MAT 296 Calculus II Syllabus Fall 2016

Course Supervisor: Professor Claudia Miller, clamille@syr.edu, Carnegie Room 300A, (315) 443-1493

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.

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.

Credit: The course material of MAT 296 overlaps with that of MAT 284, MAT 285, and MAT 286, and so credit cannot be given for both MAT 295 and these courses. Read the Course Catalog for these four courses for current rules.

Completing a calculus course numbered 284 or higher with a grade of C or better satisfies the Quantitative Skills requirement of the Liberal Arts Core in the College of Arts and Sciences. Calculus courses numbered 285 or higher may simultaneously be used to partially satisfy the Natural Sciences and Mathematics divisional requirement.

Text + WebAssign: "Essential Calculus: Early Transcendentals", 2nd edition, by James Stewart, Cengage Publishing and a WebAssign access code for submitting on-line homework. WebAssign may not be required for all sections.

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 meets three or four times a week, consisting of two or three lectures and one recitation. Your recitation leader will answer questions on the course material and/or work with students in solving additional problems. A quiz will be given in most recitation sessions.

Exams and quizzes will be given during recitation. In MAT 296-100 only, midterm exams might be given during lecture instead, to be determined by the instructor.

Attendance and Participation: Students are expected to attend and participate in class. Strong attendance and participation are good indicators of success in MAT 295. Each student is responsible for all course material, announcements, quizzes and exams made in class, whether or not the student attended that day's class.

Homework: Homework assignments will be announced by your instructor in class or online. Due dates will be strictly enforced. Depending on your instructor, there may be written and/or online homework (WebAssign).

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

Exams and Quizzes: Quizzes will be given in recitation. There will be three in-class or in-recitation examinations given during the following weeks, with the precise dates set by your instructor.

Exam 1: approximately Week 4
Exam 2: approximately Week 8
Exam 3: approximately Week 12

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 score on that portion of the material on the final exam. Policies for missed quizzes are under the purview of your instructor.

Final Exam: The final examination covers the entire course. It is a two-hour exam and will be given on **Wednesday, December 14, sometime between 8:00am and 2:30pm**. The exact time and location of your final examination will be announced in lecture. The final examination is given at this announced time and at no other time. **Do not make plans to leave campus before 2:30 pm on Wednesday, December 14.** 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.

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

Each Midterm Exam	20%
Homework/Quizzes	15%
Final Exam	25%

Letter grades are 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

Students with Disabilities: If you believe that you need accommodations for a disability, please contact the Office of Disability Services (ODS), 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.

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. 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: 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 University 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://academicintegrity.syr.edu.

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.

Use of Student Work: In compliance with the federal Family Educational Rights and Privacy Act, registration in this class is understood as permission for assignments prepared for this class to be used anonymously in the future for educational purposes

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 (listed on the first page) without delay.

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

Section	Problems	Remarks
5.5	Online: 6, 11, 13, 14, 17, 19, 35, 41, 43, 51, 533XP Written: none	review of substitution (Calculus I)
7.1	Online: 1, 3, 9, 19, 36, 501XP, 503XP Written: 12, 16, 20	review of Riemann sums and area ($y = f(x)$ and $x = f(y)$)
7.2 a	Online: 3, 5, 6, 7, 522XP Written: none	volumes by disks/washers (rotation about an axis)
7.2 b	Online: 9, 10, 12, 503XP Written: 16, 18	volumes by disks/washers (rotation about a shifted axis)
7.3 a	Online: 5, 7, 33, 502XP Written: 6	volumes by shells (rotation about y-axis)
7.3 b	Online: 9, 11, 34, 504XP Written: 10	volumes by shells (rotation about x-axis)
7.3 c	Online: 15, 17, 19, 505XP Written: 18, 38	volumes by shells (rotation about a shifted axis)
6.1 a	Online: 3, 5, 9, 11, 525XP Written: 10	integration by parts (simpler ones)
6.1 b	Online: 13, 19, 502XP, 537XP, 533XP Written: 20, 24	integration by parts (more complex ones)
6.2 a	Online: 1, 3, 5, 9, 12 Written: 4, 8	$\sin x$, $\cos x$ integrals
6.2 b	Online: 17, 19, 21, 23, 25 Written: 18, 24	$\tan x$, $\sec x$ integrals
6.2 c	Online: 42, 47 Written: 40	trig substitution
6.2 d	Online: 43, 51, 53 Written: 46, 58	trig substitution (more complex ones)
6.3 a	Online: 12, 17, 524XP Written: 10	partial fractions (distinct linear factors)
6.3 b	Online: 19, 20, 519XP, 530XP Written: 16	partial fractions (long division, powers of linear)
6.3 c	Online: 22, 23, 517XP Written: 24	partial fractions (quadratic factors, but no powers)

Section	Problems	Remarks
6.6 a	Online: 7, 9, 13, 17, 22 Written: 12, 34	improper integrals (over an infinite interval)
6.6 b	Online: 23, 27, 30, 49 Written: 24 Written: Ch6 Review True/False: 7, 10, 11	improper integrals (of a discontinuous function)
7.4	Online: 7, 13, 501XP, 511XP Written: 8, 10	arc length
7.5	Online: 5, 7, 9 Written: 8, 10	surface area of a rotation (only for rotations about x-axis)
7.6 a	Online: 9, 11 Written: 10	work (rope/chain problems)
7.6 b	Online: 17, 503XP, 504XP, 505XP Written: additional problems	work (tank problems)
8.1	Online: 9, 10, 11, 12, 14, 15, 23, 24 Written: none	sequences
8.2 a	Online: 1, 3, 7, 9, 10, 12, 508XP, 520XP Written: 4, 6	definition of series, convergence, geometric series
8.2 b	Online: 14, 15, 16, 17, 23, 35, 37, 514XP, 522XP Written: 36	geometric series, harmonic series, divergence test
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
8.3 b	Online: 9, 25, 26, 29, 528XP Written: 18, 22, 30	(more complex ones)
8.4 a	Online: 3, 5, 7, 501XP, 507XP Written: 6, 18	alternating series test (no error estimate)
8.4 b	Online: 23, 521XP, 533XP Written: 30	conditional/absolute convergence
8.4 c	Online: 19, 21, 25, 43 Written: 20, 24, 26	ratio test (no root test)
8.5 a	Online: 5, 7, 9, 15, 501XP Written: 12, 14, 16	power series
8.5 b	Online: 11, 18, 19, 23, 502XP, 512XP Written: 20, 26(c)	more power series

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