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| **Contra Costa College** |

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| **Course Outline** |

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| **Department & Number** | MATH-191 | **Number of Weeks** | 18 |
| **Course Title** | Analytic Geometry and Calculus II | **Lecture Hours By Term** | 72 |
| **Prerequisite** | MATH-190 | **Lab Hours By Term** | 0 |
| **Challenge Policy** | Satisfactory completion of an equivalent course. | **\*Hours By Arrangement** | 0 |
| **Co-requisite** |  | **Units** | 4 |
| **Challenge Policy** |  |  |  |
| **Advisory** |  |

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| **\*HOURS BY ARRANGEMENT:** | | 0 | Hours per term. |
| **ACTIVITIES:** (Please provide a list of the activities students will perform in order to satisfy the HBA requirement): | | | | |
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| **COURSE/CATALOG DESCRIPTION** |

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| This course is the second course in differential and integral calculus of a single variable: integration; techniques of integration; infinite sequences and series; polar and parametric equations; applications of integration. Primarily for Science, Technology, Engineering & Math Majors. |

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| **COURSE OBJECTIVES:** | |
| At the completion of the course the student will be able to: | |

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| 1. Evaluate definite and indefinite integrals using a variety of integration formulas and techniques; |
| 1. Apply integration to areas and volumes, and other applications such as work or length of a curve; |
| 1. Evaluate improper integrals; |
| 1. Apply convergence tests to sequences and series; |
| 1. Represent functions as power series; and |
| 1. Graph, differentiate and integrate functions in polar and parametric form. |

**INTENDED STUDENT LEARNING OUTCOMES:**

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| 1. Students will understand and be able to apply advanced integration techniques to elementary functions, including transcendental functions. |
| 1. Students will understand and be able to test for convergence of infinite series, and be able to obtain power series representations of elementary functions. |
| 1. Students will understand and be able to apply calculus techniques to parametric and polar equations. |
| 1. Students will be able to use integration techniques to solve applications problems from analytic geometry and the sciences. |

**COURSE CONTENT (Lecture):**

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| 1. Areas between curves; |
| 1. Volume, volume of a solid of revolution; |
| 1. Additional techniques of integration including integration by parts and trigonometric substitution; |
| 1. Numerical integration; trapezoidal and Simpson's rule; |
| 1. Improper integrals; |
| 1. Applications of integration to areas and volumes; |
| 1. Additional applications such as work, arc length, area of a surface of revolution, moments and centers of mass, separable differential equations, growth and decay; |
| 1. Introduction to sequences and series; |
| 1. Multiple tests for convergence of sequences and series; |
| 1. Power series, radius of convergence, interval of convergence; |
| 1. Differentiation and integration of power series; |
| 1. Taylor series expansion of functions; |
| 1. Parametric equations and calculus with parametric curves; and |
| 1. Polar curves and calculus in polar coordinates; |

**COURSE CONTENT (Lab):**

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| **METHODS OF INSTRUCTION:** | |
| Lecture and discussion | |
| Demonstration and collaboration | |
| Daily reading assignment | |
| Homework exercises | |

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| **INSTRUCTIONAL MATERIALS:** |

**NOTE:** To be UC/CSU transferable, the text must be dated within the last 7 years OR a statement of justification for a text beyond the last 7 years must be included.

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| Textbook Title: | Calculus : Early Transcendentals |
| Author: | Anton, Bivens, and Davis |
| Publisher: | J. Wiley & Sons, Inc. |
| Edition/Date: | 10th Edition / 2012 |
| Textbook Reading Level: |  |
| Justification Statement: | *(For textbook beyond 7 years)* |
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| Lab Manual Title | (*if applicable*): |
| Author: |  |
| Publisher: |  |
| Edition/Date: |  |

**OUTSIDE OF CLASS WEEKLY ASSIGNMENTS:**

Title 5, section 55002.5 establishes that a range of 48 -54hours of lecture, study, or lab work is required for one unit of credit. For each hour of lecture, students should be required to spend an additional two hours of study outside of class to earn one unit of credit.

* State mandates that sample assignments must be included on the Course Outline of Record.

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| **Outside of Class Weekly Assignments** | **Hours per week** |

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| Weekly Reading Assignments *(Include detailed assignment below, if applicable)* | 2 - 3 |

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| Students are responsible for reading the sections of the text corresponding to that week’s lectures; this will be approximately 2 – 4 sections, or 15 – 40 pages, of reading per week. |

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| Weekly Writing Assignments *(Include detailed assignment below, if applicable)* |  |

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| Weekly Math Problems *(Include detailed assignment below, if applicable)* | 6 - 12 |

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| Students will be assigned a minimum of 5 – 8 homework exercises in each section of the text, or approximately 10 – 30 exercises per week. Note: 6 – 12 hours is the minimum amount of time a student will spend on homework problems per week. |

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| Lab or Software Application Assignments *(Include detailed assignment below, if applicable)* |  |

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| Other Performance Assignments *(Include detailed assignment below, if applicable)* |  |

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**STUDENT EVALUATION**: **(Show percentage breakdown for evaluation instruments)**

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| * Course must require use of critical thinking, college-level concepts & college-level learning skills. * For degree credit, course requires essay writing unless that requirement would be inappropriate to the course objectives. If writing is inappropriate, there must be a requirement of problem-solving or skills demonstration. |

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|  | **%** | Essay (If essay is not included in assessment, explain below.) |
| N/A |
| 25 | **%** | Computation or Non-computational Problem Solving Skills |
|  | **%** | Skills Demonstration |
| 75 | **%** | Objective Examinations |
|  |  | Other (describe) |
|  | **%** |  |

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| **GRADING POLICY: (Choose LG, P/NP, or SC)** | | | | | |
| **X** | **Letter Grade** | |  | **Pass / No Pass** | | |  | **Student Choice** |
| 90% - 100% = A | | | 70% and above = Pass | | | | 90% - 100% = A |
| 80% - 89% = B | | | Below 70% = No Pass | | | | 80% - 89% = B |
| 70% - 79% = C | | |  | | | | 70% - 79% = C |
| 60% - 69% = D | | |  | | | | 60% - 69% = D |
| Below 60% = F | | |  | | | | Below 60% = F |
| *or* |
| 70% and above = Pass |
| Below 70% = No Pass |
| **Prepared by:** | | | | Carol Stanton | | | |

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| **Date:** | Spring 2014 |

*Revised form 01/14*