



MASTER COURSE OUTLINE

Prepared By:

Date: September 2017

COURSE TITLE

Calculus II

GENERAL COURSE INFORMATION

Dept.: MATH&

Course Num: 152

(Formerly: MATH 172)

CIP Code: 27.0103

Intent Code: 11

Program Code:

Credits: 5

Total Contact Hrs Per Qtr.: 55

Lecture Hrs: 55

Lab Hrs: 0

Other Hrs: 0

Distribution Designation: Math Science MS, Symbolic or Quantitative Reasoning SQR

COURSE DESCRIPTION (as it will appear in the catalog)

This course will expand on the applications and techniques of differentiation learned in the first quarter and give a depth study of integration including the fundamental methods of integrating elementary algebraic and transcendental functions. It will include the applications of the calculus to transcendental functions, analytical geometry and other relevant topics.

PREREQUISITES

MATH&151 or instructor permission

TEXTBOOK GUIDELINES

Appropriate college level text as chosen by instructor.

COURSE LEARNING OUTCOMES

Upon successful completion of the course, students should be able to demonstrate the following knowledge or skills:

1. Use appropriate methodology to compute definite and indefinite integrals, including improper integrals
2. Use integrals to compute geometric and physical properties
3. Use integrals to model and solve problems in physics

INSTITUTIONAL OUTCOMES

IO2 Quantitative Reasoning: Students will be able to reason mathematically.

COURSE CONTENT OUTLINE

1. Riemann Sums and Definite Integrals
2. Basic Properties, Area, and the Mean Value Theorem for Integrals
3. The Fundamental Theorem of Calculus
4. Indefinite Integrals
5. Integration by Substitution
6. Exponential Functions and the Derivative of e^x
7. Inverse Functions and Their Derivatives

8. Logarithmic Functions and the Derivative of $\ln x$
9. Exponential and Logarithmic Integrals
10. L'Hopital's Rule
11. Inverse Trigonometric Functions
12. Integrals of Inverse Trigonometric Functions;
13. Areas Between Curves
14. Volumes of Solids of Revolution -Disks and Washers
15. Cylindrical Shells -An Alternative to Washers
16. Curve Length and Surface Area
17. Work
18. Fluid Pressures and Fluid Forces
19. Centers of Mass
20. Basic Integration Formulas
21. Integration by Parts
22. Partial Fractions
23. Trigonometric Substitutions
24. Integral Tables
25. Improper Integrals
26. Introduction to Double Integrals

DEPARTMENTAL GUIDELINES (*optional*)

In order to give the instructor the greatest flexibility in assigning a grade for the course, grades will be based on various instruments at the instructor's discretion. However, to maintain instructional integrity there must be four class exams or three class exams and a project. A final exam will be given if there are less than four exams or a project may be substituted for the final exam if there are four in-class exams. At least 60% of the grade will be based on quantifiable work (exams, homework, quizzes, etc.). The remaining portion of the grade may be based on quantifiable work, attendance, projects, journal work, etc., at the instructor's discretion.

The following is a compilation of acceptable grading instruments: In class exams and a final, attendance, homework or quizzes, research paper, modeling projects on the calculator or computer. Other projects or assignments may be assigned as deemed appropriate at the instructor's discretion.

DIVISION CHAIR APPROVAL

DATE