

Penn State University - University Park
MATH 140, Calculus with Analytic Geometry I
Fall 2010

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 4
Midterm Examination II	Wednesday, November 3

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. **Personal business such as travel, employment, weddings, graduations, or attendance at public events such as concerts, sporting events, and Greek Rush events are not valid excuses. Forgetting the date, time or room of an examination is not a valid excuse.** Students who do not have a valid reason for missing the examination 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. The makeup examinations are given from 6:30 to 7:45 PM on the evenings listed below:

Makeup Examination I	Tuesday, October 12
Makeup Examination II	Tuesday, November 9

How and when to sign up for the Makeup Exam. Students who are ill on exam night must contact their instructor within 24 hours of the 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. **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 13-17, 2010. 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 17, 2009. Students may access their final exam schedule Monday, September 27, 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 27 and October 17, 2010.** 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 or cannot take the final examination due to a valid and documented reason, such as illness, may be allowed to take a makeup final examination. **Personal business, such as travel, employment, weddings, graduations, or attendance at public events such, as concerts, sporting events are not valid excuses.** Forgetting the date, time, or room of an examination is not a valid excuse. 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.

COURSE GRADES: Grades will be assigned on the basis of 450 points, distributed as follows:

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

Final course grades will be assigned as follows:

A	415-450 POINTS
A-	405-414 POINTS
B+	395-404 POINTS
B	370-394 POINTS
B-	360-369 POINTS
C+	350-359 POINTS
C	315-349 POINTS
D	270-314 POINTS
F	000-269 POINTS

After the second exam and before the late-drop deadline the guaranteed grade-line cutoffs will be provided to facilitate your planning for the rest of the semester. 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.