

COURSE OUTLINE
MT. HOOD COMMUNITY COLLEGE DISTRICT
Gresham, Oregon 97030

* New _____
 * Revised 9/07
 * Review only (no changes) _____
 (Date)

* COURSE TYPE Please check appropriate box:

- Lower Division Collegiate
 Occupational Supplementary
 Occupational Preparatory
 Other Education, Including General Ed & Adult Ed

COURSE TITLE Elementary Calculus

COURSE NUMBER Mth 241 COURSE CREDIT 4

* Lecture Hours 4 | _____ Lab Hours _____ | _____ Seminar Hours _____ | _____
 Wkly/Term Wkly/Term Wkly/Term

* GRADING STATUS:

- Letter Grade Only
 S/U Only
 Optional
 No Grade

* HEADCOUNT LOADING:

- Yes
 No * Factor _____

Guided Studies Requirement:

Student must be proficient in:

- Reading (RD90)
 Writing (WR90)
 Mathematics (MTH20)
 Not applicable

For Instruction Office Use Only General Education Category Apply general requirement or distribution to:		
AA _____	AS _____	AS/OT-Bus _____
AAS _____	AGS _____	
VP Approval _____	Date _____	

1) Prepared by _____ Date _____

4) Approved by Dean _____ Date _____

2) Approved by Distance Education Admin. _____ Date _____

5) Curriculum Committee _____ Date _____

3) Approved by Department Chair _____ Date _____

6) Approved by VP for Student Learning _____ Date _____

* See legend/definition for explanation

COURSE DESCRIPTION: (for catalog)

This course introduces the student to linear programming, differential and integral calculus using an intuitive approach which emphasized applications to management and social science. A graphing calculator is required and a computer lab component is incorporated.

PREREQUISITE:

Mth 111 with a grade of C or better or suitable performance on the mathematics placement exam.

INSTRUCTIONAL MATERIALS REQUIRED OF STUDENT: (text, supplies, etc.)

Text, Graphing calculator – TI 89.

STUDENT LEARNING OUTCOMES:

Upon successful completion of this course, the student will be able to:

1. Use a calculator to:
 - a. Estimate point specific derivative function values, $f'(x)$ using the “numerical derivative” calculator feature.
 - b. Graph the “numerical derivative” of a given function.
 - c. Create a matrix, designate its dimension and individual entries up to 6x6)
 - d. Perform the three elementary row operations on a matrix.
2. Demonstrate use of the derivative to:
 - a. Define the limit, demonstrate the properties of limit and evaluation limits.
 - b. Define continuity, properties of continuity and solve nonlinear inequalities.
 - c. Demonstrate increments and define the slope of tangent and secant lines.
 - d. Define the derivative, use the derivative to find equation of tangent lines.
 - e. Demonstrate the power rule, use the property involving derivative of a constant.
 - f. Find the derivative of products and quotients using the product and quotient rule.
 - g. Find the derivative of a function using the general power rule.
 - h. Define marginal cost, revenue and profit, average cost, revenue and profit.
3. Use derivatives and graphs to:
 - a. Demonstrate increasing and decreasing functions.
 - b. Use concavity, inflection points and the second-derivative to graph functions.
 - c. Find the absolute maximum and minimum of graphs.
 - d. Define asymptotes and use in curve sketching.
4. Apply exponential and logarithmic functions to:
 - a. Define the constant e , simple interest, compound interest and continuous compound interest.
 - b. Use the derivative formulas relating to the natural logarithmic and exponential functions.
5. Demonstrate integration to:
 - a. Define antiderivatives and state the formulas and properties of indefinite integrals.
 - b. Demonstrate integration by substitution.
 - c. Define differential equations.
 - d. Define the definite integral.
 - e. Demonstrate area under a curve to x-axis, area between two curves.
 - f. Define definite integral or a limit of sum.
 - g. Define continuous income stream.
6. Determine variables to:
 - a. Demonstrate linear programming both graphically and through the Simplex Algorithm.
 - b. Apply a function of two independent variables and its graph to solve problems.

III. GENERAL INSTRUCTIONAL METHODS:

The MHCC Mathematics Curriculum emphasizes conceptual understanding, real-world applications, multiple representations of problem situations, making connections, mathematical modeling and mathematical problem solving. This represents a shift away from technique mastery and procedural skills. For students to see mathematics as an integrated whole, the above objective should be presented in a connected fashion and not treated as discrete topics or concepts.

IV. EVALUATION PROCESS:

Assessment may include in class participation, homework, projects, quizzes, written assignments and a comprehensive final exam.