Northwest Arkansas Community College

Science and Mathematics Division

Discipline Code
MATH

Course Number
2564

Course Title
Calculus II

Catalog Description
A continuation of MATH 2554. Topics include applications of integration, techniques of integration, infinite series, conic sections, parametric curves, and polar coordinates.

Prerequisites
MATH 2554 with a grade of C or better.

Credit Hours
4 credit hours

Contact hours
60 contact hours

Load hours
4 load hours

Semesters Offered
Fall and Spring

ACTS Equivalent
MATH 2505, Calculus II

Grade Mode
A-F

Learning Outcomes

Upon successful completion of this course students will exhibit mastery of certain knowledge and basic skills. These skills include, but are not limited to:

- Evaluate area between curves.
- Evaluate surface area and arc length.
- Compute volumes of solids of revolution.
- Compute work.
- Evaluate definite and indefinite integrals using a variety of integration techniques.
- Evaluate improper integrals.
- Determine convergence or divergence of infinite series.
- Represent various functions using power series (including Taylor and Maclaurin series).
- Convert among rectangular, polar and parametric forms.
- Apply calculus topics using polar coordinates and parametric equations.
- Identify basic properties of and graph conic sections.

- ## General Education Outcomes Supported

- Students develop higher order thinking skills.
- Students achieve mathematical literacy

Standard Practices

Topics list

- Applications of integration including velocity and net change, area between curves, volumes of revolution, length of curves, and surface area of revolution, and work
- Logarithmic and Exponential functions and models
- Hyperbolic Functions
- Integration techniques including basic approaches, integration by parts, trigonometric integrals, trigonometric substitution, and partial fractions
- Improper Integrals
- Sequences
- Infinite Series and Series Tests
- Power Series
- Polynomial Approximations and Taylor/Maclaurin Series
- Parametric Equations
- Polar coordinates, graphs and areas of polar graphs
- Conic Sections

Learning activities

- Courses must, at a minimum, cover the core learning outcomes for each topic. Faculty may add to these outcomes, but may not omit any of them.
- The content of the course may be taught with or without the use of a graphing calculator as deemed appropriate by the instructor.

Assessments

- There will be a common departmental portion on the required comprehensive final exam.
- These questions will be in direct support of the Learning Outcomes.
- Instructors will report the results of the individual departmental questions when grades are submitted.

Grading Guidelines

- At least 70% of the student's final grade should come from proctored work.