

MATH 16500 Analytic Geometry & Calculus

Prerequisite: 15900 or 15400 (minimum grade of C) or equivalent, and one year of high school geometry..

Course Description: Introduction to differential and integral calculus of one variable, with applications.

Objectives: Students should gain a thorough understanding of the basic concepts of Calculus of one variable. This includes limits, derivatives of functions and their applications, the definition of the integral, the Fundamental Theorem of Calculus, and some applications of integration.

Textbook: James Stewart, Calculus, Thomson Brooks/Cole.

Content:

- 1.3. New Functions from Old Functions
- 1.4. The Tangent and Velocity Problems
- 1.5. The Limit of a Function
- 1.6. Calculating Limits Using the Limit Laws
- 1.7. The Precise Definition of a Limit
- 1.8. Continuity
- 2.1. Derivatives and Rates of Change
- 2.2. The Derivative as a Function.
- 2.3. Differentiation Formulas
- 2.4. Derivatives of Trigonometric Functions
- 2.5. The Chain Rule
- 2.6. Implicit Differentiation
- 2.7. Rates of Change in the Natural and Social Sciences
- 2.8. Related Rates
- 2.9. Linear Approximations and Differentials
- 3.1. Maximum and Minimum Values
- 3.2. The Mean Value Theorem
- 3.3. How Derivatives Affect the Shape of a Graph
- 3.4. Limits at Infinity; Horizontal Asymptotes
- 3.5. Summary of Curve Sketching
- 3.7. Optimization Problems
- 3.8. Newton's Method
- 3.9. Antiderivatives
- 4.1. Areas and Distances
- 4.2. The definite Integral
- 4.3. The Fundamental Theorem of Calculus
- 4.4. Indefinite Integrals and the Net Change Theorem
- 4.5. The Substitution Rule
- 5.1. Areas Between Curves
- 5.2. Volumes
- 5.3. Volumes by Cylindrical Shells

5.4. Work

5.5. Average Value of a Function

Calculator Policy: no calculators or other forms of technology can be used on in-class, closed-books assessments (quizzes, tests, final)

Attendance: Attendance is critical for success in this course and is required of all students without exception. A student absent from class is responsible for all material covered that day. Please see Administrative Withdrawal section later in this syllabus.

Homework: Homework will not be collected and graded but will be reflected in your quiz grade.

Quizzes/Tests: (400 points); **Final Exam:** 1 (200 points)

Grading Scale:

90-91% A-; 92%-95%, A; 96%-100% A+

75%-79% B-, 80%-84% B, 85%-89% B+

60%-64% C-; 65%-69% C, 70%-74% C+

50%-59% D; 0%-49% F

Department policy states that students must pass the final exam to pass the course.

Course web page: The web page <http://www.math.iupui.edu/courses/> contains practice problems and tests and other helpful information about the course.

Math Assistance Center: Tutoring/mentoring is available in the Math Assistance Center (MAC). The MAC is located in Taylor Hall (UC), Room B001. To find it more about the tutoring/mentoring schedule and other general information about the MAC, check out the MAC web page (<https://mac.iupui.edu/liveHelp.php>).

Email Correspondence: All email correspondence should be sent to university faculty using your university e-mail account and not from a non-university email provider such as yahoo, gmail, Hotmail, etc.

Accommodations: Students needing accommodations because of a disability will need to register with Adaptive Educational Services (AES) and complete the appropriate forms issued by AES before accommodations will be given. The AES office is located in Taylor Hall, UC 100. You can also reach the office by calling 274-3241. Visit <http://aes.iupui.edu/> for more information.

Dishonesty and Student Misconduct: Cheating will result in a minimum penalty of receiving a grade of F in the course. The IUPUI Department of Mathematical Sciences expects all students to adhere to the regulations put forth in the “IUPUI Code of Student Rights, Responsibilities, and Conduct” concerning academic misconduct or personal misconduct. Procedures for imposing academic and disciplinary sanctions are outlined in the Code. The Code can be found at: <http://studentcode.iu.edu/>

Campus-Wide Policies Governing the Conduct of Courses at IUPUI: These can be found at http://registrar.iupui.edu/course_policies.html, with links to specific policies in the general areas of attendance, academic policy, conduct and related policies.

Administrative Withdrawal: A basic requirement of this course is that you will participate in all class meetings and conscientiously complete all required course activities and/or assignments. Keep in touch with me if you are unable to attend, participate, or complete an assignment on time. If you miss more than half of the required activities within the first 25% of the course without contacting me, you may be administratively withdrawn from this course. Administrative withdrawal may have academic, financial, and financial aid implications. Administrative withdrawal will take place after the full refund period, and if you are administratively withdrawn from the course you will not be eligible for a tuition refund. If you have questions about the administrative withdrawal policy at any point during the semester, please contact me.

Incompletes: Grades of Incomplete will only be given in accordance with the university policy available at <http://www.registrar.iupui.edu/incomp.html>. Specifically, students must be passing at the 3/4 mark of the semester to qualify for assigning an incomplete. The instructor must agree that an incomplete is appropriate and it must be approved by the Associate Chair of the Department of Mathematical Sciences.