complex numbers.

Contact Information:

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Lectures: Monday, Wednesday, Friday.

Section 1 at 8am taught by Vance Blankers in Glover 130

Section 2 at 10am taught by Benjamin Sencindiver in Clark A 103

Section 3 at 11am taught by Ryan Becker in Clark A 102

Section 220 (Honors) at 9am taught by Steve Benoit in ENGR E 205

Labs and Recitations: Always on Tuesdays in ENGR E204 and ENGR E205 and hours arranged.

Lab-Assignments: We will have four lab-assignments. They have to be prepared as a Word document, including all graphics. They need to be turned in in printed form. Electronic submission is not acceptable. Do not submit the full Maple worksheet (save a tree!). Print your name and CSU-ID as well as your Lab number on the top. Keep an electronic copy of your lab for reference. While we will teach you suitable *Excel, Matlab* and *Maple* commands, you are not obliged to use any of these systems. We will accept lab reports that are based on other systems. However, if you decide to use a different system, do so at your own risk. We cannot provide support for systems other than the ones mentioned above.

For questions regarding the Lab assignments, please email

mirth@math.colostate.edu

Besides Excel, we will use the computer algebra software Maple and Matlab for symbolic computations and for plotting. Previous knowledge of a programming language is not required. Please remember the section number of your lab as you will need that when you take quizzes or exams. For after-hours studies, please check the opening hours of Weber 205/206 as posted at the door.

Quizzes: Always on Wednesdays, but not in Weeks 1,4,8,12,15 (so, not in exam weeks and not in the first or last week). Make-up quizzes are given only for CSU-sponsored events or after sickness with doctor's note. If you do require a make-up quiz for one of the accepted reasons, please email

craig@math.colostate.edu

Exams:
Midterm Exam 1: Thursday 9/17 (starting at 5pm)
Midterm Exam 2: Thursday 10/15 (starting at 5pm)
Midterm Exam 3: Thursday 11/12 (starting at 5pm)
Final Exam: during Final's week.
No books, notes etc. during the exams. Calculators are OK provided they cannot do symbolic computation (TI-84 is OK). The exam locations will be announced through Canvas. We offer an early exam starting at 4pm as well as a late exam starting at 7pm. You need to document a time conflict in order to be admitted to either one of these exams. Please see your instructor.

Extra recitations before exams (all sections):
Monday 9/14 at 3pm in Johnson Hall 222
Monday 10/12 at 3pm in Johnson Hall 222
Monday 11/9 at 3pm in Johnson Hall 222
Wednesday 12/9 at 3pm in Johnson Hall 222

Homework: We will use the electronic system MyMathLab for homework assignments. Please sign up for MyMathLab through the Canvas shell. For MyMathLab trouble, please email

<div align="center">sauriol@math.colostate.edu</div>

Attendance: Attendance is required. We will take attendance during Tuesday's labs and recitations. Make sure your TA marks you off on the attendance sheet. Attendance will be taken *at the beginning* of class. It is your responsibility to be marked off. Latecomers may lose their attendance count for that class. Claims that you have attended a particular class after the fact will not be accepted.

Tutoring: Free tutoring is available for this course through the Arts & Sciences Tutoring Program. The program is located in the Russell George Great Hall in The Institute for Learning and Teaching (TILT), and runs 5 p.m. to 10 p.m., Sunday-Thursday evenings during the academic year. No appointment is necessary and all students are welcome. For more information and tutoring schedule, please visit:

<div align="center">http://tilt.colostate.edu/learning/tutoring/artSciences.cfm</div>

Mentoring Program: We are offering a mentor program I-CSU (*Intensive Calculus Study Units*). This program provides free tutoring in a small group setting (typically 5 students with 1 mentor). The groups meet once a week in a designated room and at a designated time. Please consider applying for this program, as previous students found it very helpful. You need to apply in order to be admitted to the probgram. Details on the application process will be announced in class. For questions regarding the I-CSU program, please email

<div align="center">alvares@math.colostate.edu</div>

Discussion Forum: We will use *Piazza* http://www.piazza.com for discussions. Use this forum to ask your questions. Someone will answer! Try to avoid emailing your instructors too frequently. The large number of students per class makes instructor emails somewhat painful. We appreciate your cooperation. By now, you should have received an email from Piazza. If not (for instance, if you enrolled late), go to the Piazza website (above) and search for MATH161 at Colorado State University. You can enroll yourself.

FERPA: The Family Educational Rights and Privacy Act (FERPA) severely limits the disclosure of information about students. Without a written, signed, release from the student we are unable to discuss course progress, grades, even the fact of enrollment in a course, with any person but the individual student.

RDS: Students working with RDS should make themselves known early and present their form to their teachers. RDS will facilitate the exam.

Alternate Exams: Exams must be taken at the time announced on the syllabus or in class. The only exceptions are conflicts with university events (such as band practice or

sports team competitions) or events beyond your control that cannot be rescheduled (e.g. hospitalization). In either case it is the student's responsibility to inform the instructor in due course (well ahead of a conflict with a university events, or as soon as possible in case of a medical emergency) of this conflict and to provide written documentation.

