

**NEOSHO COUNTY COMMUNITY COLLEGE
MASTER COURSE SYLLABUS**

COURSE IDENTIFICATION

Course Code/Number: MATH 155

Course Title: Analytic Geometry and Calculus II

Division: Applied Science (AS) Liberal Arts (LA) Workforce Development (WD)
 Health Care (HC) Lifetime Learning (LL) Nursing Developmental

Credit Hour(s): Five (5)

Effective Date: Summer 2015

Assessment Goal Per Outcome: 80%

COURSE DESCRIPTION

A study and practice with additional applications of integrals. Further development and applications of the logarithmic functions. Integration of inverse trigonometric and differentiation and integration of hyperbolic functions. More advanced methods of integration are developed. Convergence and divergence of infinite series are included. Conic sections, parametric equations and polar coordinates are studied.

MINIMUM REQUIREMENTS/PREREQUISITES AND/OR COREQUISITES

MATH150 Analytic Geometry and Calculus I

TEXTS

The official list of textbooks and materials for this course is found on *myNeosho*.

<http://www.neosho.edu/ProspectiveStudents/Registration/CourseSyllabi.aspx>

GENERAL EDUCATION OUTCOMES

1. Practice Responsible Citizenship through:
 - identifying rights and responsibilities of citizenship,

- identifying how human values and perceptions affect and are affected by social diversity,
 - identifying and interpreting artistic expression.
2. Live a healthy lifestyle (physical, intellectual, social) through:
 - listing factors associated with a healthy lifestyle and lifetime fitness,
 - identifying the importance of lifetime learning,
 - demonstrating self-discipline, respect for others, and the ability to work collaboratively as a team.
 3. Communicate effectively through:
 - developing effective written communication skills,
 - developing effective oral communication and listening skills.
 4. Think analytically through:
 - utilizing quantitative information in problem solving,
 - utilizing the principles of systematic inquiry,
 - utilizing various information resources including technology for research and data collection.

COURSE OUTCOMES/COMPETENCIES (as Required)

All students will be expected to have a graphing calculator. (TI-83 or higher recommended) The student will strive to achieve, and be able to demonstrate an understanding of, the following competencies:

- 1) Solve applied integration problems including volumes (solids and solids of rotation), fluid forces, center of mass, work, and arc length.
- 2) Utilize advanced techniques of integration including integration by parts, trigonometric substitutions, and partial fractions.
- 3) Solve simple differential equations.
- 4) Determine the convergence or divergence of infinite sequences and series.
- 5) Interpret parametric equations with applied Calculus problems in polar coordinates and conic sections.

MINIMUM COURSE CONTENT

The following topics must be included in this course. Additional topics may also be included.

Unit I Applications of Definite Integrals

Lengths of Plane Curves
 Moments and Centers of Mass
 Areas of Surfaces of Revolution and the Theorems of Pappus
 Work
 Fluid Pressures and Forces

Unit II Integrals and Transcendental Functions

The Logarithm Defined as an Integral
 Exponential Growth and Decay
 Relative Rates of Growth
 Hyperbolic Functions

Unit III Techniques of Integration

Basic Integration Formulas

Integration by Parts
Integration of Rational Functions by Partial Fractions
Trigonometric Integrals
Trigonometric Substitutions
Integral Tables and Computer Algebra Systems
Numerical Integration
Improper Integrals

Unit IV Further Applications of Integration

Slope Fields and Separable Differential Equations
First-Order Linear Differential Equations
Euler's Method
Graphical Solutions of Autonomous Differential Equations
Applications of First-Order Differential Equations

Unit V Conic Sections and Polar Coordinates

Conic Sections and Quadratic Equations
Classifying Conic Sections by Eccentricity
Quadratic Equations and Rotations
Conics and Parametric Equations; The Cycloid
Polar Coordinates
Graphing in Polar Coordinates
Areas and Lengths in Polar Coordinates
Conic Sections in Polar Coordinates

Unit VI Infinite Sequences and Series

Sequences
Infinite Series
The Integral Test
Comparison Tests
The Ratio and Root Tests
Alternating Series, Absolute and Conditional Convergence
Power Series
Taylor and Maclaurin Series
Convergence of Taylor Series; Error Estimates
Applications of Power Series
Fourier Series

STUDENT REQUIREMENTS AND METHOD OF EVALUATION

INSTRUCTIONAL METHODS

The text will serve as a guideline for the course with most of the material taken from the text and delivered in an informal lecture/discussion presentation. A TI-83 or other model of a graphing calculator, an overhead projector, chalkboard, videos or other forms of technology may be used for demonstrations. Problem assignments will be made for each section that is covered and the student

should be ready to discuss the problems in the next class session. Normally the first part of a class will be used to discuss the previous assignments. The student is encouraged to visit the instructor for individual help outside of class; seek help immediately when you don't understand some concept.

