

Calculus for Engineers II - MAT 266, §77967
(Fall 2018)

Class Day/Time: T Th, 6:00PM - 7:15PM

Location: WXMLR A103

Instructor: Joseph Wells

Email: jswells@asu.edu

Course Website: www.blackboard.asu.edu

Instructor Website: www.joedub.net

Office Location: WXMLR 434

Office Hours: TBD

Textbook: Stewart, James. *Essential Calculus, Early Transcendentals, 2nd Edition* (Brooks/Cole).

Prerequisites and Placement: MAT 265 or MAT 270 - Calculus I with a grade of C or better.

Exam Schedule: Exams are coordinated, so the dates of the exams are firm.

Exam	Topics Covered	Date	Room
1	5.5, 6.1 - 6.5	September 20	Classroom
2	6.6, 7.1 - 7.4, 7.6, 8.1 - 8.2	October 18	Classroom
3	8.4 - 8.7, 9.1, 9.2	November 15	Classroom
Final	Cumulative, including 9.3 and 9.4	December 4	TBA

Grade Calculation: Your grade is dependent upon how well you demonstrate your comprehension of the subject through application and completion of the items listed above in this syllabus.

<i>Assignments</i>	<i>Percentage of Final Grade</i>
Exam #1-#3	50%
Final Exam	25%
Homework & Quizzes	25%

Letter Grades: You should not expect any extra credit or curving of grades. The instructor will neither round up grades nor drop lowest scores. The table below shows the breakdown for the final letter grades assigned to the overall percentage in the class.

<i>Percentage</i>	<i>Letter Grade</i>	<i>Percentage</i>	<i>Letter Grade</i>
97% - 100%	A+	80% - 81.99%	B-
93% - 96.99%	A	77% - 79.99%	C+
90% - 92.99%	A-	70% - 76.99%	C
87% - 89.99%	B+	60% - 69.99%	D
82% - 86.99%	B	0% - 59.99%	E

Your final grade will be assigned based on the course credit you have earned during the period from the first day of class to the final exam, with weights assigned to grade components as given in the table above. Your opportunity to earn course credit ends with the final exam. Final percent grades *will not be* rounded up to the next higher integer before they are converted into letter grades. That means that a grade of 89.99% is a B+.

Catalog Description: Methods of integration, applications of calculus, elements of analytic geometry, improper integrals, Taylor series.

Course Overview: The purpose of the course is to gain a working understanding of methods of integration, applications of calculus, elements of analytic geometry, improper integrals and series, to include Taylor Series. All the standard methods of techniques of integration are covered. Applications of calculus include general methods where the goal is for the student to divide a quantity into small pieces, estimate with Riemann sums and recognize the limit as an integral. Taylor Series and Taylor Polynomials are covered. Parametric and polar curves are introduced and methods of calculus are applied to them.

Learning Outcomes: At the completion of this course, students will be able to

- Evaluate an integral using the substitution method, integration by parts, trigonometric substitution or partial fractions.
- Use tables to match the form of a given integral to a form given on the table to evaluate the integral.
- Approximate the definite integral using the Midpoint, Trapezoidal or the Simpson's Rule.
- Evaluate an improper integral where either the definite integral is extended to cover the case where the interval is infinite or where f has an infinite discontinuity on $[a, b]$.
- Determine the area of a region enclosed by given curves.
- Determine the volume of the solids of revolution obtained by rotating a region about a line using washer, disc or shell method.
- Determine the arc length of a curve.
- Solve applied problems involving work, including the work to stretch a spring and the work to empty a tank of liquid.
- Determine if a sequence converges or diverges and find the limit.
- Determine if a series converges or diverges using geometric series or test for divergence.
- Find a radius and interval of convergence for a power series.
- Perform differentiation and integration on known power series to create new power series.
- Find a power series representation and the interval of convergence for a given a function.
- Find either a Taylor Series or Maclaurin Series for a given a function.
- Convert between Cartesian and parametric form and sketch a curve defined parametrically.
- Determine the tangent line at a point on a curve defined parametrically.
- Find the area below a parametric curve and the arc length along a curve.
- Convert between Cartesian and polar form and sketch a curve defined in polar coordinates.
- Find the area made by a polar curve.

