North Central State College

MASTER SYLLABUS	2025-2026

A. Academic Division: Liberal Arts

B. Discipline: Mathematics

C. Course Number and Title: MATH1110 College Algebra

D. Assistant Dean: Laura Irmer

E. Credit Hours: 4

F. Prerequisites: MATH0084 (Minimum grade of C- required) or qualifying placement test score

G. Last Course/Curriculum Revision Date: Fall 2023 Origin date: 06/08/2011

H. Textbook(s) Title:

College Algebra with Co-Requisite Support - Access Code
Author: Lumen Learning
Publisher: Lumen, Inc
ISBN 978-1-64087-291-2
Copyright: 2023

I. Workbook(s) and/or Lab Manual: Supplies: TI-84/83 Calculator is required.

J. Course Description:

A study of:

1. Polynomial operations, rational expressions, exponents, radicals;
2. Linear and quadratic equations, inequalities, absolute value applications and their graphs;
3. Graphs of elementary functions and non-functions including inverse functions, combining functions, and translating and transforming functions;
4. Study of polynomial functions, including the Fundamental Theorem of Algebra, zeroes of polynomials, rational functions, partial fractions;
5. Exponential and logarithmic functions including graphs and applications;
6. Gauss-Jordan elimination and Cramer's Rule.

This course meets the requirements for OTM College Algebra TMM001

K. College Wide Learning Outcomes:

College-Wide Learning Outcomes	Assessments - - How it is met & When it is met
Communication – Written	
Communication – Speech	
Intercultural Knowledge and Competence	
Critical Thinking	
Information Literacy	
Quantitative Literacy	Quantitative Literacy VALUE Rubric, midterm exam

L. Course Outcomes and Assessment Methods:

Upon successful completion of this course, the student shall:

Outcomes	Assessments – How it is met & When it is met
1. Determine whether an algebraic relation or graph represents a function and perform transformation of those functions.	Homework and tests regularly throughout the term and Final Exam.
2. Add, subtract, multiply, divide and compose a variety of functions.	Homework and tests regularly throughout the term and Final Exam.
3. Analyze the graph of a variety of functions and their inverses.	Homework and tests regularly throughout the term and Final Exam.
4. Use the Remainder and Factor Theorems for polynomial functions.	Homework and tests regularly throughout the term and Final Exam.
5. Solve application problems including creating mathematics which model a wide range of phenomena.	Homework and tests regularly throughout the term and Final Exam.
6. Solve equations and systems of equations with a variety of methods (including technology) and determine symmetry using their graphs.	Homework and tests regularly throughout the term and Final Exam.
7. Solve inequalities graphically, algebraically, and with using technology and solve systems of inequalities.	Homework and tests regularly throughout the term and Final Exam.
8. Identify and express conics in standard rectangular form and graph.	Homework and tests regularly throughout the term and Final Exam.
9. Solve polynomials over the complex numbers system.	Homework and tests regularly throughout the term and Final Exam.
10. Write series in summation notation and find the sum of arithmetic and geometric series.	Homework and tests regularly throughout the term and Final Exam.

M. Recommended Grading Scale:

NUMERIC	GRADE	POINTS	DEFINITION
93–100	A	4.00	Superior
90–92	A-	3.67	Superior
87–89	B+	3.33	Above Average
83–86	B	3.00	Above Average
80–82	B-	2.67	Above Average
77–79	C+	2.33	Average
73–76	C	2.00	Average
70-72	C-	1.67	Below Average
67–69	D+	1.33	Below Average
63-66	D	1.00	Below Average
60-62	D-	0.67	Poor

N. College Procedures/Policies:

North Central State College believes that every student is a valued and equal member of the community.* Every student brings different experiences to the College, and all are important in enriching academic life and developing greater understanding and appreciation of one another. Therefore, NC State College creates an inclusive culture in which students feel comfortable sharing their experiences. Discrimination and prejudice have no place on the campus, and the College takes any complaint in this regard seriously. Students encountering aspects of the instruction that result in barriers to their sense of being included and respected should contact the instructor, assistant dean, or dean without fear of reprisal.

* *Inclusive of race, color, religion, gender, gender identity or expression, national origin (ancestry), military status (past, present or future), disability, age (40 years or older), status as a parent during pregnancy and immediately after the birth of a child, status as a parent of a young child, status as a foster parent, genetic information, or sexual orientation*

Important information regarding College Procedures and Policies can be found on the syllabus supplement located at
https://ncstatecollege.edu/documents/President/PoliciesProcedures/PolicyManual/Final%20PDFs/14-081b.pdf

North Central State College

SYLLABUS ADDENDUM

Academic Division:	Liberal Arts	**Discipline:**	Mathematics
Course Coordinator:	Sara K. Rollo		
Course Number:	MATH 1110-CN2	**Course Title:**	College Algebra
Semester / Session:	Fall 2025-16 week	**Start / End Date:**	8/11/2025-12/12/2025

Instructor Information

Name:	Amanda Cooper	**Phone Number:**	Please contact me by email or canvas inbox
		E-Mail Address:	Acooper2@ncstatecollege.edu
Office Location:	Fallerius	**Office Hours:**	In zoom by appointment

I. **Topical Timeline (Subject to Change):**

Pre-Requisite Material: Algebra Essentials and Polynomial and Rational Expressions [Week 1]