STUDENT REQUIREMENTS

See the syllabus supplement for a specific course section for details of student requirements and method of evaluation.

GRADE SCALE

The grading scale will be 90-80-70-60 percent of the total possible points for an A, B, C, D, or F letter grade.

ASSESSMENT OF STUDENT GAIN

The purpose of assessing student learning at Neosho County Community College is to ensure the educational purposes of the institution are met and appropriate changes are made in program development and classroom instruction to allow for student success. The instructor(s) of this course will determine the methods of assessment most appropriate and complete an assessment report at the end of the course.

Attendance Policy

1. NCCC values interactive learning which promotes student engagement in the learning process. To be actively engaged, the student must be present in the learning environment.
2. Unless students are participating in a school activity or are excused by the instructor, they are expected to attend class. If a student's absences exceed one-eighth of the total course duration, (which equates to one hundred (100) minutes per credit hour in a face-to-face class) the instructor has the right, but is not required, to withdraw a student from the course. Once the student has been dropped for excessive absences, the registrar's office will send a letter to the student, stating that he or she has been dropped. A student may petition the chief academic officer for reinstatement by submitting a letter stating valid reasons for the absences within one week of the registrar's notification. If the student is reinstated into the class, the instructor and the registrar will be notified. Please refer to the Student Handbook/Academic Policies for more information
3. Absences that occur due to students participating in official college activities are excused except in those cases where outside bodies, such as the State Board of Nursing, have requirements for minimum class minutes for each student. Students who are excused will be given reasonable opportunity to make up any missed work or receive substitute assignments from the instructor and should not be penalized for the absence. Proper procedure should be followed in notifying faculty in advance of the student's planned participation in the event. Ultimately it is the student's responsibility to notify the instructor in advance of the planned absence.

ACADEMIC INTEGRITY

NCCC expects every student to demonstrate ethical behavior with regard to academic pursuits. Academic integrity in coursework is a specific requirement. Definitions, examples, and possible consequences for violations of Academic Integrity, as well as the appeals process, can be found in the College Catalog, Student Handbook, and/or Code of Student Conduct and Discipline.

ELECTRONIC DEVICE POLICY

Student cell phones and other personal electronic devices not being used for class activities must not be accessed during class times unless the instructor chooses to waive this policy.

NOTE

Information and statements in this document are subject to change at the discretion of NCCC. Students will be notified of changes and where to find the most current approved documents.

ACCOMMODATIONS

If you are a student with a disability who may need accommodation(s), in compliance with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act (ADA) of 1990, please notify the Dean of Student Services in the Student Services Office, Sanders Hall, 620-432-0304, on the Chanute Campus, or the Dean for the Ottawa and Online Campuses, 785-248-2798, on the Ottawa Campus as soon as possible. You will need to bring your documentation for review in order to determine reasonable accommodations, and then we can assist you in arranging any necessary accommodations.

NON-DISCRIMINATION POLICY

The following link provides information related to the non-discrimination policy of NCCC, including persons with disabilities. Students are urged to review this policy.

<http://www.neosho.edu/Departments/NonDiscrimination.aspx>

SEXUAL MISCONDUCT POLICY (TITLE IX)

At NCCC, it is the responsibility of an instructor to help create a safe learning environment in the classroom, including both physical and virtual classrooms. All instructors are considered mandatory reporters at NCCC, therefore any information regarding sexual misconduct that is shared by a student in one-on-one meetings with the instructor must be reported to appropriate personnel at the College. Instructors will keep the information private to the greatest extent possible, but it is not confidential.

Generally, climate surveys, classroom writing assignments or discussions, human subjects research, or events such as Take Back the Night events do not provide notice that must be reported to the Coordinator by employees, unless the reporting party clearly indicates that they wish a report to be made.

The following link provides information related to the sexual misconduct policy of NCCC, including resources, reporting options, and student rights. Students are urged to review this policy.

<http://www.neosho.edu/TitleIX.aspx>

COURSE NOTES