

MATH 151 SYLLABUS

Calculus I

Spring 2013

Instructor: Prof. Alex Meadows, SB 170
(240) 895-4432, ammeadows@smcm.edu

TA: Brad Putnam
bwputman@smcm.edu

Website: TBA

Class: MWF, 8:00–9:10, SB 134, W, 18:00–20:00, SB 109

Office Hours: M 2:00–3:00, T 1:00–2:00, TBA T evening, or by appointment or chance or questions over email. See also the schedule on my office door or website.

Book: *Calculus, 5e* by James Stewart.

Introduction to the course: Calculus is one of the great achievements of human civilization. It is a mathematical way of describing how quantities can be related to each other, how those quantities change with respect to each other, and how we can quantify those changes very precisely. This class will introduce the basic ideas of Calculus, namely the derivative, the integral, the Fundamental Theorem, and the key concepts of function and limit that tie everything together. We will also be interested in the applications of calculus in the natural and social sciences.

Grading:

Task	Date	Percent
Exam 1	Wednesday 2/5	15
Exam 2	Wednesday 3/5	15
Exam 3	Wednesday 4/9	15
Final Exam	Friday 5/3 9:00–11:15	25
Homework	Daily and Weekly	15
Class Work & Quizzes	Daily	10
Gateway 1	Wednesday 3/27	Pass
Gateway 2	Wednesday 4/22	Pass

Content: This is the first of a two-semester sequence in differential and integral calculus. The semester is divided into five content periods, roughly corresponding to the first five chapters of the text. Below is an *approximate* timeline for the course. Note that all of the following is subject to change.

Chapter 1: Sections 1.1–1.3: Review of functions, graphs, composition of functions, and trigonometric functions. 2 weeks.

Chapter 2: Sections 2.1–2.6: Limits, rates of change, continuity. 3 weeks.

Chapter 3: Sections 3.1–3.9: Derivatives, the chain rule, applications. 3–4 weeks.

Chapter 4: Sections 4.1–4.5, 4.7, 4.8, 4.10: Maxima and minima, curve sketching, more applications, optimization, antiderivatives. 3–4 weeks.

Chapter 5: Sections 5.1–5.5: Areas, the definite integral, the Fundamental Theorem of Calculus, indefinite integrals, substitution. 3 weeks.

Class time: This will be a mixture of lectures, discussions, and collaborative work. It is more likely that you will learn calculus by doing it rather than by watching

me do it. We will mostly favor practice and group activities. You will be required to participate actively in all class discussions and activities. You can prepare for any class by reviewing material and reading ahead in the book. You are expected to attend all classes (subject to the attendance policy in the catalog), both for your benefit and for the benefit of the rest of the class during group discussions. You will also be graded partly on the basis of your participation in discussions and activities.

Homework and Quizzes: Homework will be assigned daily and graded for both effort and correctness. There will also be occasional quizzes. These quizzes will reflect recent classes and homework. In all the mathematical work you submit, you should include, as much as possible, clear explanations. I want to understand the reasoning behind your solution. I encourage you to work together on homework, but your final paper should be (neatly) written in your own voice. Also, make sure to *acknowledge* students you worked with at the top of your homework. When doing homework, it is *important* that you attempt some problems yourself before seeking assistance. Use your Polya Sheet to help with problem solving. If you have trouble solving problems yourself, it is also *critical* that you seek out assistance. Keep in mind the resources that are available to you: the textbook (it's good – read it), your classmates (misery loves company), your TA (loves answering questions), and the professor (please stop by or email me questions - I live for helping with calculus problems). Gaining a thorough understanding of the material through homework and classwork is how you get ready to do well on exams.

Polya Sheet: Your Polya Sheet (How to Solve It) is a formal approach to problem solving. It can help you to focus your attention and thought on the right parts of the problem, thus leading you toward a solution. Practicing this approach may improve your problem solving skills. See also the problem solving section at the end of Chapter 1 in the book.

Exams: Exams will be given during the evening review sessions. Make-up exams will be allowed in emergency situations only. If at all possible, notify your professor of the emergency *prior* to the exam. There will be two gateway exams that you will be required to pass in order to pass the course.

Calculators: There will be no calculators allowed on exams, and most homework problems (unless otherwise noted) should be doable without calculators. We will have the opportunity to use spreadsheets occasionally to help with problems.

Extra Credit: You can earn a 1% increase in your grade by attending and writing a one page report on one of the NSM Colloquium talks. This can be repeated for a total of 2% extra before calculating your final grade. Talks are for a general audience of science majors in the areas of Mathematics, Computer Science, Biology, Chemistry, and Physics. The lectures are in Schaefer Hall room 106 most Wednesdays at 4:40. A schedule of talks and weekly reminders will be sent to all students via email. There will be replacement extra credit opportunities for those who can't attend the NSM. For all work that is labeled 'extra credit,' the relevant grades will be added *after* all other grades have been averaged and letter grade boundaries have

been assigned. No extra credit work will be required for the course. For a .2% extra credit, email Professor Meadows right now with the subject line *Jamisia* to prove that you read the syllabus.

Attendance and Disabilities: You are expected to attend all classes (subject to the attendance policy outlined in the catalog). All varsity athletes should discuss possible conflicts with their professor, agree on resolutions, and sign the form provided by your coaches. Any student with a disability requiring accommodations in this class is encouraged to contact me outside of class. Students with a disability may also wish to contact the Office of Academic Services, Glendening Hall, suite 230, x4388.

I'm looking forward to a fun semester, and I hope to see everyone succeeding and learning the material. If you have questions or comments, *please* email me or find a spot to talk to me. I almost always respond to email within 24 hours.