

MATH 16600 Analytic Geometry & Calculus

Prerequisite: 16500 (minimum grade of C-) or equivalent.

Course Description: Continuation of MATH 16500. Inverse functions, exponential, logarithmic, and inverse trigonometric functions. Techniques of integration, applications of integration, differential equations, and infinite series.

Objectives: Students will build on their understanding of the concepts of Calculus of one variable covered in Math 16500. Their use of the basic concepts should be broadened to include the exponential, logarithmic, and inverse trigonometric functions and the use of parametric equations and polar coordinates. Applications of integration and techniques of integration will be developed more fully. Finally, students should develop broader understanding of limit concepts such as improper integrals and convergence of sequences and series.

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

Content:

- 6.1. Inverse Functions
- 6.2. Exponential Functions and Their Derivatives
- 6.3. Logarithmic Functions
- 6.4. Derivatives of Logarithmic Functions
- 6.5. Exponential Growth and Decay
- 6.6. Inverse Trigonometric Functions
- 6.7. Hyperbolic Functions
- 6.8. Indeterminate Forms and l'Hospital's Rule.
- 7.1. Integration by Parts
- 7.2. Trigonometric Integrals
- 7.3. Trigonometric Substitution
- 7.4. Integration of Rational Functions by Partial Fractions
- 7.5. Approximate Integration
- 7.6. Integration Using Tables and Computer Algebra Systems
- 7.7. Approximate Integration
- 7.8. Improper Integrals
- 8.1. Arc Length
- 8.2. Area of a Surface of Revolution
- 8.3. Applications to Physics and Engineering
- 10.1. Curves Defined by Parametric Equations
- 10.2. Calculus with Parametric Curves
- 10.3. Polar Coordinates
- 10.4. Areas and Lengths in Polar Coordinates
- 11.1. Sequences
- 11.2. Series
- 11.3. The Integral Test and Estimates of Sums
- 11.4. The Comparison Tests
- 11.5. Alternating Series
- 11.6. Absolute Convergence and the Ratio and Root Tests

- 11.7. Strategy for Testing Series
- 11.8. Power Series
- 11.9. Representations of Functions as Power Series
- 11.10. Taylor and Maclaurin Series

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 (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 (<http://www.math.iupui.edu/mac/>).

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://www.iupui.edu/code/>

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.