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 – Section CN3	**Course Title:**	College Algebra
Semester / Session:	Fall AB 2025	**Start / End Date:**	August 11th to December 12th

Instructor Information

Name:	Pamula (Pam) Robison	**Credentials:**	BA Mathematics / MS Applied Mathematics
Phone Number:	419-755-4525	**E-Mail Address:**	probison@ncstatecollege.edu
Office Location:	Online at https://ncsc.zoom.us/j/856970747?pwd=UE1JNC9WNjhPM3dkRCs3bjE0SGx3Zz09 Or in KEHOE 134 or ASHLAND	**Office Hours:**	Mondays 10:00am – 11:00am (ASHLAND) Wednesdays 12:00pm – 3:00pm (KEHOE) Thursday 6:30 – 7:30pm (ONLINE)

I. Topical Timeline (Subject to Change): - PUT dates of the week you teach topics

Pre-Requisite Material: Algebra Essentials and Polynomial and Rational Expressions [Week 1, August 11th – 15th]

Topic 1-Graphs, Equations, Inequalities [Weeks 1-2, August 11th – 22nd]

- 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 [Week 3, August 25th – 29th]

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

Topic 3 - Functions and Their Graphs [Weeks 4-5, September 1st – 12th]

- 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 6, September 15th – 19th]

- 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 7, September 22nd – 26th]

- 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 9-10, October 13th – 24th]

- 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 [Week 11, October 27th – 31st]

- The Parabola
- The Ellipse
- The Hyperbola

Topic 12 - Systems of Equations and Matrices [Weeks 11-12, October 27th – November 7th]

- 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, November 17th – December 1st]

- Sequences
- Arithmetic Sequences
- Geometric Sequences; Geometric Series
- Mathematical Induction
- The Binomial Theorem

II. Course Assignments:

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:

Activity	Found on	Number of Items	Points per Item	Total Points	Percentage
Review for Success	Lumen	12	5	60	6.0%
Homework	Lumen	9	20	180	18.0%
Discussions	Canvas	2	5	10	1.0%
Reviews before Tests	In class	2	10	20	2.0%
Exam Reviews	In class	2	15	30	3.0%
Tests 1 and 3	In class	2	125 & 175	300	30.0%
Midterm & Final Exam	In class	2	200	400	40.0%
Total				1000 points	100.0%

IV. Examination Policy:

The Midterm Exam and Final Exam will be cumulative. Tests 1 & 3 will not be cumulative, and topics covered for each will be the content covered preceding that particular test. Test 1 covers chapters 2 & 3. The Midterm Exam covers chapters 1 – 5. Test 3 covers chapters 6, 11 & 12. These cannot be made up without documentation. As long as we are meeting on campus, the tests will be given in class. If we should have to remove ourselves from campus and go online only, then the tests will be found on Pearson.

V. Class Attendance and Homework Make-Up Policy:

I have set up Review for Success on Lumen. Some Topics don't have one, while others have one or two. The due dates fall on class days. They are worth 5 points a piece. I grade by percentage, multiplying it by 5 and rounding to the nearest whole number. I have set up homework for each section on Lumen. The due dates will fall on the class day after we have covered the Topic in its entirety in class. Each Topic Homework is worth 20 points and will be graded based on the percentage correct for each assignment. I will calculate the grade by multiplying the percentage by 20, and round to the nearest whole number. If you are struggling, or late in your work, I can grant an extension if you request it.

I have set up three discussions on Canvas, two for part of your grade, and a third for extra credit. The discussions are mainly for students to share studying strategies that work (or didn't work) for them.

The reviews packets will be handouts in class. We will go over them as time allows, but they will be graded for completion (60%) at the beginning of class, and accuracy (40%) afterward. If you are in class, I will not need to collect the packet, but if you are absent that day, then you are required to turn it in to me ASAP so that I may grade it for accuracy. I write them up as study guides, so every effort should be made to have them not only complete but correct.