Grading Scheme:

The class measures your performance on a raw score scale of 800 points. These points are assigned to various tasks as follows. The cutoffs for the grades go in 10 percent steps.

	Points
Midterm Exam 1:	100
Midterm Exam 2:	100
Midterm Exam 3:	100
Final Exam:	200
Lab reports and Written Assignments:	80
Quizzes:	80
Homework:	80
Attendance:	60
Total:	800

Point Range	Grade
720-800	A
640-719	B
560-639	C
480-559	D
0-479	F
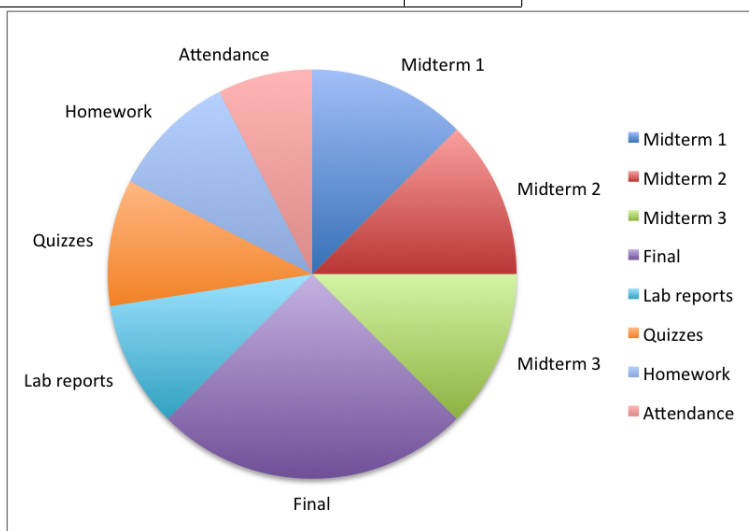
Verification of Points: Please keep your graded labs/exams/quizzes etc. You may need them to verify your earned points should there be a dispute about grades. This is unlikely to happen but it may.

Syllabus (with section numbers):
Part 1:
4.6 Newton's method, convergence of a sequence.
10.1 Sequences, convergence and limits of sequences, ϵ-tunnel, ϵ/N relationships, skip Theorem 5
10.2 Series, the geometric series, series manipulation, partial sums, repeating decimals and rational numbers
10.2 Theorem 7: the n-th term test
10.3 The harmonic series, skip the rest of 10.3: no integral test
7.1 Inverse functions, properties, slope of inverse function formula
7.2 Natural logarithm, definition, properties, Euler's number e
Exam 1 (Thursday 9/17 5pm)
No class Friday 9/18.
Part 2:
7.3 Exponential function,
7.4 Exponential growth and decay, 2 parameter model
7.5 L'Hôspital, logarithmic limits,
10.1 Special limits (Theorem 5), $\lim_{n\to\infty} \left(1 + \frac{1}{n}\right)^n$
7.6 Inverse trigonometric functions, sin-inverse, tan-inverse, secant-inverse, integration techniques
8.1 Integration by parts,
8.4 Partial fractions,
8.7 Improper integrals, type I and type II, p-integrals
Exam 2 (Thursday 10/15 5pm)
No class Friday 10/16.
Part 3:
10.7 Power series,
10.8 Taylor and Maclaurin series, Taylor polynomials
10.9 Theorem 24: The error bound
10.5 Ratio test, interval of convergence, center and radius of convergence,
Exam 3 (Thursday 11/12 5pm)
No class Friday 11/13
Part 4:
11.1 Parametrization of plane curves,
11.2 Arc length and area for parametric curves, tangent lines
11.3 Polar coordinates, switching back and forth between cartesian and polar
11.4 Graphing in polar,
11.5 Area and arc length in polar,
A.7 Complex numbers, Euler's formula $e^{i\theta} = \cos\theta + i\sin\theta$, argument and modulus, algebraic and geometric ways to add and multiply. Fast exponentiation using polar form.
Final Exam Comprehensive, the 4 parts are weighted approximately 25/25/25/25.

Academic Integrity:
We take academic integrity serious. If you need help, get it through the official channels as announced above. If nothing goes, send an email to your teacher or lab/recitation person. You may try asking for an extension. *Cheating is not an option.* If you use inappropriate means, you will find yourself in the office of the course coordinator.

Credible Scholarship requires academic integrity, a direct result of responsible research and writing habits. As with all ethically driven behavior, such habits – and their foundational underpinnings – are not innate. They are learned and – through practice – honed to a point where they become second nature, a character trait both much valued and much sought after in the professional world. Preparing for success in your chosen profession begins with developing and practicing these habits. One follows the other: Academic integrity lays the groundwork for professional integrity.
Quote from Colorado State University Student Conduct Code, Article III:

> Any student or student organization found to have committed or to have attempted to commit the following misconduct is subject to disciplinary sanction. Academic misconduct including but not limited to: cheating, plagiarism, unauthorized possession or disposition of academic materials, falsification, or facilitation of acts of misconduct. Plagiarism includes the copying of language, structure, images, ideas, or thoughts of others and is related only to work submitted for credit.

