

MATH - 22100

Course Syllabus

General Information

Text:	Peter Kuhfittig, Technical Calculus with Analytic Geometry, 5th Edition. 4th Edition will be permitted for FALL 2013 ONLY
Calculator	Calculator is not necessary and hence NOT allowed for closed book quizzes, tests and the Final Exam
Prerequisites:	Math 15300-15400

Course Objective

The objective of Math 22100 is to provide a solid, practical, working knowledge of calculus and its applications to various scientific and technical fields.

This course has a DEPARTMENTAL FINAL EXAM

This course includes several MATLAB assignments

Additional information can be found on the Math Home Page

<http://www.math.iupui.edu>

Course Outline

1. Introduction to Functions
2. Limits
3. The Derivative as the Slope of a Tangent Line
4. The Derivative as an Instantaneous Rate of Change
5. Derivatives of Polynomials, Products and Quotients of Functions
6. Derivative of a Power of a Function
7. Differentiation of Implicit Functions
8. Higher Derivatives

9. Tangent and Normals
10. Using Derivatives in Curve Sketching
11. Applied Maximum and Minimum Problems
12. The Trigonometric Functions
13. Basic Trigonometric Relations
14. Derivatives of the Trigonometric Functions
15. The Inverse Trigonometric Functions
16. Derivatives of the Inverse Trigonometric Functions
17. Derivatives of the Logarithmic and Exponential Functions
18. Applications
19. Newton's Method for Solving Equations
20. Differentials and Linear Approximations
21. Antiderivatives
22. The Area Problem
23. The Definite Integral
24. The Indefinite Integral
25. The Fundamental Theorem of the Calculus
26. Basic Integration Formulas
27. Improper Integral with infinite limits
28. Numerical Integration: The Trapezoidal Rule and Simpson's Rule
29. Areas by Integration
30. Volume by Integration