Topic 1-Graphs, Equations, Inequalities [Weeks 1-2]

- Solving Equations Using a Graphing Utility; Linear and Rational Equations; Quadratic Equations
- Quadratic Equations
- Complex Numbers; Quadratic Equations in the Complex Number System
- Radical Equations; Equations Quadratic in Form; Absolute Value Equations; Factorable Equations
- Problem Solving: Interest, Mixture, Uniform Motion, Constant Rate Jobs
- Solving Inequalities

Topic 2 – Graphs [Weeks 2-3]

- The Distance and Midpoint Formulas
- Symmetry; Graphing Key Equations
- Lines
- Circles
- Variation

Topic 3 - Functions and Their Graphs [Weeks 3-5]

- Functions
- The Graph of a Function
- Properties of Functions
- Library of Functions; Piecewise-defined Functions
- Graphing Techniques: Transformations
- Mathematical Models: Building Functions

Topic 4-Linear and Quadratic Functions [Weeks 5-6]

- Linear Functions and Their Properties
- Linear Models: Building Linear Functions from Data
- Quadratic Functions and Their Properties
- Build Quadratic Models from Verbal Descriptions and from Data

Topic 5 - Polynomial and Rational Functions [Weeks 6-8]

- Polynomial Functions
- The Graph of a Polynomial Function; Models
- The Real Zeros of a Polynomial Function
- Complex Zeros; Fundamental Theorem of Algebra
- Properties of Rational Functions
- Graph of a Rational Function
- Polynomial and Rational Inequalities

Topic 6 - Exponential and Logarithmic Functions [Weeks 8-11]

- Composite Functions
- One-to-One Functions; Inverse Functions
- Exponential Functions
- Logarithmic Functions
- Properties of Logarithms
- Logarithmic and Exponential Equations
- Financial Models
- Building Exponential, Logarithmic, and Logistic Models from Data

Topic 11 – Conic Sections [Weeks 11-12]
- The Parabola
- The Ellipse
- The Hyperbola

Topic 12 - Systems of Equations and Matrices [Weeks 12-13]
- Systems of Linear Equations: Substitution and Elimination
- Systems of Linear Equations: Matrices
- Systems of Linear Equations: Determinants
- Partial Fraction Decomposition

Topic 13 - Sequences; Induction; the Binomial Theorem [Weeks 14-16]
- Sequences
- Arithmetic Sequences
- Geometric Sequences; Geometric Series
- Mathematical Induction
- The Binomial Theorem

II. Course Assignments: Each week's assignments will be due on Tuesday and Thursday at midnight.

1. Topic 1 Homework and Review for Success
2. Topic 2 Homework
3. **Topic 2 Test**
4. Topic 3 homework and Reviews for Success 1 and 2
5. **Topic 3 Test**
6. Topic 4 Homework and Review for Success
7. Topic 5 Homework and Reviews for Success
8. **Midterm Exam: Topics 1 - 5**
9. Topic 6 Homework and Reviews for Success 1 and 2
10. **Topic 6 Test**
11. Topic 11 Homework and Review for Success
12. **Topic 11 Test**
13. Topic 12 Homework and Reviews for Success 1 and 2
14. **Topic 12 Test**
15. Topic 13 Homework and Review for Success
16. **Comprehensive departmental final exam**

III. Grading and Testing Guidelines:

- Homework 20%
- Test/Quizzes 60% (Midterm will count as two tests)
- Final 20%

IV. Examination Policy:

- Tests/Midterm/Final must be completed by the indicated due date.
- Due dates are on both Canvas and Lumen.
- Tests are to be completed using the online component for the course, lumen.
- The midterm and final are to be completed in-person and in-class.
- Check Canvas for the up-to-date grade on the tests/midterm/final and in the class.
- All tests are open starting the first day of the semester and will close on the due date. You can complete those assignments any day leading up to the due date.
- There is a time limit for the tests so be diligent while completing those assignments and be prepared prior to the start of it!
- You will have TWO attempts per question for each test.

V. Class Attendance and Homework Make-Up Policy:

- Homework must be completed using the online component of the course, lumen.
- Homework must be completed by the indicated due date.
- Due dates are on both Canvas and on Lumen.
- Check Canvas for the up-to-date grade on the homework and in the class.
- There is not time limit for the homework.
- You have multiple attempts to get the homework correct.
- All homework is open starting the first day of the semester and will close on the due date. You can complete the assignments any day leading up to the due date.
- Be sure to use the resources available to you-in canvas and lumen.
- Come to class prepared to ask questions about the lecture video content and/or homework assignments.

VI. Classroom Expectations:

• If you post or state a message/discussion/comment, then please be respectful to your classmates and to me.
• You are expected to complete the assignments by the indicated due dates.
• You are expected to come to class.
• Please have electronics on silent and avoid side conversations that are distracting to others!
• You can expect a turn- around time for both grades (for assignments completed on time) and communication to be within 24 hours (this includes nights and weekends)
• The assignments move quickly. Be sure to write due dates and to stay organized.
• Ask Questions Often!
• Any student who requires reasonable accommodations related to a disability should inform the course instructor and the Coordinator of Specialized Services (Room 138 in Kee Hall; phone 419-755-4727)