Calculus for Engineers II - MAT 266, §72320
(Fall 2017)
Class Day/Time: M W F, 8:35AM - 9:25AM
Location: EDB L1-20

SCHOOL OF MATHEMATICAL & STATISTICAL SCIENCES
ARIZONA STATE UNIVERSITY

Last Revision Date: August 23, 2017

Instructor: Joseph Wells
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Course Website: www.blackboard.asu.edu
Instructor Website: joedub.net
Office Location: WXLR 434
Office Hours: Mon 10:30AM - 12:00PM, Wed 10:30AM - 12:00PM, or by appointment
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 5	TBD

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.

Assignments	*Percentage of Final Grade*
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.

Percentage	*Letter Grade*	*Percentage*	*Letter Grade*
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 Simpsons 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.

Textbook: You must read each section of the textbook before it is covered in class.

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-nspire & 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- nspire CAS cannot be used in class or during an exam.

Online Homework: You will also have online homework through WeBWorK. To access it, click on your instructor's name at `webwork.asu.edu`. If you have not been imported into the WeBWorK roster, it is your responsibility to notify your instructor of that fact. Failure or delay in doing so will not entitle you to time extensions. *Murphy's Law of online homework systems* is that something always happens on the evening of the due date. You should start working on homework assignments on the day the material was covered in class, and finish well before the due date. Failing to do this will not entitle you to a time extension in case of a server breakdown, broken computer, or personal emergency.

Quizzes: In an attempt to give feedback on written work and ensure the WeBWorK is being completed in a timely fashion, you can expect one short quizzes each week, typically at the beginning of class, but the instructor reserves the right to administer them at any time during the class period.

Exams: There will be three midterm exams given during the semester. They will be taken in the classroom on the dates indicated on page 1. For practice and preparation, there are sample exams at `https://math.asu.edu/resources/math-courses/mat266`

Exam Calculator Policy: It is your responsibility to bring a permitted graphing calculator to the exam. Your teacher will not be able to supply you with a calculator if you do not bring yours. You cannot share a calculator with another student who is also taking the test. Your calculator memory may be viewed during any exam and will be cleared if anything suspicious is written therein. The instructor has the right to regard any suspicious material in your calculator memory as cheating.

Exam Communications Policy: All internet-capable devices must be turned off and be made inaccessible during all exams. Anyone who accesses such a device during an exam for any reason will receive a score of 0 for that exam and possible further disciplinary measures.

Exam Bathroom Breaks Policy: You are not permitted to go to the bathroom during midterm exams. Please use the restroom before you start your exam. If you go to the bathroom during the exam, that ends your testing period. If you have a medical condition that may require you to go to the bathroom during exams, you must provide documentation to your instructor in advance. On the final exam, you are permitted one bathroom break and must leave your cell phone in the classroom. A proctor will escort you to the bathroom.

Exam Make-up Policy: Make-up 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**. Notify your instructor directly or call the Math Department Office (480-965-3951) and leave a message. There are no exam retakes or "corrections". No lowest exam score will be dropped. You will not receive extra credit assignments to erase the consequences of a bad exam.

Exam Reviews: You have a textbook with literally hundreds of exercises similar to those covered in lecture and on homework - use it (a selection of practice exercises can be found on page 6 of this syllabus). Math is not a spectator sport, so the more exercises you do, the better you'll internalize the material. Additionally, reviews and old exams are posted on the school's website at `https://math.asu.edu/resources/math-courses/mat266`

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 Math Tutoring Center North - WXLR 116, South - BAC 16. For hours, see `math.asu.edu/mathtutors`
- The Engineering Tutoring Center (free of charge). For hours and locations, see `tutoring.engineering.asu.edu`
- 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.

The School of Mathematical and Statistical Sciences Policies and Procedures

Attendence: 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 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 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.

Athletic Scheduling: 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.

Students with Disabilities: Disability Accommodations: Qualified students with disabilities who will require disability accommodations in this class are encouraged to make their requests to me at the beginning of the semester either during office hours or by appointment. Note: Prior to receiving disability accommodations, verification of eligibility from the Disability Resource Center (DRC) is required. Disability information is confidential.Arrangements for any religious observances or ASU sanctioned activity must be arranged with the instructor at least one week prior to the event.