Homework & Quizzes: Homework will be collected and graded. Students may work together on homework, but each individual student is required to write-up and turn in their own work. No late homework is accepted. Students will also submit homework online through WeBWorK (click on your instructor's name at <http://webwork.asu.edu>). Students are also responsible for reading each section before it is taught in class. Quizzes are given at the discretion of the instructor and frequently reflect material that has recently been discussed in class.

Exams: There will be three 50 minute midterm exams given during the semester. All exams will be taken in the classroom on the dates indicated on the given table. Non-CAS graphing calculators are allowed on the exams, but graphing calculators that do symbolic algebra are not allowed on the exams (see below). **Your calculator may be viewed during exams and it will be taken away if it is a CAS calculator or have its memory cleared if anything suspicious is written therein.** The Instructor has the right to regard any suspicious material in your calculator memory as cheating. **Any student who accesses a phone or any internet-capable/camera device during an exam for any reason automatically receives a score of zero on the exam. All such devices must be turned off and put away and made inaccessible during the exam.** Makeup exams are given at the discretion of the instructor and only in the case of verified medical or other emergency, which must be documented. The instructor must be notified before the test is given. Call the instructor or the Math Department Office (480-965-3951) and leave a message or directly notify your instructor.

Picture ID requirement for testing: For each exam including the final, you must bring a picture ID.

Final Exam: Tuesday, December 6th, 7:10-9:00 PM. Location: to be announced. The final exam is comprehensive through section 9.4.

Study Tips: In order to be successful, it is good to have a solid study regimen - it is expected that you will spend **15 - 20 hours outside of class each week** learning the material. You should start homework early, review class notes, read the textbook, and take advantage of office hours. Because mathematics is cumulative, failure to know the material covered in a previous lecture will result in your inability to follow subsequent lectures.

Cramming is a totally ineffective study technique for mathematics and will virtually guarantee failure in the class.

Tutoring: Should you require tutoring, the following options are available.

- The Engineering Tutoring Center (free of charge). For hours and locations, see tutoring.engineering.asu.edu
- The Math Tutoring Center North - WXMLR 116, South - BAC 16. For hours, see math.asu.edu/mathtutors
- Many residence halls and the Memorial Union also offer evening or weekend free tutoring to all ASU students enrolled in math courses as part of the Student Success Centers.
- If you'd like to seek private tutoring through the math department, email: math@asu.edu

Come in for help before it is too late, and several days before an exam day to strengthen your preparation. Each student must present their valid ASU Sun Card to be admitted into the Tutoring Centers.

Graphing Calculator: A graphing calculator is required for this course. *If you already have a graphing calculator, you may use it.* Examples of highly recommended models are the TI-*n*spire & TI 83/84 or Casio 9850GB Plus. Calculators that do symbolic algebra, such as the Casio FX2, Casio 9970Gs, TI-89, TI-92, or TI-*n*spire CAS *cannot be used in class or during an exam.*

The School of Mathematical and Statistical Sciences Policies and Procedures

Inclusivity: The School of Mathematical and Statistical Sciences encourages faculty to address and refer to students by their preferred name and gender pronoun. If your preferred name is different than what appears on the class roster, or you would like to be addressed using a specific pronoun, please let your instructor know.

Attendance: Attendance is mandatory! Your instructor reserves the right to take attendance and to incorporate your attendance as part of your overall grade. For classes that meet two days a week, the maximum number of absences is four. For classes that meet three days a week, the maximum number of absences is six. Students who exceed the number of allowed absences will receive a grade of EN. Your instructor reserves the right to take attendance and to incorporate your attendance as part of your overall grade.

Academic Status Report: There are two times during the semester when you will be issued an academic status report from your instructor if your class grade is failing at that time. If you receive such a status report, you must act on it. In particular, if the status report says that you are to meet with your instructor in person, come to office hours *within one week of receiving the report*.

Status Report #1 is issued on October 3rd, 2016. Status Report #2 is issued on October 27th, 2016. Status reports are *not* a real-time running tally of your grades in the class, nor are they updated to reflect grades earned after the report has been issued.

