North Central State College
MASTER SYLLABUS
2019-2020

A.   Academic Division: Liberal Arts

B.   Discipline: Mathematics

C.   Course Number and Title: MATH1110 College Algebra

D.   Course Coordinator: Sara Rollo
        Assistant Dean: Dr. Steve Haynes

   Instructor Information:
   - Name: Click here to enter text.
   - Office Location: Click here to enter text.
   - Office Hours: Click here to enter text.
   - Phone Number: Click here to enter text.
   - E-Mail Address Click here to enter text.

E.   Credit Hours: 4

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

G.   Syllabus Effective Date: Fall, 2019

H.   Textbook(s) Title:

   On Campus Classes:
   Algebra & Trigonometry Enhanced with Graphing Utilities, 7e
   - Author: Michael Sullivan and Michael Sullivan III
   - Copyright Year: 2016
   - Edition: 7th
   - ISBN: 9780134268200 (Loose-leaf book packaged with My Math Lab)

   Note: **Purchase New Books Only – contains My Math Lab access code in bundled package.** If you decide to rent a textbook or buy a used copy, you will also need to purchase the My Math Lab software.

   Courses at High Schools
   Algebra & Trigonometry Enhanced with Graphing Utilities, 6e
   - Author: Michael Sullivan and Michael Sullivan III
   - Copyright Year: 2013
   - Edition: 6th
   - ISBN # 9780321837752 (this is bundle ISBN #)
   - (Packaged with My Math Lab)
   Note: a new one-year access code is needed

I.   Workbook(s) and/or Lab Manual: Supplies: A 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, week 8, 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 semester and Final Exam (Weeks 2,3, 4, 7, 8, 16)
2. Add, subtract, multiply, divide and compose a variety of functions.	Homework and tests regularly throughout the semester and Final Exam (Weeks 1, 2,3,16)
3. Analyze the graph of a variety of functions and their inverses.	Homework and tests regularly throughout the semester and Final Exam (Weeks 5, 6, 7, 11, 16)
4. Use the Remainder and Factor Theorems for polynomial functions.	Homework and tests regularly throughout the semester and Final Exam (Weeks 5, 6, 16)
5. Solve application problems.	Homework and tests regularly throughout the semester and Final Exam (Weeks 1, 2, 3, 4, 6, 16)
6. Solve equations and systems of equations with a variety of methods and determine symmetry using their graphs.	Homework and tests regularly throughout the semester and Final Exam (Weeks 1, 2, 3, 4, 6,7,8, 16)
7. Solve inequalities graphically and algebraically and solve systems of inequalities.	Homework and tests regularly throughout the semester and Final Exam (Weeks 1, 3, 5, 6, 16)
8. Identify and express conics in standard rectangular form and graph.	Homework and tests regularly throughout the semester and Final Exam (Weeks 2, 3, 16)

Outcomes	Assessments – How it is met & When it is met
9. Solve polynomials over the complex numbers system.	Homework and tests regularly throughout the semester and Final Exam (Weeks 5, 6,16)
10. Write series in summation notation and find the sum of arithmetic and geometric series.	Homework and tests regularly throughout the semester and Final Exam (Weeks 13, 15, 16)