Reviews may be turned in up to one week late (except for the final review), with 20% deducted. Once again, the reviews are study guides, and it is unwise to take a test without studying first, so make the reviews a priority. Turning them in late will not only hurt your review grade for being late but will also hurt your test grade because you are not fully prepared for the test.

This information is needed to first register for the homework component on LUMEN:

Class Section	Schedule	Course ID	Enrollment Key
MATH 1110-CN3	TH 10:00 – 11:50am	91521	Algebra 3572

VI. Classroom Expectations:

I take attendance each day. Although it is not for a grade, your lack of attendance will affect your performance in this course, and good attendance is critical to your success in this course. This course is an investment in your future, and you only get out of it what you have put into it, so make it worth your while by being here.

Many of you are on a road headed towards Trigonometry, then Calculus I. Others will be taking Probability & Statistics. This course is the foundation of those other two courses. This material is not meant just to be learned for this semester, but to be remembered and understood for the rest of your mathematics courses. Strive to truly understand the concepts and procedures; do not just memorize them.

My personal goal is to grade assignments I have collected within one week and to reply to messages and emails within 48 hours.

Topical Timeline (subject to change):

MATH 1110	Day 1	Day 2
Week 1 Tuesday, August 12th Thursday, August 14th	**Happening in Class**: Introduction to class. Notes 1.1: Solving Equations Using a Graphing Utility; Linear and Rational Equations	**Happening in Class:** Notes 1.2: Quadratic Equations Notes 1.3: Complex Numbers; Quadratic Equations in the Complex Number System
Week 2 Tuesday, August 19th Thursday, August 21st	**Happening in Class:** Notes 1.4: Radical Equations; Equations Quadratic in Form; Absolute Value Equations; Factorable Equations Notes 1.5: Problem Solving: Interest, Mixture, Uniform Motion, Constant Rate Jobs **Complete Assignments**: Review for Success: Topic 1 (Lumen)	**Happening in Class:** Notes 1.6: Solving Inequalities Notes 1.7: Lines
Week 3 Tuesday, August 26th Thursday, August 28th	**Happening in Class:** Notes 2.1: The Distance and Midpoint Formulas Notes 2.2: Intercepts; Symmetry Notes 2.3: Circles **Complete Assignment:** Homework for Topic 1 (Lumen)	**Happening in Class:** Notes 2.4: Variations Notes 3.1: Introduction to Functions
Week 4 Tuesday, September 2nd Thursday, September 4th	**Happening in Class:** Notes 3.2: The Graph of a Function Notes 3.3: Properties of Functions **Complete Assignment:** Homework for Topic 2 (Lumen)	**Happening in Class:** Notes 3.4: Library of Functions; Piece-wise Functions Notes 3.5: Graphing Tech.-Transformations **Complete Assignment:** Review for Success 1: Topic 3 (Lumen) Review for Success 2: Topic 3 (Lumen)
Week 5 Tuesday, September 9th Thursday, September 11th	**Happening in Class:** Notes 3.6: Polynomial and Rational Inequalities Notes 3.7: Composite Functions Notes 3.8: One-to-one and Inverse Functions **Complete Assignment:** Growth Mindset (Canvas)	**Happening in Class:** Going over Review 1 in class **Complete Assignment:** Homework forTopic 3 (Lumen)
Week 6 Tuesday, September 16th Thursday, September 18th	**Happening in Class:** Turn in Review 1 Take Test 1 over Topics 2 and 3 **Complete Assignment:** Study Strategies Part 1 (Canvas)	**Happening in Class:** Notes 4.1: Linear Functions and their Properties Notes 4.2: Quadratic Functions and their Properties Notes 4.3: Build Linear and Quadratic Models with Verbal Descriptions or Data **Complete Assignment:** Review for Success: Topic 4 (Lumen)
Week 7 Tuesday, September 23rd Thursday, September 25th	**Happening in Class:** Notes 5.1: Polynomial Functions; the Graphs and Models Notes 5.2: The Real Zeros of a Poly. Func. Notes 5.3: The Complex Zeros; Fundamental Theorem of Algebra **Complete Assignment:** Homework for Topic 4 (Lumen)	**Happening in Class:** Notes 5.4: Properties of Rational Functions Notes 5.5: The Graph of a Rational Function **Complete Assignment:** Review for Success: Topics 1 and 5 Due (Lumen) Review for Success: Topic 5 Due (Lumen)
Week 8 Tuesday, September 30th Thursday, October 2nd	**Happening in Class:** Going over the Midterm Review Packet **Complete Assignment:** Homework for Topic 5 (Lumen)	**Happening in Class:** Turn in Midterm Review Packet Take Midterm Exam (Topics 1 – 5)