Classroom behavior, etiquette and academic integrity policies:

- Athletes with travel schedules should meet with the instructor by the end of the first week of classes to discuss any necessary arrangements that need to be made.
- If you have a disability that requires special accommodations, it is your responsibility to bring this to your instructor's attention during the first week of class. You must also contact the ASU Disability Resource Center <https://eoss.asu.edu/drc>. All efforts will be made to ensure you have equal opportunity to succeed in the course, but there can be no retroactive accommodation.
- Arrangements for any religious observances or ASU sanctioned activity must be arranged with the instructor at least one week prior to the event.
- Classroom disturbances, including but not limited to: arriving late, talking in class, using cellular devices, texting, listening to music, eating and drinking are not tolerated. Each student is expected to show respect for every student registered in the course. Turn off any cellular phones, pagers, laptops, tablets and other electronic devices and put them out of sight prior to entering class. The usage of laptops is prohibited in the classroom. Notes should be taken with pen/pencil on paper. If you wish to use an electronic device for note taking, talk to your instructor.
- An instructor may withdraw a student from a course when the student's behavior disrupts the educational process under USI 201-10 <http://www.asu.edu/aad/manuals/usi/usi201-10.html> Students are required to adhere to the ABOR Student Code of Conduct: <https://eoss.asu.edu/dos/srr/codeofc>
- Academic Integrity: Academic honesty is expected of all students in all examinations, papers, laboratory work, academic transactions and records. The possible sanctions include, but are not limited to, appropriate grade penalties, course failure (indicated on the transcript as a grade of E), course failure due to academic dishonesty (indicated on the transcript as a grade of XE), loss of registration privileges, disqualification and dismissal. For more information, see <http://provost.asu.edu/academicintegrity>.

The grade of XE: A grade of XE is reserved for "failure due to academic dishonesty." The grade goes on the student's transcript and usually remains there permanently. Examples of academic dishonesty are signing an attendance sheet for another student or asking another student to sign an attendance sheet on your behalf, accessing unauthorized help while taking an exam, and attempting to influence a grade for reasons unrelated to academic achievement. Asking for a higher grade than the one you have earned because you need a higher grade to maintain a scholarship, or to satisfy your own or someone else's expectations constitutes academic dishonesty.

Withdrawal Deadlines: A student may withdraw from a course with a grade of W during the withdrawal period. The instructor's signature is not required. A complete withdrawal must be done in person and that it involves withdrawing from all ASU classes, not just Math 266. Students will not be withdrawn if they merely stop coming to class. It is a student's responsibility to verify whether they have in fact withdrawn from a class.

- **Course Withdrawal Deadline: October 31, 2018**
- **Complete Withdrawal Deadline: November 30, 2018**

Withdrawal: A student may withdraw from a course with a grade of W during the withdrawal period. The instructor's signature is not required. A complete withdrawal must be done in person and that it involves withdrawing from all ASU classes, not just Math 266. Students will not be withdrawn if they merely stop coming to class. It is a student's responsibility to verify whether they have in fact withdrawn from a class.

The grade of Incomplete: A grade of incomplete will be awarded only in the event that a documented emergency or illness prevents the student who is doing acceptable work from completing a small percentage of the course requirements. The guidelines in the current general ASU catalog regarding a grade of incomplete will be strictly followed.

Instructor-Initiated Drop: At the instructor's discretion, a student who has not attended any class during the first week of classes may be administratively dropped from the course. However, students should be aware that non-attendance will NOT automatically result in their being dropped from the course. Thus, a student should not assume they are no longer registered for a course simply because they did not attend class during the first week. It is the student's responsibility to be aware of their registration status.

Final Exam Make-up Policy: The final exam schedule listed in the Schedule of Classes will be strictly followed. Except to resolve those situations described below, no changes may be made in this schedule without prior approval of the Dean of the College of Liberal Arts and Sciences. Under this schedule, if a conflict occurs, or a student has more than three exams on one day, the instructors may be consulted about an individual schedule adjustment. If necessary, the matter may be pursued further with the appropriate dean(s). This procedure applies to conflicts among any combination of Downtown Phoenix campus, Tempe campus, Polytechnic campus, West campus, and/or off campus class. Make-up exams will NOT be given for reasons of a non-refundable airline tickets, vacation plans, work schedules, weddings, family reunions, and other such activities. Students should consult the final exam schedule before making end-of-semester travel plans.

