

PALOMAR COLLEGE
COURSE OUTLINE OF RECORD FOR
DEGREE CREDIT COURSE

 X Transfer Course X A.A. Degree applicable course
(check all that apply)

COURSE NUMBER AND TITLE: MATH 141 - Calculus with Analytic Geometry, Second Course

UNIT VALUE: 4

MINIMUM NUMBER OF SEMESTER HOURS: 64

BASIC SKILLS REQUIREMENTS: Appropriate language and computational skills.

ENTRANCE REQUIREMENTS:

PREREQUISITE: A minimum grade of "C" in MATH 140.

COREQUISITE: None.

RECOMMENDED PREPARATION: None.

SCOPE OF COURSE:

Continuation of MATH 140. Topics include definite integrals and their applications; methods of integration (including the use of modern computational technology as appropriate); indeterminate forms; improper integrals; sequences; infinite series; Taylor series; conic sections; polar coordinate; and parametric equations from analytic, graphic, and numeric perspectives.

SPECIFIC COURSE OBJECTIVES:

The successful student will be able to:

- 1) Apply critical thinking and quantitative reasoning skills to solving mathematical problems with calculus.
- 2) Identify and evaluate limits of indeterminate form.
- 3) Identify and evaluate improper integrals.
- 4) Model and solve application problems with definite integrals.
- 5) Evaluate integrals using a variety of techniques of integration.
- 6) Analyze sequences and infinite series with analytic, geometric, and numeric methods.
- 7) Represent elementary functions with appropriate power series.
- 8) Construct and analyze multiple representations of conic sections.

- 9) Represent functions in the polar coordinate system using analytic, geometric, and numeric perspectives.
- 10) Construct, graph, and use parametric equations.

CONTENT IN TERMS OF SPECIFIC BODY OF KNOWLEDGE:

At least the following topics will be covered:

1. Applications of integration such as area, volume, work, fluid pressure and fluid force, center of mass, arc length and surfaces of revolution.
2. Techniques of integration: integration by parts, trigonometric substitution, integration using partial fractions, indeterminate forms and L'Hopital's Rule, improper integrals.
3. Infinite sequences; infinite series; tests for convergence (integral test, comparison tests, ratio and root tests, and alternating series test); representation of functions by power series, including Taylor series and Maclaurin series with error estimates.
4. Conics: parabolas, ellipses, hyperbolas, rotation of axis and the general second-degree equation.
5. Plane curves and parametric equations: characteristics, graphing, parametric form of derivative, arc length, and definite integral.
6. Polar coordinates: graphing, equivalent expressions in cartesian coordinates and polar coordinates, integration and differentiation of polar curves.
7. Additional topics may be included at instructor's discretion.

REQUIRED READING:

Stewart, James. Single Variable Calculus with Early Transcendentals, 4th Ed.
Pacific Grove: Brooks/Cole, 1999.

Or

Larson, Hostetler, & Edwards. Calculus of a Single Variable, 7th Ed.
Boston: Houghton Mifflin, 2002.

Or

Anton, Howard. Calculus – A New Horizon, 6th Ed.
New York: John Wiley & Sons, Inc., 1999.

SUGGESTED READING: None.

REQUIRED WRITING:

Problem-solving exercises on homework assignments and written tests are more appropriate. In addition, students may be required to write reports from one paragraph to several pages explaining concepts or explaining and interpreting solutions to non-routine or applied problems.

OUTSIDE ASSIGNMENTS:

Students are expected to spend a minimum of three hours per unit per week in class and on outside assignments, prorated for short-term classes.

INSTRUCTIONAL METHODOLOGY:

Check all that apply:

- lecture
- laboratory
- lecture-laboratory combination
- directed study

DISTANCE LEARNING:

This course may be offered as a distance learning course and meets Title 5 regulations 55370, 55372, 55374, 55376, 55378, and 55380.

Yes No

If yes, check all that apply:

- Television Course (Video one-way, e.g. ITV, video cassette, etc.)
- Online Course (Text one-way, e.g. newspaper, correspondence, electronic file, etc.)
- Two-Way Video Conferencing (Two-way interactive video and audio)
- One-Way Video Conferencing (One-way interactive video and two-way interactive audio)
- Computer Assisted Instruction (A specialized form of mediated instruction relying primarily on student access to information and prepared lessons or teaching materials through a computer terminal, but not under immediate supervision of a qualified instructor.)

GRADING POLICY AND STANDARDS (include methods of determining whether the stated objectives have been met by students):

Computation of semester grade may include the following methods of evaluation: In-class exams, ‘take home’ exams, computer lab assignments, homework assignments, essays or other evaluation methods. A comprehensive final exam (in class) is required. For example, the semester grade may be computed as follows:

Written exams	40 - 80%
Comprehensive final	20 - 40%
Homework or other outside assignments	0 - 25%

IS COURSE REPEATABLE FOR REASON(S) OTHER THAN DEFICIENT GRADE?

Yes No Number of times course may be taken for credit: 1

If yes, identify specific provision of Title 5 Division 2 section(s), 55761-55763 and 58161 which qualifies course as repeatable:

CONTACT PERSON: Robert Jones, Ext. 2547.

SIGNATURES ON FILE