MAT 397 - Calculus III   **Syllabus**   **Summer I   2016**

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Office Hours: Mon – Thurs 11:00 – 11:45
                          Mon – Thurs 2:30 – 3:00
Any changes to office hours will be announced in class or by email, and posted on Blackboard.

Course Description: MAT 397 is the third course in a three-semester sequence in Calculus. This sequence is designed for Mathematics, Science and Engineering majors and for those students in other majors who intend to take advanced courses in mathematics. This course covers the concepts of vectors, vector valued functions, functions of several variables, partial derivatives, multiple integration and vector calculus.

Background for Course: Completing MAT 296 (Calculus II) with a grade of C− or better is a prerequisite for MAT 397 (Calculus III).

Liberal Arts Core: Completion of MAT 397 with a grade of C or better satisfies the Quantitative Skills requirement of the Liberal Arts Core in the College of Arts & Sciences. It also may be used to partially satisfy the Natural Sciences and Mathematics divisional requirement.

Textbook: *Essential Calculus: Early Transcendentals*, 2nd ed., by James Stewart. (The material we will cover appears in Chapters 10 through 13.)

WebAssign: WebAssign is **NOT** required. If you need a class key in order to access the e-textbook, you can use **syr 9410 9859**. There will also be WebAssign assignments for those who wish to do them, but they are optional only and will not count in any way toward your grade.

Calculators: A calculator is not required for this course. **In particular, no calculators will be allowed on any examination or in-class quiz. This includes calculators on cell phones. Use or availability of any calculator or other electronic device at an examination is a violation of the Academic Integrity Policy.** You may use a calculator on take-home quizzes and homework if you wish. Under no circumstances will calculators capable of symbolic integration be allowed. Extensive computations and/or decimal approximations will not be required. On exams and quizzes complete solutions, and not merely answers, must be presented to receive credit.

Course Format: The course will meet from noon to 2:25 pm Mon-Thurs in Bowne Hall 105, with a short break approximately halfway through. Typically we will start with questions on homework. You are encouraged to ask about problems with which you have trouble. Then we will go over new material. After a break of 10 – 15 minutes we will cover additional new material. As noted above, there are office hours in 305 Carnegie before and after class.

Class Attendance and Participation: You are expected to attend and participate in class. Missing class is the most common reason for poor performance in the course. **If you miss a class, you are responsible for obtaining notes for that class from a student who attended. It is also your responsibility to find out about any announcements made in class.** Summer courses move extremely quickly, so missing class will have a seriously adverse effect on your learning.

Homework: Homework will be assigned each day in class, and **should be completed before the next class meeting**. Homework will **not** be collected, but you cannot be successful in the class unless you do the problems. Homework will also be posted on Blackboard under "Assignments". You are encouraged to work with others on the homework, and ask questions about homework problems in class and during office hours.

Quizzes: Short take-home quizzes will be given approximately every class day on the previous day's material. These will be due the next class day by 3:00 pm. Quizzes can be turned in during class or at office hours. On review days before exams there will be in-class quizzes. **No late quizzes will be accepted and no make-up quizzes will be given.** A 0 will be entered for any missed quiz. You may miss up to 3 quizzes without penalty. If you choose to miss fewer than three quizzes, the appropriate number of your lowest quiz scores will be dropped. You are encouraged to take all the quizzes to maximize your quiz grade. Quizzes will be posted under "Content" on Blackboard so that if you miss class (although that is strongly discouraged!) you can still print the quiz. The quiz scores will make up $70/3\% \approx 23.33\%$ of your grade. You may work with others on the take-home (but not in-class) quizzes. Quiz solutions will be posted on Blackboard under "Content" soon after they are given.

Examinations: There will be three examinations during the session, on alternate Thursdays. There will be 60 minutes tests on June 2 and 16, and a two-hour comprehensive final exam on the last day of class, June 30. There will be **no make-up exams, even in the case of an emergency**. With an acceptable excuse your missed exam score will be replaced by your score on the relevant portion of the final exam.

