MAT 296 Calculus II   Syllabus   Fall 2017

Course Description: MAT 296 is the second 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 more advanced courses in mathematics. This course covers techniques of integration, applications of integration, improper integrals, sequences and series (including power series and Taylor series), and polar coordinates.

Learning Goals: The broad learning goals for this course are for you to:

✓ 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 the usage of mathematical notation;
✓ have the ability to do hand calculations accurately and appropriately; and
✓ have the ability to follow proofs and other mathematical discourse.

Prerequisites: Completion of MAT 295 (Calculus I) with a grade of C- or better is a prerequisite for MAT 296. **If you have not either satisfied this prerequisite or have the relevant AP credit, you must drop MAT 296 and register for MAT 295.** Furthermore, students who earned a C or C- in MAT 295 are historically at great risk in MAT 296. For these students, it is essential to review material from the earlier course, especially as it comes up again.

Students who have scored a 4 or 5 on the Advanced Placement Calculus BC exam cannot receive both AP credit and credit for MAT 296. Such students should register for MAT 397 Calculus III.

Textbook and WebAssign: *Essential Calculus: Early Transcendentals*, **2nd ed.**, by James Stewart, Cengage Publishing and a WebAssign access code for submitting online homework.

The ISBN for the bundle (book and WebAssign) is 9781133425946.

Purchasing Your Textbook and WebAssign Access Code: All students are required to have a WebAssign access code for online homework assignments. This code includes access to the online electronic version of the textbook. Some students will also want a physical copy of the textbook. **You may choose between the following options.**

(1) Purchase a WebAssign access code either at the Syracuse University bookstore or online at http://webassign.net. This access code includes access to the online electronic version of the textbook. If you purchase this code at the SU bookstore, it is valid for future semesters in the Calculus sequence. If you purchase it online and plan to take MAT 397, you should purchase the multi-term (lifetime of edition) version.

(2) Purchase a new textbook bundled with a WebAssign access code at the SU bookstore. This access code includes access to the online electronic version of the textbook, and is valid for future semesters in the Calculus sequence.

(3) Purchase a new textbook bundled with a WebAssign access code from the publisher?s website at http://www.cengagebrain.com. You can also purchase just your WebAssign access code at the publisher's website.

Calculators: MAT 295-296-397 students are expected to complete the calculus sequence without the use of a calculator. Calculators will not be permitted on quizzes or exams.

Course Format: The course format is two or three lectures (depending on your section) and one recitation each week. Your primary instructor will introduce new material in lecture. Your recitation instructor will answer questions on the course material and the assigned homework problems. A quiz will be given in most recitation sessions. Midterm exams will be given during recitation. In MAT 296-100 only, midterm exams might be given during lecture instead, to be determined by the instructor.

Class Attendance and Participation: You are expected to attend and participate in class. Strong attendance and participation are good indicators of success 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.

Grading: Course grades will be computed using the following percentages:

Each of three Midterm Exams	20%
Homework/Quizzes	15%
Final Exam	25%

Your letter grade will be determined as follows:

93-100	A	77-79	C+
90-92	A-	73-76	C
87-89	B+	70-72	C-
83-86	B	65-69	D
80-82	B-	0-64	F

Homework: To learn the material in a mathematics class, it is essential to do all the homework assignments. Many of the problems will be done using WebAssign. Other problems are to be done with paper and pencil. Your instructor may require all or some of these to be handed in and graded. Completing all the homework problems is essential to be prepared for quizzes and exams.

Quizzes: There will be weekly quizzes given in recitation except in the weeks you have an exam. These quizzes will have 2 or 3 problems similar to the homework problems. **No makeup quizzes will be given.**

Midterm Exams: Three midterm exams will be given during the semester. They will be given in your recitation[1] during the following weeks, with the precise dates announced by your instructor.

Exam 1:	**Week of Sept. 18.**
Exam 2:	**Week of Oct. 16.**
Exam 3:	**Week of Nov. 13.**

There will be **no make-up exams**, even in the case of an emergency. A missed examination counts as a zero unless a valid excuse from a physician or the Dean's Office is presented and accepted. With an acceptable written excuse, a missed exam score will be replaced by the

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[1] In MAT 296-100 only, the midterm exams might be given during lecture.

score on that portion of the material on the final exam.

Final Exam: The final examination covers the entire course. It will be given during a two-hour block on

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Wednesday, December 13, between 8:00am and 2:30pm.

