

Penn State University - University Park
MATH 140, Calculus with Analytic Geometry I
Fall 2009

CATALOG DESCRIPTION: MATH 140 (GQ) CALCULUS WITH ANALYTIC GEOMETRY I (4 semester hours)

Functions, limits; analytic geometry; derivatives, differentials, applications; integrals, applications. Students may only take one course for credit from MATH 110, 140, 140A, 140B, 140E, 140G, and 140H.

PREREQUISITE: Math 22 AND 26; or Math 40 or Math 41; or satisfactory performance on the algebra and trigonometry math proficiency examination.

TEXT: Calculus (Single Variable), Sixth Edition, (OR) Calculus, Sixth Edition, by James Stewart, published by Thomson (Brooks/Cole). An electronic version of the text (e-text) is available chapter by chapter through <http://pennstate.ichaptersites.com>

COURSE FORMAT: There are four 50-minute lectures each week. The sections covered in lectures are listed at the end of this syllabus

MATH 140 LEARNING OBJECTIVES :

Upon successful completion of Math 140, the student should be able to:

1. Calculate or estimate limits of functions given by formulas, graphs, or tables.
2. Determine whether a function given by a graph or formula is continuous at a given point or on a given interval or on its domain.
3. Determine whether a function given by a graph or formula is differentiable at a given point or on a given interval.
4. Distinguish between average and instantaneous rate of change and interpret the definition of the derivative graphically.
5. Determine derivatives of some functions using the limit definition of the derivative.
6. Calculate derivatives of polynomial, rational, and common transcendental functions, and combinations of these functions.
7. Calculate derivatives of composite functions.
8. Calculate derivatives of implicitly defined functions.
9. Give examples to illustrate important theorems.
(Intermediate Value Thm, Rolle's Thm, Mean Value Thm, Extreme Value Thm, Squeeze Thm)
10. Apply the ideas and techniques of derivatives to related rate problems.
11. Apply the ideas and techniques of derivatives to finding local and absolute extrema.
12. Apply the ideas and techniques of derivatives to graphing functions.
13. Apply the ideas and techniques of derivatives to optimization problems.
14. Find linear approximations of functions (differentials).
15. Calculate the Riemann sum for a given function and partition.
16. Describe a definite integral as the limit of a Riemann sum.
17. Determine antiderivatives of some algebraic functions and some trigonometric functions.
18. Calculate values of definite integrals using antiderivatives and areas.
19. Use the Fundamental Theorem of Calculus to determine the derivative of an integral.
20. Use the Fundamental Theorem of Calculus to evaluate definite integrals.
21. Apply substitution techniques to integrate functions.
22. Apply the ideas of definite integrals to calculate the area of a region between curves.
23. Apply the ideas of definite integrals to calculate the volume of a solid of revolution rotated about a coordinate axis.
24. Apply the ideas of definite integrals to calculate the volume of a solid of revolution rotated about a line parallel to a coordinate axis.

CALCULATORS: A graphics calculator is useful as a study and learning tool when used appropriately, but it is not essential. Calculus is a collection of ideas that are not mastered through calculator skills. No calculators are allowed on quizzes, midterms, or on the final examination.

TUTORS AND MATH CENTER: Free mathematics tutoring is available at Penn State Learning located in 220 Boucke Building. For more information, go to the [PSU Learning](#) webpage. If you need extra help, a (paid) [tutors list](#) maintained by the Mathematics Department Undergraduate Office is available.

EXAMINATIONS: Two 75-minute evening examinations will be given during the semester and a comprehensive final examination will be given during the final examination period. NO books, notes, or calculators may be used on the examinations. You must bring your University ID card to all exams. The examinations will be given from 6:30 to 7:45 PM on the following dates:

Midterm Examination I	Monday, October 5
Midterm Examination II	Thursday, November 5

Rooms for examinations will be announced by your instructor at a later date and may also be found on the [Courses](#) website

CONFLICT EXAMINATIONS: For the two mid-semester examinations, there is a conflict examination from 5:05 to 6:20 PM on the same night as the regular examination.

Who may take the Conflict Exam? If you have a valid conflict with the regular examination time, such as a class or other scheduled activity, you may sign up for the conflict exam.

How and when to sign up for the Conflict Exam. Students must sign up for the Conflict Exam **in class, with your instructor, on a pink form**. The student is responsible for knowing the room and time of the conflict examination. This information is on the pink form. Your instructor must turn in the pink form 2 class days prior to the examination date. If you have not signed up with your instructor, you will not be allowed to take the conflict exam.

Instructions on Conflict Exam night. The student is responsible for knowing the room and time of the conflict examination. **Students must bring their University ID to the conflict examination.** The ID will be checked by the proctor. **Although the conflict examination will end at 6:20 PM, no student will be permitted to leave the examination room before 6:25 PM.** Any student who leaves before 6:25 PM will receive a grade of zero on the examination and will not be allowed to retake it.

