IMPERIAL COMMUNITY COLLEGE DISTRICT
IMPERIAL VALLEY COLLEGE

COURSE OUTLINE

DIVISION: Science, Mathematics and Engineering **DATE:** September 2006

COURSE TITLE: Calculus II **COURSE NO.:** MATH 194

UNITS: 5

LEC HRS. 5 **LAB HRS.** _____ **HRS. TBA**

If cross-referenced, please complete the following

COURSE NO.(s) _____ **COURSE TITLE**

I. COURSE/CATALOG DESCRIPTION:

Concepts dealing with integration applications, methods of integration, infinite series, plane analytic geometry, parametric equations, and polar coordinates.

II. A. PREREQUISITES, if any:

MATH 192 with a grade of "C" or better.

B. COREQUISITES, if any:

C. RECOMMENDED PREPARATION, if any:

III. GRADING CRITERIA:

X Course must be taken on a "letter-grade" basis only.

_____ Course may be taken on a "credit" basis or for a letter grade.

_____ Course must be taken on a "credit" basis only.

IV. MEASURABLE COURSE OBJECTIVES AND MINIMUM STANDARDS FOR GRADE OF "C":

1. The student will demonstrate the ability to solve many problems in diverse areas, in a step-by-step manner, when dealing with applications of integration.

2. The student will demonstrate knowledge and understanding of various methods used in mathematical integrations.

3. The student will be introduced to various indeterminate forms and be able to evaluate improper integrals.

4. The student will recognize infinite sequences and infinite series and will apply various tests for convergence determination.

5. The student will demonstrate knowledge in series expansion and the concept of power series.

6. The student will learn and distinguish the various types of conic sections.

7. The student will demonstrate knowledge of the polar system of coordinates and its use in applications.

V. CORE CONTENT TO BE COVERED IN ALL SECTIONS:

CORE CONTENT	APPROX. % OF COURSE
1. Applications of the definite integral A. Calculating volumes by slicing B. Calculating volumes by the method of cylindrical shells C. Arc length and surface area D. Distance and velocity E. Hydrostatic pressure F. Work G. Moments and centers of gravity H. The Theorems of Pappus	25%
2. Techniques of integration A. Integration by parts B. Trigonometric substitutions C. Integrals involving quadratic expressions D. The method of partial fractions E. Miscellaneous substitutions F. The use of integral tables	15%
3. l'Hopital's Rule and Improper Integrals A. Indeterminate forms: l'Hopitals Rule B. Other indeterminate forms C. Improper integrals	10%
4. The Theory of Infinite Series A. Infinite sequences B. More on infinite sequences C. Infinite series D. The integral test E. The comparison test F. The ratio and root tests G. Absolute and conditional convergence	15%
5. Taylor Polynomials and Power Series A. The approximation problem and Taylor polynomials B. Taylor's Theorem C. Applications of Taylor's Theorem D. Power series E. Differentiation and Integration of Power Series F. Taylor and Maclaurin series	10%
6. The Conic sections A. The Parabola B. The Ellipse C. The Hyperbola D. Rotation of Axes	10%
7. Polar Coordinates and Parametric Equations A. The polar system coordinates B. Graphing techniques for polar equations C. Calculating area in polar coordinates D. Parametric equations	15%

VI. METHOD OF EVALUATION TO DETERMINE IF OBJECTIVES HAVE BEEN MET BY STUDENTS: (check all that apply)

Essay	X	**Class Activity**	X	**Written Assignments**	X
Problem Solving Exercise	X	**Final Exam**	X	**Oral Assignments**	X
Skill Demonstration	X	**Objective**	X	**Quizzes**	X
Other	X				

VII. INSTRUCTIONAL METHODOLOGY: (Check all that apply)

Lecture	X	**Discussion**	X	**Demonstration**	X
Audio Visual	X	**Group Activity**	X	**Lab Activity**	X
Computer Assisted Instruction	X	**Individual Assistance**	**Simulation/** X	**Case Study**	X
On-Line	X				

Two (2) hours of independent work done out of class per each hour of lecture or class work, or 3 hours lab, practicum, or the equivalent per unit. _____

Other

VII. REQUIRED AND MAJOR OPTIONAL READING(S), INCLUDING TEXTBOOK(S) AND SOFTWARE

Larson, R., Hostetler, R. and Edwards, B. *Calculus of a Single Variable*. 8th edition. Houghton Mifflin, 2006.

Stewart, James. *Calculus.* 5th edition. Brooks/Cole, 2003.

Stewart, James. *Single Variable Calculus: Early Transcendentals*. 5th edition. Brooks/Cole, 2003.

Edwards, C. and Penney, D. *Calculus, Early Transcendentals.* 6th edition. Prentice Hall, 2003.

Strauss, M., Bradley, G. and Smith, K. *Single Variable Calculus.* 3rd edition. Prentice Hall, 2002.

Technology: Graphing Calculators

Journals: *Math Teacher,* NCTM
The College Mathematics Journal, MAA