FALL BREAK	FALL BREAK	FALL BREAK
Week 9 Tuesday, October 14th Thursday, October 16th	**Happening in Class:** Notes 6.1: Composite Functions Notes 6.2: One-to-one Functions; Inverse Functions	**Happening in Class:** Notes 6.3: Exponential Functions Notes 6.4: Logarithmic Functions
Week 10 Tuesday, October 21st Thursday, October 23rd	**Happening in Class:** Notes 6.5: Properties of Logarithms Notes 6.6: Logarithmic and Exponential Functions **Complete Assignment:** Review for Success 1: Topic 6 Due (Lumen) Review for Success 2: Topic 6 Due (Lumen)	**Happening in Class:** Notes 6.7: Financial Models Notes 6.8: Building Exponential, Logarithmic, and Logistic Models from Data
Week 11 Tuesday, October 28th Thursday, October 30th	**Happening in Class:** Notes 11.1: The Parabola Notes 11.2: The Ellipse **Complete Assignment:** Homework for Topic 6 (Lumen)	**Happening in Class:** Notes 11.3: The Hyperbola Notes 12.1: Systems of Linear Equations; Substitution and Elimination **Complete Assignment:** Review for Success: Topic 11 (Lumen)
Week 12 Tuesday, November 4th Thursday, November 6th	**Happening in Class:** Notes 12.2: Introduction to Matrices and their Operations Notes 12.3: Solving Systems of Linear Equations: Matrices **Complete Assignment:** Homework for Topic 11 (Lumen)	**Happening in Class:** Notes 12.4: Determinants Notes 12.5: Partial Fraction Decomposition **Complete Assignment:** Review for Success 1: Topic 12 (Lumen) Review for Success 2: Topic 12 (Lumen)
Week 13 Tuesday, November 11th Thursday, November 13th	**Veteran's Day → No class!!!**	**Happening in Class:** Go over Review 3 in class **Complete Assignment:** Homework for Topic 12 (Lumen)
Week 14 Tuesday, November 18th Thursday, November 20th	**Happening in Class:** Turn in Review 3 Take Test 3 over Topics 6, 11 & 12	**Happening in Class:** Notes 13.1: Sequences Notes 13.2: Arithmetic Sequences
Week 15 Tuesday, November 25th Thursday, November 27th	**Happening in Class:** Notes 13.3: Geometric Sequences & Series Notes 13.4: Mathematical Induction **Complete Assignment:** Review for Success: Topic 13 (Lumen)	**Thanksgiving Day – Enjoy!** *(Watch 13.4 & 13.5 videos)*
Week 16 Tuesday, December 2nd Thursday, December 4th	**Happening in Class:** Finish Chapter 13 notes Go over Final Review in Class **Complete Assignment:** Topic 13 HW Due (Lumen)	**Happening in Class:** Go over Final Review in Class
Week 17 Tuesday, December 9th Thursday, December 11th	**Happening in Class:** Go over Final Review in Class **Complete Assignment:** Study Strategies 2 (Canvas)	**Happening in Class:** Turn in Final Review Packet Take Final Exam