Disability Accommodations: If you have a disability that needs accommodating, please report this privately to the instructor by the end of the first week of class. You should also contact the Disability Resource Center at (480) 965-1234 (voice) or (480) 9659000 (TTY). All efforts will be made to ensure you have equal opportunity to succeed in the course.

Note: This syllabus is tentative and should not be considered definitive. The instructor reserves the right to modify it (including the dates of the tests) to meet the needs of the class. It is the student responsibility to attend class regularly and to make note of any change. The Instructor also reserves the right to create class policies in regards to homework due date, late assignments, etc.

Suggested Practice Problems

Section	Problems from Book
5.5	1-19 odd, 33, 35, 37, 39, 40, 45, 46, 48
6.1	1, 2, 5, 9-12, 17, 20, 22, 23
6.2	2, 4, 5, 7, 9, 17, 18, 19, 20, 39-44
6.3	1-3, 7-10, 15, 17, 19, 21, 23
6.4	3-6, 10, 19, 21
6.5	1, 2, 3, 8, 15, 29, 33
6.6	3, 5, 6, 8, 9, 13, 16, 17, 21, 23, 24, 30, 32
7.1	1-4, 8, 9, 12, 15, 29
7.2	2-5, 9, 12, 13, 14, 32, 33, 38, 41, 42, 43
7.3	2-6, 10, 11, 15, 17
7.4	2, 3, 7, 9, 12, 15
7.6	1, 2, 5, 6, 9, 10, 12, 15, 16, 17, 18
8.1	3, 4, 6, 8, 9, 11, 14, 17, 18, 24, 27, 29
8.2	7-10, 15, 18, 21, 25, 26, 31, 32, 39
8.4	2, 19, 20, 21, 24, 25, 26
8.5	3, 5, 7, 8, 9, 11, 14, 15, 18
8.6	3-8, 13, 15, 16, 26, 28, 29
8.7	2, 4-7, 11-14, 18, 23- 25, 27, 32, 36, 37, 41, 47, 48, 52, 53, 54
8.8	3, 6, 7 (optional section)
9.1	5-8, 11-18
9.2	3-5, 9-11, 13, 14, 16, 17, 18, 26, 28, 29, 37, 39
9.3	3, 5, 7, 10, 13, 16, 17, 46, 47, 49, 51, 52
9.4	1, 2, 5-8, 11, 15, 33, 34, 35

Tentative Lecture and Test Schedule

Week Of	Section(s)	Concepts
Aug 13	5.1 - 5.4	Introduction; Review of the Definite and Indefinite Integral
Aug 20	5.5, 6.1	Substitution, Integration by Parts
Aug 27	6.2, 6.3	Trigonometric Integrals and Substitutions, Partial Fractions
Sep 3	6.4, 6.5	Integration with Tables & CAS, Numerical Integration Holiday Monday 09/03
Sep 10	6.6	Improper Integrals, Test 1 Review
Sep 17	7.1	Area Between Curves Test 1 Thursday 9/20 (In Class)
Sep 24	7.2, 7.3	Volumes (Slicing, Disks and Washers), Volume (Shells)
Oct 1	7.4, 7.6, 8.1	Arc Length, Applications to Physics and Engineering (Work), Sequences
Oct 8	8.1, 8.2, 8.4	Sequences (cont.), Series, Convergence Tests (Ratio Test) Fall Break 10/06 – 10/09
Oct 15	8.4	Convergence Tests, Test 2 Review, Power Series Test 2 Thursday 10/18 (In Class)
Oct 22	8.5, 8.7	Representing Functions as Power Series, Taylor and Maclaurin Series
Oct 29	8.7, 9.1	Taylor and Maclaurin Series, Parametric Curves, Calculus with Parametric Curves
Nov 5	9.2	Calculus with Parametric Curves
Nov 12	9.2	Calculus with Parametric Curves (cont'd), Test 3 Review Holiday Monday 11/10, Test 3 Thursday 11/15
Nov 19	9.3	Polar Curves, Tangents to Polar Curves Thanksgiving break 11/22 – 11/23
Nov 26	9.4	Areas and Lengths in Polar Coordinates, Final Exam Review
Dec 3		Final Exam: Tuesday, Dec 5. 7:10PM – 9:00PM (Room TBA)