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The exact time and location will be announced later in the semester. **Do not make plans to leave campus before 2:30 pm on Wednesday, December 13.** The final exam will not be given at any other time.

If a student has a conflict with another final exam, the student must contact the instructor at least two weeks in advance in order to have it resolved.

Help: Each lecture and recitation instructor will be available to answer questions during office hours. Help is also available at the Calculus Help Center.

Course Supervisor: Professor Jani Onninen, jkonnine@syr.edu, Carnegie Room 304A, (315) 443-1700. Please first inform *your instructor* of any problems you are having with the course. Problems not satisfactorily resolved with your instructor should be brought to the attention of the course supervisor without delay.

Students with Disabilities: If you believe that you need academic adjustments (accommodations) for a disability, please contact Office of Disability Services (ODS), located in Room 309 of 804 University Avenue, or call (315) 443-4498 or TDD: (315) 443-1371 for an appointment to discuss your needs and the process for requesting academic adjustments. ODS is responsible for coordinating disability-related academic adjustments and will issue students with documented Disabilities Accommodation Authorization Letters, as appropriate. Since academic adjustments may require early planning and generally are not provided retroactively, please contact ODS as soon as possible.

Religious Observances Policy: SU religious observances policy recognizes the diversity of faiths represented among the campus community and protects the rights of students, faculty, and staff to observe religious holidays 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 are religious observance provided they notify their instructors before the end of the second week of classes. For fall and spring semesters, an online notification process is available through MySlice (Student Services → Enrollment → My Religious Observances) from the first day of class until the end of the second week of class.

Academic Integrity: Syracuse University's Academic Integrity Policy reflects the high value that we, as a university community, place on honesty in academic work. The policy defines our expectations for academic honesty and holds students accountable for the integrity of all work they submit. Students should understand that it is their responsibility to learn about course-specific expectations, as well as about university-wide academic integrity expectations. The policy governs appropriate citation and use of sources, the integrity of work submitted in exams and assignments, and the veracity of signatures on attendance sheets and other verification of participation in class activities. The policy also prohibits students from submitting the same work in more than one class without receiving written authorization in advance from both instructors. Under the policy, students found in violation are subject to grade sanctions determined by the course instructor and non-grade sanctions determined by the School or College where the course is offered as described in the Violation and Sanction Classification Rubric. SU

students are required to read an online summary of the University's academic integrity expectations and provide an electronic signature agreeing to abide by them twice a year during pre-term check-in on MySlice. The Violation and Sanction Classification Rubric establishes recommended guidelines for the determination of grade penalties by faculty and instructors, while also giving them discretion to select the grade penalty they believe most suitable, including course failure, regardless of violation level. Any established violation in this course may result in course failure regardless of violation level. For more information and the complete policy, see http://class.syr.edu/academic-integrity.

How to Succeed: Here are a few basic suggestions.

1. Do the assigned problems. It is absolutely essential that you understand how to solve them. Quiz and exam questions will be similar to these problems. It is important to be able to use the skills and techniques presented in the course and not simply to be able to solve a specific set of problems.

2. Ask questions – at lecture, recitation, office hours, and the math clinic.

3. Stay caught up. Mathematical 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. Contact me immediately and discuss the problem.

4. Form a study group. Many students benefit from a study group to work through challenging problems and to review for exams. You should attempt the problems ahead of time by yourself and then work through any difficulties with your study partners. Explaining your reasoning to another student can help to clarify your own understanding.

5. Expect to work hard. Don't get discouraged if you find some of the material very difficult. Be persistent and patient! If you follow the above suggestions, your experience in this course will be a rewarding one.

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Tentative Schedule for MWF sections and Suggested Homework Problems

Problems may be added or deleted later by your instructor. Check with your individual instructor for due dates.