MAKEUP EXAMINATIONS: A makeup exam will be given about a week following the regularly scheduled exam.

Who may take the makeup exam? Students who have a valid documented reason, such as a class conflict or illness, during both the conflict and regular examination times are permitted to schedule a makeup examination with no penalty. You must be prepared to verify the reason for taking the makeup. Students who do not have a valid reason for missing the examination, such as forgetting the date, time, or room of an examination, or attending Greek rush events, are permitted to schedule the makeup, but 20 points will be deducted from their score. Students who have taken either the regularly scheduled examination or conflict examination are not permitted to take the makeup examination. Students who have not signed up for the makeup exam 2 days prior to the exam date will not be allowed to take the exam. The makeup examinations are given from 6:30 to 7:45 PM on the evenings listed below:

Makeup Examination I	Tuesday, October 13
Makeup Examination II	Wednesday, November 11

How and when to sign up for the Makeup Exam. Students must sign up for the Makeup Exam **in class, with your instructor, on a yellow form**, as soon as possible following the regular exam date. The student is responsible for knowing the room and time of the makeup examination. This information is on the yellow form. Your instructor must turn in the yellow form 2 class days prior to the examination date. If you have not signed up with your instructor, you will not be allowed to take the makeup exam.

Instructions on Makeup Exam night. The student is responsible for knowing the room and time of the makeup examination. On the day of the exam the room will be posted on the door of 104 McAllister. **Students must bring their University ID to the makeup examination.** The ID will be checked by the proctor.

What if a student misses both the regularly scheduled exam and the makeup exam? If a student misses both the regularly scheduled examination and the scheduled makeup due to a valid, verifiable reason, it may be possible to take a makeup examination by appointment. All such makeup examinations must be scheduled through the instructor with the approval of the course coordinator and must be completed no later than one week after the scheduled makeup examination.

FINAL EXAMINATION: The final examination will be given during the week, December 14-18, 2009. **The final examination may be scheduled on any day during the final examination period. Do not plan to leave University Park until after Fri, December 18, 2009.** Students may access their final exam schedule Monday, September 28, through their e-lion account. Notification of conflicts is given on the student's final exam schedule. There are two types of conflict examinations, direct and overload. Direct conflicts are two examinations scheduled at the same time. Overload examinations are three or more examinations scheduled within a fifteen hour period, from the beginning of the first examination to the beginning of the third examination. Students may elect to take the three or more examinations on the same day if they wish or request a conflict final examination. **A student must take action to request a conflict exam through e-lion between September 28 and October 18, 2009. Conflict final examinations cannot be scheduled through mathematics department, and there will be no sign up sheet in 104 McAllister for the final conflict examination.** Students who miss both the regular and conflict final examinations due to a valid and documented reason, such as illness, may be allowed to take a makeup final examination. If the student does not have a valid reason, at least a 30-point penalty will be imposed. All such makeup examinations must be arranged through the instructor with the approval of the course coordinator, and students in such a situation should contact their instructor within 24 hours of the scheduled final examination. Students who have taken the original final examination are not permitted to take a makeup examination.

LATE-DROP: Students may add/drop a course without academic penalty within the first ten calendar days of the semester. A student may late drop a course within the first twelve weeks of the semester but accrues late drop credits equal to the number of credits in the dropped course. A baccalaureate student is limited to 16 late drop credits. The late drop deadline for Fall 2009 is **November 13, 2009.**

GRADES: Your course grade will be determined by your exam scores and a homework/quiz score (labeled "QZ" by Testing Services).

Total possible points follow:

Examination I	100
Examination II	100
Homework and/or quizzes	100
Final Examination	150
Total	450

The exact point requirements for each letter grade will be decided at the end of the course.

A typical distribution follows:

Grade	%-score	Points
A, A-	90-100	405-450
B+, B, B-	80-89	360-404
C+, C	70-79	315-359
D	60-69	270-314
F	0-59	0-269

After the second exam and before the late-drop deadline the guaranteed grade-line cutoffs for the major grades (A, B, C, D, F) will be provided to facilitate planning for the rest of the semester. The +/- grade-lines will be assigned after the final exam. The unavoidable consequence is that some students are just "a point" away from the higher grade. For the reason of fairness, the policy in this course is to NOT adjust individual grades in such circumstances.

NOTE: Your grade will be based **EXCLUSIVELY** on the midterm examinations, homework and/or quizzes and final examination. **There is no "extra-credit" work.**

DEFERRED GRADES: Students who are unable to complete the course because of illness or emergency may be granted a deferred grade which will allow the student to complete the course within the first six weeks of the following semester. Note that deferred grades are limited to those students who can verify and document a valid reason for not being able to take the final examination. For more information see [DF grade](#).