Grades: Your grade will be computed using the following percentages:

1st and 2nd Exams	$\frac{70}{3}\% \approx 23.33\%$ each
Final	30%
Quizzes	$\frac{70}{3}\% \approx 23.33\%$

You will be given the curve for each of the first two exams when you get the exam back. In any case, the curves will be no higher (but may be lower) than the standard Math Department curve:

A (93-100)	A- (90-92)	B+ (87-89)	B (83-86)	B- (80-82)
C+ (77-79)	C (73-76)	C- (70-72)	D (60-69)	F (0-59)

Learning Goals: The successful student will

✓ have a basic knowledge and understanding of the analytic and geometric concepts taught, and some of their classical applications to other sciences such as physics.
✓ understand the nature and role of deductive reasoning in mathematics.
✓ have the ability to use and understand mathematical notation.
✓ have the ability to do hand calculations accurately and appropriately.
✓ have the ability to follow proofs and other mathematical discourse.
✓ freely translate among geometric descriptions and descriptions in terms of equations, parametric equations, and level sets: for lines and planes, as well as for certain more general curves and surfaces.
✓ set up the iterated integrals needed to evaluate multiple integrals over regions in 2 and 3 dimensions.
✓ effectively use the vector concept in problem solving
✓ determine whether a given applied optimization problem is suitable to be solved using multi-variable calculus. If so, formulate the mathematical problem as one of finding the extreme value of a function of several variables over a subset of two or three dimensional space, including the boundary. Solve the problem in simple example cases.
✓ be able to state multi-variable generalizations of the derivative, the chain rule, the fundamental theorem of calculus, the second derivative test, limits, and continuity, and use then in problem solving when appropriate.

Students with Disabilities: If you believe that you need accommodations for a disability, please contact the Office of Disability Services (ODS), http://disabilityservices.syr.edu, located in Room 309 of 804 University Avenue, or call (315) 443-4498 for an appointment to discuss your needs and the process for requesting accommodations. ODS is responsible for coordinating disability-related accommodations and will issue students with documented disabilities Accommodation Authorization Letters, as appropriate. Since accommodations may require early planning and generally are not provided retroactively, please contact ODS as soon as possible. You are also welcome to contact me privately to discuss your academic needs although I cannot arrange for disability-related accommodations. Making arrangements with ODS takes time. Do not wait until just before the first test.

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 is their responsibility to learn about instructor and general academic expectations with regard to proper citation of sources in written work. The policy 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://supolicies.syr.edu/ethics/acad_integrity.htm

Religious Observances Policy: Syracuse University's religious observances policy, found at http://supolicies.syr.edu/emp_ben/religious_observance.htm, recognizes the diversity of faiths represented among the campus community and protects the rights of students, faculty, and staff to observe religious holy days according to their tradition. Under the policy, students are provided an opportunity to make up any examination, study, or work requirements that may be missed due to a religious observance provided they notify their instructors before the end of the second week of classes.

How to Succeed:

1. Do your homework, using examples from class and your textbook as models. It is essential that you understand how to solve the assigned problems, since quiz and exam questions will be similar to these problems. Complete, written solutions from you (not just copied from the Professor's work) will be the most valuable for you.

2. Ask questions. If something is not clear, ask about it in class or office hours as soon as possible. Ask to see homework problems you have trouble with.

3. Keep up with the material. Calculus concepts build on each other cumulatively and you need to stay on top of the material at every stage. If you are having difficulty, don't expect that the problem will take care of itself and disappear later. We will be moving very quickly through the material and it is easy to fall behind. You will also want to do well on the daily quizzes.

4. Form a study group. Working together is a great way to learn mathematics, as long as you make sure you understand the problems discussed. A solution you copy from someone else doesn't help you unless you learn how to do it yourself. In particular, connect with someone in the class who takes good notes, so that if you miss class you can get the notes easily.

Course-related Problems or Questions: 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 (Professor Leuschke, email:gjleusch@syr.edu) without delay.

Getting Help: Your instructor will be holding regular office hours and will make appointments with students having class conflicts with their scheduled office hours. In addition, the Mathematics Department offers regular math clinics. These will be set up by the second day of classes and will be posted outside the math office.

Cell Phones: all electronic devices other than the calculator should be turned off and put away during class. Calculators on cell phones are not to be used on tests or quizzes.