

SEWARD COUNTY COMMUNITY COLLEGE COURSE SYLLABUS

I. TITLE OF COURSE: MA2615- Analytic Geometry and Calculus II

II. COURSE DESCRIPTION: 5 credit hours **credit hours**

5 credit hours of lecture **credit hours of lecture** and 0 credit hours of lab per week **credit hours of lab per week**.

This course is a continuation of MA 2605, Analytic Geometry/Calculus I, in which the tools of single variable differential and integral calculus are further developed. Applications of these mathematical tools are investigated. Differential Equations, integration techniques, parametric equations and polar coordinates are studied. Infinite series convergence and divergence tests are presented along with power series including Taylor's theorem.

For each unit of credit, a minimum of three hours per week with one of the hours for class and two hours for studying/preparation outside of class is expected.

Pre-requisite: A grade of "C" or better in MA 2605 Analytic Geometry and Calculus I.

III. PROGRAM AND/OR DEPARTMENT MISSION STATEMENT:

The Mathematics Department at Seward County Community College will enhance a student's ability to think critically using mathematical principles, ideas, and concepts in order to function in a society with ever-changing technology.

IV. TEXTBOOK AND MATERIALS:

1. Roland E. Larson and Bruce H. Edwards. Calculus, 10th Edition, Cengage, 2014
2. TI 83+, 84, or 84+ Graphing Calculator

V. SCCC OUTCOMES

Students who successfully complete this course will demonstrate the ability to do the following SCCC Outcomes.

4: Demonstrate mathematical skills using a variety of techniques and technologies.

5: Demonstrate the ability to think critically by gathering facts, generating insights, analyzing data, and evaluating information

VI. COURSE OUTCOMES:

1. To solve differential equations numerically using Euler's method or slope fields and analytically with types such as separable, homogeneous, first order linear and Bernoulli.
2. To demonstrate skills in the application of integration to problems such as in determining areas between curves, arc length of a curve, work, centers of mass, fluid pressure, volumes and surface areas of surfaces of revolution.
3. To utilize common techniques of integration such as integration by parts, trigonometric substitution, partial fractions, integration by tables and improper integrals.
4. To understand the testing of infinite series for convergence and divergence and formation of infinite series representing functions.
5. To analyze the conic curves with the tools of calculus and extend to analytical geometry in general.
6. To work with parametric equations and polar coordinates, their graphs, areas, and length, and surface areas.

VII. COURSE OUTLINE:

1. Terminology and techniques in solving certain differential equations.
2. Applications of integration to the area between curves, volumes, surface areas of revolution, arc length, work, fluid pressure and force problems.
3. The techniques of integration including powers of the trig functions, integration by parts, trigonometric substitution, algebraic substitutions, partial fractions, and integration by tables and other integration techniques.
4. L'Hopital's Rule and application to improper integrals.
5. Infinite sequences and series, convergence tests, power series, Taylor and Maclaurin Series and their applications.
6. Conics, polar coordinates and parametric equations presented with Calculus applications.

VIII. INSTRUCTIONAL METHODS:

1. Lecture/Discussion
2. In class and out of class assignments
3. Calculator and computer exercises
4. Whiteboard drills
5. Calculator demonstrations
6. Quizzes and Examinations
7. Individual help

IX. INSTRUCTIONAL AND RESOURCE MATERIALS:

1. Textbook
2. Library mathematics reference books.
3. Supplementary materials prepared by the instructor
4. Computer tutorial programs
5. Smart Panel, computer projector and computer used for demonstration and lecture.

X. METHODS OF ASSESSMENT:

Methods of assessing the general course outcomes and the specific course competencies include tests, daily work, and class attendance. Student progress will be measured by the various forms of written work as required.

SCCC Outcome #4 will be assessed and measured by class participation, quizzes, and tests.

SCCC Outcome #5 will be assessed and measured using assignments, tests, and non-traditional problem-solving activities.

XI. ADA STATEMENT:

Under the Americans with Disabilities Act, Seward County Community College will make reasonable accommodations for students with documented disabilities. If you need support or assistance because of a disability, you may be eligible for academic accommodations. Students should identify themselves to the Dean of Students at 620-417-1106 or go to the Student Success Center in the Hobble Academic building, room A149.

Syllabus Reviewed: 05/19/22