Date	Section	Problems	Remarks
C1	5.5	Online: 11, 13, 14, 17, 19, 35, 41, 51, 533XP Written: none	review of substitution (Calculus I)
8/28	7.1	Online: 1, 3, 9, 36, 501XP, 503XP Written: 12, 16, 20	review of Riemann sums and area ($y = f(x)$ and $x = f(y)$)
8/30	7.2 a	Online: 3, 5, 7, 522XP Written: none	volumes by disks/washers (rotation about an axis)
9/1	7.2 b	Online: 9, 12, 503XP Written: 16, 18	volumes by disks/washers (rotation about a shifted axis)
9/6	7.3 a	Online: 5, 7, 9, 11, 33, 34, 502XP, 504XP Written: 6	volumes by shells (rotation about an axis)
9/8	7.3 b	Online: 15, 17, 19, 505XP Written: 18, 38	volumes by shells (rotation about a shifted axis)
9/11	6.1 a	Online: 1, 3, 5, 9, 11, 525XP Written: 10	integration by parts (simpler ones)
9/13	6.1 b	Online: 13, 8, 502XP, 533XP Written: 20, 24	integration by parts (more complex ones)
9/15	6.2 a	Online: 1, 3, 9 Written: 4, 8	$\sin x$, $\cos x$ integrals
9/18		Review for Exam 1: During this week	Review
9/20	6.2 b	Online: 17, 19, 21, 25 Written: 18, 24	$\tan x$, $\sec x$ integrals
9/22	6.2 c	Online: 40, 42, 47 Written: 40	trig substitution
9/25	6.2 d	Online: 51, 53, 55 Written: 46, 58	trig substitution (more complex ones)
9/27	6.3 a	Online: 12, 18, 524XP Written: 10	partial fractions (distinct linear factors)
9/29	6.3 b	Online: 19, 32, 519XP Written: 16	partial fractions (long division, powers of linear)
10/2	6.3 c	Online: 22, 23, 517XP Written: 24	partial fractions (quadratic factors, but no powers)

Date	Section	Problems	Remarks
10/4	6.6 a	Online: 7, 9, 13, 16, 17 Written: 12, 34	improper integrals (over an infinite interval)
10/6	6.6 b	Online: 23, 27, 32, 41 Written: 24 Written: Ch6 Review True/False: 7, 10, 11	improper integrals (of a discontinuous function)
10/9	7.4	Online: 7, 11, 511XP Written: 8, 10	arc length
10/11	7.5	Online: 6, 11, 507XP, 514XP Written: 8, 10	surface area of a rotation
10/13	7.6a or 7.7a	7.6 Online: 9, 11 7.7 Online: 3, 8, 9, 15	work (rope/chain problems) differential equations
10/16		Review for Exam 2: During this week	Review
10/18	7.6b or 7.7b	7.6 Online: 17, 504XP 7.7 Online: 24, 43	work (tank problems) differential equations
10/20	8.1	Online: 9, 10, 11, 12, 15, 23, 24 Written: none	sequences
10/23	8.2 a	Online: 1, 7, 9, 10, 12, 508XP Written: 4, 6	definition of series, convergence, geometric series
10/25	8.2 b	Online: 15, 16, 17, 35, 514XP Written: 36	geometric series, harmonic series, divergence test
10/27	8.3 a	Online: 3, 4, 13, 15, 19, 21, 503XP, 523XP Written: 6, 10, 12, 14	integral test, p-series, comparison and limit comparison tests
10/30	8.3 b	Online: 9, 25, 26, 29, 528XP Written: 18, 22, 30	(more complex ones)
11/1	8.4 a	Online: 3, 5, 7, 501XP, 507XP Written: 6, 18	alternating series test (no error estimate)
11/3	8.4 b	Online: 23, 521XP, 533XP Written: 30	conditional/absolute convergence
11/6	8.4 c	Online: 19, 21, 25, 43 Written: 20, 24, 26	ratio test
11/8	8.5 a	Online: 5, 7, 9, 15, 501XP Written: 12, 14, 16	power series
11/10	8.5 b	Online: 11, 18, 19, 23, 502XP, 512XP Written: 20, 26(c)	more power series

Date	Section	Problems	Remarks
11/13		Review for Exam 3: During this week	Review
11/15	8.6	Online: 3, 7, 13, 15, 17, 39, 503XP Written: 8, 11	Writing functions as power series
11/17	8.7 a	Online: 5, 7, 11, 13, 14, 17 Written: 6, 12, 16	Taylor's formula (no error estimate)
11/27	8.7 b	Online: 28, 30, 31, 44, 45 Written: 46	using known Taylor series to obtain more series
11/29	8.7 c	Online: 59, 61, 63 Written: 60, 62, 64 Written: Ch8 Review True/False: 1, 9, 12, 17	recognizing known Taylor series
12/1	9.3 a	Online: 4, 6, 15, 19, 506XP, 514XP, 522XP Written: 16, 20	converting cartesian/polar coords
12/4	9.3 b	Online: 27, 31, 33 Written: 24, 30, 34	graphing polar curves
12/6	9.4	Online: 5, 7, 502XP, 17, 19, 21 Written: 6, 20	areas inside and between polar curves
12/8			Review for Final Exam