Establishing Eligibility for Disability Accommodations: Students who feel they will need disability accommodations in this class but have not registered with the Disability Resource Center (DRC) should contact DRC immediately. Their office is located on the first floor of the Matthews Center Building. DRC staff can also be reached at: 480-965- 1234 (V), 480-965- 9000 (TTY). For additional information, visit: `www.asu.edu/studentaffairs/ed/drc`. Their hours are 8:00 AM to 5:00 PM, Monday through Friday.

Policy on Threatening Behavior: All incidents and allegations of violent or threatening conduct by an ASU student (whether on-or off campus) must be reported to the ASU Police Department (ASU PD) and the Office of the Dean of Students. If either office determines that the behavior poses or has posed a serious threat to personal safety or to the welfare of the campus, the student will not be permitted to return to campus or reside in any ASU residence hall until an appropriate threat assessment has been completed and, if necessary, conditions for return are imposed. ASU PD, the Office of the Dean of Students, and other appropriate offices will coordinate the assessment in light of the relevant circumstances.

Classroom Behavior: Make sure you arrive on time for class. Excessive tardiness will be subject to sanctions. Under no circumstances should you allow your cell phone to ring during class. Any disruptive behavior, which includes ringing cell phones, listening to your mp3/iPod player, text messaging, constant talking, eating food noisily, reading a newspaper will not be tolerated. The use of laptops (unless for lecture note taking), cell phones, MP3, IPOD, etc are strictly prohibited during class. Students who engage in disruptive classroom behavior may be subject to various sanctions. The procedures for initiating a disruptive behavior withdrawal can be found at `http://clas.asu.edu/classroom/disruptive`.

Academic Dishonesty: 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 elses expectations constitutes academic dishonesty.

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.

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: November 2, 2017**
- **Complete Withdrawal Deadline: December 2, 2017**

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 pursed 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.

Absences Related to Religious Observances/Practices: If you will be absent from class due to a religious observance or practice, it is your responsibility to inform the instructor during the first week of class. Your instructor will work with you on alternative and reasonable arrangements for any time missed.

Absences Related to University Sanctioned Events and Activities: If you will be absent from class due to participation in a university sanctioned event/activity, it is your responsibility to inform the instructor during the first week of class. Your instructor will work with you on alternative and reasonable arrangements for any time missed.

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 14	5.1 - 5.4	Introduction; Review of the Definite and Indefinite Integral
Aug 21	5.5, 6.1	Substitution, Integration by Parts
Aug 28	6.2, 6.3	Trigonometric Integrals and Substitutions, Partial Fractions
Sep 4	6.4, 6.5	Integration with Tables & CAS, Numerical Integration **Holiday Monday 09/04**
Sep 11	6.6	Improper Integrals, Test 1 Review
Sep 18	7.1	Area Between Curves **Test 1 Wednesday 9/20 (In Class)**
Sep 25	7.2, 7.3	Volumes (Slicing, Disks and Washers), Volume (Shells)
Oct 2	7.4, 7.6, 8.1	Arc Length, Applications to Physics and Engineering (Work), Sequences
Oct 9	8.1, 8.2, 8.4	Sequences (cont.), Series, Convergence Tests (Ratio Test) **Fall Break 10/9 - 10/10**
Oct 16	8.4, 8.5	Convergence Tests, Test 2 Review, Power Series **Test 2 Wednesday 10/18 (In Class)**
Oct 23	8.6, 8.7	Representing Functions as Power Series, Taylor and Maclaurin Series
Oct 30	8.7, 9.1	Taylor and Maclaurin Series, Parametric Curves, Calculus with Parametric Curves
Nov 6	9.2	Calculus with Parametric Curves **Holiday Friday 11/10**
Nov 13	9.2	Calculus with Parametric Curves (cont'd), Test 3 Review **Test 3 Wednesday 11/15**
Nov 20	9.3	Polar Curves, Tangents to Polar Curves **Thanksgiving break 11/23 - 11/24**
Nov 27	9.4	Areas and Lengths in Polar Coordinates, Final Exam Review
		Final Exam: Tuesday, Dec 5. 7:10PM - 9:00PM (Room TBA)