M.   Topical Timeline (Subject to Change):

Review Equations and Inequalities
Chapter 1-Rectangular Coordinates; Graphing Utilities; Introduction to Graphing Equations   [Weeks 1-2]
    1.2 Solving Equations Using a Graphing Utility; Linear and Rational Equations; Quadratic Equations
    1.3 Quadratic Equations
    1.4 Complex Numbers; Quadratic Equations in the Complex Number System
    1.5 Radical Equations; Equations Quadratic in Form; Absolute Value Equations; Factorable Equations
    1.6 Problem Solving: Interest, Mixture, Uniform Motion, Constant Rate Jobs
    1.7 Solving Inequalities
Chapter 2 – Graphs [Weeks 2-3]
    2.1 Symmetry; Graphing Key Equations
    2.2 Lines
    2.3 Circles
    2.4 Variation
Chapter 3 - Functions and Their Graphs [Weeks 3-5]
    3.1 Functions
    3.2 The Graph of a Function
    3.3 Properties of Functions
    3.4 Library of Functions; Piecewise-defined Functions
    3.5 Graphing Techniques: Transformations
    3.6 Mathematical Models: Building Functions
Chapter 4-Linear and Quadratic Functions [Weeks 5-6]
    4.1 Linear Functions and Their Properties
    4.2 Linear Models: Building Linear Functions from Data
    4.3 Quadratic Functions and Their Properties
    4.4 Build Quadratic Models from Verbal Descriptions and from Data
Chapter 5 - Polynomial and Rational Functions [Weeks 6-8]
    5.1 Polynomial Functions and Models
    5.2 Properties of Rational Functions
    5.3 The Graph of a Rational Function; Inverse and Joint Variation
    5.4 Polynomial and Rational Inequalities
    5.5 The Real Zeros of a Polynomial Function
    5.6 Complex Zeros; Fundamental Theorem of Algebra
Chapter 6 - Exponential and Logarithmic Functions [Weeks 8-11]
    6.1 Composite Functions
    6.2 One-to-One Functions; Inverse Functions
    6.3 Exponential Functions
    6.4 Logarithmic Functions
    6.5 Properties of Logarithms
    6.6 Logarithmic and Exponential Equations
    6.7 Financial Models
    6.9 Building Exponential, Logarithmic, and Logistic Models from Data
Chapter 11 - Analytic Geometry Conics [Weeks 11-12]
    11.2 The Parabola
    11.3 The Ellipse
    11.4 The Hyperbola
Chapter 12 - Systems of Equations and Inequalities [Weeks 12-13]
    12.1 Systems of Linear Equations: Substitution and Elimination
    12.2 Systems of Linear Equations: Matrices
    12.3 Systems of Linear Equations: Determinants
    12.5 Partial Fraction Decomposition

Chapter 13 - Sequences; Induction; the Binomial Theorem [Weeks 14-16]
    13.1 Sequences
    13.2 Arithmetic Sequences
    13.3 Geometric Sequences; Geometric Series
    13.4 Mathematical Induction
    13.5 The Binomial Theorem

N.   Course Assignments:

1. Chapter 1 sections 1-1 through 1-7
2. Chapter 2 sections 2 -1 through 2-4
3. **Test #1**
4. Chapter 3 sections 3-1 through 3-6
5. Chapter 4 sections 4-1 through 4-4
6. Chapter 5 sections 5-1 through 5-6
7. **Midterm Exam**
8. Chapter 6 sections 6-1 through 6-9 Omit 6-8
9. Chapter 11 sections 11-2, 3 and 4
10. **Test #3**
11. Chapter 12 sections 12-1, 12-2, 12-3, 12-5
12. Chapter 13 sections 13-1 through 13-5
13. **Comprehensive departmental final exam**

O.   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
00-59	F	0.00	Failure

P.   Grading and Testing Guidelines:

Face to Face:
- Homework 10%
- My Math Lab 10%
- Test/Quizzes 60% (Midterm will count as two tests)
- Final 20%

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

- Final 20%

Q.   <u>Examination Policy:</u>

Click here to enter text.

R.   <u>Class Attendance and Homework Make-Up Policy</u>:

Click here to enter text.

S.   <u>Classroom Expectations</u>:

Click here to enter text.

<u>Classroom Etiquette:</u>

Remember, the class sessions simulate meetings and discussion among co-workers in the workplace. To respect the rights of all of us to hear what is going on and to not be distracted, please:

1. Arrive on time
2. No personal or private conversations. Good communication and listening require that only one person be speaking at a time.

3. Disable all audible signals from cell phones, pagers, etc. for the duration of the class session. If you need to have your phone turned on set it on stun.
4. Everyone should have the opportunity to participate in the discussion and ask questions.

T.   <u>College Procedures/Policies</u>:

Important information regarding College Procedures and Policies can be found on the <u>syllabus supplement</u> located at https://sharept.ncstatecollege.edu/committees/1/curriculum/SiteAssets/SitePages/Home/SYLLABUS %20SUPPLEMENT.pdf

The information can also be found Choose an item.