

# MAT 286 FALL 2011

## CALCULUS FOR THE LIFE SCIENCES II

**Course Description:** This is the second course in a two-course, terminal calculus sequence. It is designed to continue the introduction of students to the beauty and power of integral calculus. Applications to the life sciences are emphasized.

**Mathematics Requirements:** MAT 285 must be successfully completed before taking MAT 286. This course is the second course in the Quantitative Skills sequence MAT 285-286. *Note that students planning to major in a physical science, engineering, or mathematics must take the MAT 295-296-397 sequence. The MAT 285-286 sequence does not satisfy the requirements for such majors or the prerequisites for MAT 397.*

**Text:** Calculus for the Life Sciences, by Greenwell, Ritchey, and Lial; Addison Wesley. The course will cover Chapters 7, 8, 11, and parts of Chapter 9 of the text.

**Calculator:** A graphing calculator is required. The TI84 or TI83+ calculators are the recommended graphing calculators for the course. Students who already own and know how to use another equivalent calculator (e.g. TI83/85/86, some Casios) are free to use it. The use of a symbolic calculator (such as the TI-89 or the TI-Nspire with CAS) will not be allowed on quizzes or exams.

**Course Format:** The course meets two times per week.

**Final Examination:** The final exam is comprehensive. Your final examination will take place on Wednesday, 14<sup>th</sup> December in a two-hour block between 8:00 am and 2:30 pm. The time and location will be announced in class during the semester. You are required to take the final examination during the appointed examination block and, in the absence of an exam conflict, at the scheduled time. **DO NOT MAKE PLANS TO LEAVE CAMPUS BEFORE 2:30 P.M. on December 14th, 2011.**

**Important dates:**

Add Deadline: 6<sup>th</sup> September 2011

Academic Drop Deadline: 25<sup>th</sup> October 2011

Withdrawal Deadline: 18<sup>th</sup> November 2011

Final Exam: 14<sup>th</sup> December 2011

**Grades:** Your semester average will be based on your performance on the final exam, the three hour exams, and some combination of homework, quizzes, and exam corrections. These components will be weighted as follows:

Final exam	20% total
3 hour tests	20% each
Quizzes, homework, corrections	20% total

Your semester course grade will be determined from your semester average as follows:

93-100	A		77-79	C+
90-92	A-		73-76	C
87-89	B+		70-72	C-
83-86	B		60-69	D
80-82	B-		Below 60	F

Your instructor will establish and announce the homework, quiz, and exam corrections policy for your section.

**Examinations:** There will be three in-class examinations. There will be NO MAKE- UP EXAMS, even in the case of an emergency. A missed quiz or examination counts as a zero unless the student presents a valid excuse from a physician or his or her dean's office. With the written excuse, your score on the relevant portion of the final exam may be used to replace the missed quiz or exam.

An essential part of success in a mathematics course is to learn from one's mistakes. Part of your grade may be to submit correct solutions to problems that you missed on each exam.

**Students with Disabilities:** Students who may need academic accommodations due to a disability are encouraged to discuss their needs with the instructor at the beginning of the semester. In order to obtain authorized accommodations, students must be registered with the Office of Disability Services (ODS), 804 University Avenue, Room 309, 315-443- 4498, and have an updated accommodation letter for the instructor. Accommodations and related support services such as exam administration are not provided retroactively and must be requested in advance.

**Academic Integrity:** The Syracuse University Academic Integrity Policy holds students accountable for the integrity of the work they submit. Students should be familiar with the Policy and know that it also governs the integrity of work submitted in exams and assignments as well as the veracity of signatures on attendance sheets and other verifications of participation in class activities. Serious sanctions can result from academic dishonesty of any sort. For more information and the complete policy, see <http://academicintegrity.syr.edu>.

### **Course Objectives and Learning Goals:**

- To reinforce prior understanding of derivatives and how they relate to integration.
- To be able to find antiderivatives systematically.
- To understand what a definite integral is.
- To understand the Fundamental Theorem of Calculus.
- To be able to solve problems using applications of integration.
- To be able to solve and model using basic differential equations.
- To correctly use and understand the usage of mathematical notation.
- To develop critical thinking and problem solving skills.

**How to succeed:** Calculus is a mathematical tool, and the only way to become proficient at it is to practice. Approach learning calculus as you would learning a musical instrument.

- Do not expect to retain new mathematics the first time you hear it. You should either read the

appropriate section of your textbook before each class, or re-read your class notes after each class. Ideally you should aim to do both.

- Take accurate class notes. Just because you do not understand what is being written on the board doesn't mean you should stop copying it down. Often examples done on the board can seem confusing the first time you see them (even professors find this to be the case!) but are understandable the second time you read through them.
- When attempting a hard problem for the first time, work through it with the examples given in class in front of you. Look at the steps taken in an example, and see if you can do something similar to solve your problem.
- Your assigned homework is the minimum amount of work a good student needs to pass the class. If you wish to get a high grade, or if you find the course difficult, you will need to practice using other questions from your textbook. The answers to half of the textbook problems are in the back of the book.
- Prepare for exams by practicing questions. Take your time answering questions at the beginning, but once you are competent start trying to answer your practice questions quickly. In an exam you will not have a great deal of time to answer all the questions, so speed and accuracy are essential.
- Calculus is not difficult to master, even for those of you who have found mathematics difficult in the past, as long as you practice. If you wish to get a high grade in this subject, attempt all the homework questions, and all the relevant textbook questions you can find. Wait a few days, and then do them again. Repeat this until you find **all** of the questions incredibly easy. Once this moment occurs, you have achieved mastery.

**Resolving Problems:** Please inform your instructor of any problems you have with this course. Problems not satisfactorily resolved with your instructor should be brought to the attention of the Course Supervisor without delay.

Dr Simon Smith  
[smsmit13@syr.edu](mailto:smsmit13@syr.edu)  
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