

PALOMAR COLLEGE
COURSE OUTLINE OF RECORD FOR
DEGREE CREDIT COURSE

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

COURSE NUMBER AND TITLE: MATH 206 - Calculus with Differential Equations

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 205

COREQUISITE: None

RECOMMENDED PREPARATION: None

SCOPE OF COURSE: A first course in ordinary differential equations from analytic, geometric, numeric and applied perspectives (including the use of modern computational technology as appropriate). Topics include exact, separable, and linear equations; initial-value and boundary-value problems; systems of first-order equations; reduction of order; undetermined coefficients; variation of parameters; series solutions; and Laplace transforms.

SPECIFIC COURSE OBJECTIVES:

The successful student will be able to:

1. Classify and solve first- and second-order differential equations using analytic, geometric, and numeric methods.
2. Model application problems with first- and second-order differential equations.
3. Construct series solutions to differential equations.
4. Solve linear systems of differential equations.
5. Solve second-order differential equations using Laplace transforms.
6. Apply critical thinking and quantitative reasoning skills to advanced mathematical problem solving.

CONTENT IN TERMS OF SPECIFIC BODY OF KNOWLEDGE: At least the following topics will be covered:

1. Classification of differential equations.
2. 1st-order differential equations: exact equations, integrating factors, separable equations, linear equations, Bernoulli equations, homogeneous equations.
3. Applications of 1st-order differential equations.
4. Linear differential equations: linear independence and dependence, Wronskian, existence of solutions, reduction of order, homogeneous equations, undetermined coefficients, variation of parameters.
5. Applications of 2nd-order linear differential equations.
6. Series solutions of linear differential equations: ordinary points, singular points, solutions about ordinary points.
7. The Laplace transform: definition of Laplace transform, basic properties, step functions, translated functions, the inverse transform, the convolution, Laplace transform solution of linear differential equations with constant coefficients, Laplace transform solution of linear systems.
8. Linear systems of differential equations. Solving Linear systems using eigenvectors and eigenvalues.
9. Additional topics may be included at instructor's discretion.

REQUIRED READING:

Boyce, William E., DiPrima, Richard C. Elementary Differential Equations. 7th Edition. New York: John Wiley & Sons, Inc., 2001.

or

Zill, Dennis G., Cullen, Michael R. Differential Equations with Boundary-Value Problems. 5th Edition. Pacific Grove: Brooks/Cole, 2001.

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.

Students are expected to read the text, study lecture notes, and complete daily homework assignments. Homework assignments may include practice solving routine problems, explaining concepts, and solving application or non-routine problems. Other outside assignments may include computer laboratory assignments, problem-solving reports or journals.

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: _____

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

CONTACT PERSON: Jorge Saavedra Extension: 2870

SIGNATURES ON FILE