Tips for Succeeding in this Class:
Being successful in this course is as much a question about attitude as it is about skill. Make sure you take this class seriously. You need to put in work to get a passing grade. The exams are different from what you may have experienced in High School. The best results are often obtained by studying in small groups together with fellow students. Take advantage of the tutoring in TILT and the I-CSU mentoring program. Go to office hours, or post questions to Piazza. If you feel anxious about exam taking, talk to the course coordinator. Do the Homework yourself. It is useless to copy/paste answers from other websites: There is a chance that the same problem will show up on a midterm. Many students find quizzes difficult. The quiz is about material that was covered the week leading up to the quiz. Regarding exam preparation, go over your quizzes and homework. Go over the exam from the previous semester as it becomes available through Canvas. Don't be fooled into thinking that you know the material unless you are able to sit down and work a problem on your own without help. Be prepared and know the location of your exam. The rooms are assigned by Lab numbers and the schedule will be posted on Canvas. The room for the Final may be different from the room for the midterms. Last but not least: if you feel you are in trouble, talk to someone. Try talking to your recitation TA first, then to the teacher of your section, and then to the course coordinator. Our goal is to help you.

What to do if I am stressed out:
Sometimes, we have too much stuff going on. If you feel stressed out, maybe because you have too many things due at the same time, do the following: Send an email explaining the

situation and ask for an extension. It is better to ask for help than skipping an assignment altogether. If you have serious trouble with a lab, email

mirth@math.colostate.edu

If you have serious trouble with a homework assignment, email

sauriol@math.colostate.edu

If in doubt, you can always email the course coordinator

betten@math.colostate.edu

Remember that all other options should be exhausted first: Specific math questions should always be addressed on Piazza or in office hours, but definitely not by email.

Where is my exam going to be? The location of the common exams will be announced. We do not know the location until some time in the semester. Watch for an announcement on Piazza and a post on Canvas or a post on the Web site of the Math department. In any case, you may want to get familiar with the possible rooms and buildings (these classrooms are called GA classrooms, where GA stands for general assignment). Here is a map of all classrooms that would be candidates for exams. Also, keep in mind that the Final is going to be at a different location than the Midterms. The location of the common Finals will be announced first on the registrar's website and it will be repeated on Piazza and on Canvas.

$$\frac{d}{dx}\left(\tan^{-1}x\right) = \frac{1}{1+x^2}$$

KEEP
CALM
AND
DO MORE
CALCULUS

General Assignment Classroom Buildings

Buildings with GA Classrooms

Feb. 2013

Laurel St.

DANFORTH CHAPEL

PRECONST CENTER

Engineering 2

ROCKWELL WEST

ROCKWELL HALL

AMMONS HALL

GUGGENHEIM

INDUSTRIAL SCIENCES LABS

GREEN HALL

ALLISON HALL

LAUREL HALL

Rensbrandt Dr.

Mason St.

W. Plum St.

TILT

Music Dr.

OT

OT ANNEX

WEBER

Oval Dr.

Oval Dr.

GIBBONS

ENGINEERING

STAT

Isotope Dr.

JOHNSON HALL

Meridian Ave.

Meridian Ave.

LORY STUDENT CENTER

GLOVER

WAGAR

NRRL

West Dr.

ADMIN.

CENTENNIAL HALL

Center Avenue Mall

COMP SCI

NATURAL RESOURCES

FORESTRY

East Dr.

STUDENT SERVICES

LSC Theatre

University Ave.

MILITARY SCIENCE

MILITARY ANNEX

HARTSHORN HEALTH CENTER

CLARK A-WING

PLANT SCIENCE

SHEPARDSON

GENETIC RESOURCES PRESERVATION

MORGAN LIBRARY

B-WING

Mason St.

South Dr.

EDDY HALL

C-WING

ANIMAL SCI

NESB

A Street

AYLESWORTH HALL

BRAIDEN HALL

EDUCATION

BEHAVIORAL SCIENCES

UNIVERSITY GREENHOUSES

OBSERVATORY

East Dr.

GENERAL SERVICES BUILDING

Braiden Dr.

WEED RESEARCH LAB

INSECTARY

Edison Dr.

FACILITIES SERV. NORTH

Pitkin St.

FACILITIES SERVICES SOUTH

VISUAL ARTS

MICRO

STOCK PAVILION

CHEMISTRY

YATES HALL

ANATOMY ZOOLOGY

PAINTER CENTER

GIFFORD

MRB

Center Ave.

PHYSIOLOGY

ENVIRON. HEALTH

PATHOLOGY

CENTRAL RECEIVING

W. Lake St.