



**MAT 136-012 (Calculus I) Syllabus, Spring 2019**  
Class 7953, MWThF 11:30-12:20 in Student Academic Serv. (SAS) 221

**Instructor:** Jim.Swift@NAU.edu [www.nau.edu/Jim.Swift](http://www.nau.edu/Jim.Swift) AMB 110 523-6878

**Office Hours:** Tu 11:30-12:30, Th 2:00-4:00, F 12:45-2:45. If these times are inconvenient, you can make an appointment, or drop by my office any time. E-mail is always a good way to contact me. I will check my e-mail after 9:00pm on nights before a WeBWorK assignment is due, and reply that night.

**Information:** This course fulfills a requirement in the Science/Applied Science distribution block in the University Liberal Studies program. It is a Certified First Year Learning Initiative course.

**Course Description and Objectives:** MAT 136 is a four credit hour course that meets 200 minutes each week. The course initiates the study of calculus with emphasis on limits, differentiation, the beginnings of integration and the applications of the ideas to geometry and the natural sciences. This courses addresses the essential skills of critical thinking, quantitative analysis, and the use of technology.

**Student Learning Outcomes:** Upon completion of the course, students should be able to calculate limits by a variety of methods, apply these methods to the calculation of derivatives from the definition of derivative, be able to take derivatives of the basic algebraic and transcendental functions and to use the chain rule to take derivatives of more complex functions. They will be able to correctly interpret the meaning of the derivative in terms of rates and tangent lines and do numerical approximations. They will be able to apply their knowledge of the derivatives of functions to find tangent lines and rates of change in a variety of circumstances and to find maximums and minimums of functions and be able to use this knowledge to analyze graphs. They will be able to find higher derivatives and use them to investigate concavity and the application of concavity to maximum and minimum problems and to acceleration. They will be able to take derivatives in complicated situations by use of logarithmic differentiation and implicit differentiation. In addition, they will be able to find easy antiderivatives and apply this knowledge to the calculation of areas using the fundamental theorem of Calculus and to do some more complex integrals by the use of tables and substitution.

**Text:** Calculus, Early Transcendentals 3E by Rogawski and Adams. The book store has an "NAU" loose leaf edition.

## **Tentative Dates of Midterm Exams:**

Exam 1 will be on Chapter 1 Review and Chapter 2 Limits. (Feb. 8?)

Exam 2 will be on Chapter 3, Differentiation. March 6?)

Exam 3 will be on Chapter 4, Applications of the derivative (April 3?)

Exam 4 will be on Chapter 5, The integral (April 26?)

The date of each midterm exam will be finalized at least a week in advance.

**Prerequisite:** MAT 125 with a grade of C or better, or Math Placement Test Results (MTHPLACE 65+; ALEKS 65+; PLACE 70+) or International Exchange Student Group

**Course Structure** The class will mostly use lecture-discussion format. There will be several in-class group work projects. Students will apply what they have learned to solve homework problems. Problems will come mostly from WeBWorK.

### *Assessment of Student Learning Outcomes*

**Points:** There are approximately 850 class points possible, plus extra credit. Class points can always be converted to letter grades with the scale A (90%), B (80%), C (70%), and D (60%).

The timeline for assessment is simple; whenever class points are assigned, they are fully “curved” and will not change further. So at any point students can calculate the fraction of the assigned class points to determine their current grade.

**Midterm Exams:** ( $4 \times 100 = 400$  class points)

**Final Exam:** (200 class points) The comprehensive Final Exam is scheduled for Wednesday, May 8 from 10:00 am to 12:00 noon. The final exam will be in our usual classroom. I reserve the right to raise your course grade from the 90/80/70 curve, based on an exceptional final exam.

**WeBWorK:** (Approximately  $27 \times 6 = 162$  class points). Regular homework assignments will be given in WeBWorK, a web-based homework system. Each assignment is worth 6 class points. For most problems you have unlimited attempts to get the correct answer.

**Quizzes/Group Work/Other:** (Approximately 88 class points) These will be quizzes, in-class assignments, or paper homework not counting WeBWorK.

**Attendance:** (8 extra credit class points for perfect attendance, down to 40 points deducted for never showing up) Attendance is mandatory, and will be recorded for every class period. At each of the 4 tests midterms, the students will receive an attendance score equal to 2 minus the number of unexcused absences since the last exam. That is, you get 2 class points of extra credit at each exam, but you lose one point for every class you miss.

**Extra Credit:** Up to 3 points of extra credit will be given each week for the departmental “Problem of the Week.”

### *Course Policies*

**Calculators:** No calculators are allowed at the exams. You may bring a calculator to class on non-exam days.

**In class devices on non-test days:** You may not text, do Facebook, etc. during class. You MAY use a mobile device to take notes, work on your WeBWorK problems during class, photograph the white board, or check wikipedia pages that are relevant to the class.

**Excused Absences:** If you have an institutional excuse, you will not lose the attendance extra credit. If you feel you deserve an excused absence for some other reason contact me by e-mail, phone, or in person. Do so before the absence, if possible. Makeup exams will be given only in extenuating circumstances. Contact me *before* an exam if you must miss it.

**Late Homework:** I can delay your individual due date for WeBWorK assignments. I will handle requests on a case-by-case basis, but you must send an email request to me by 9:00 pm on the night the assignment is due.

**Help:** If you need help the first person to contact is me. I am your personal tutor at no charge. I encourage you to come to my office hours or contact me via e-mail. There is a button in WeBWorK for sending me e-mail. We have a peer TA for this class, Ryan Kelly, who is available to help. The Math Achievement Program (MAP) in AMB 137, with a supportive environment for help with this class as part of the FYLI program. The math department also has a list of tutors for hire, available from the department office.

**Academic Honesty:** Do not look at other people’s exams during tests. You may not use cell phones or other electronic communication devices during the exams (see next item). You are allowed and encouraged to work together on homework (WeBWorK and textbook problem sets). However, you are expected to complete your own work. Copying, plagiarism, or cheating of any kind will be considered Academic Dishonesty and will be dealt with very harshly.

### **Department of Mathematics & Statistics Portable electronic device policy**

Cell phones, mp3 players and portable electronic communication devices, including but not limited to smart phones, cameras and recording devices, must be turned off and inaccessible during in-class tests. Any violation of this policy will be treated as academic dishonesty.

**Department and University Policies:** Our class web site has links to the Departmental and University Policies at

[www.nau.edu/Jim.Swift/classes/MathDepartmentPolicies.pdf](http://www.nau.edu/Jim.Swift/classes/MathDepartmentPolicies.pdf) and  
[www.nau.edu/university-policies/](http://www.nau.edu/university-policies/).

**Amendments:** Any changes to this syllabus will be announced in class, and an updated version will be posted on my website. This version: April 16, 2019