A. Academic Division: Liberal Arts

B. Discipline: Mathematics

C. Course Number and Title: MATH1110 College Algebra

D. Course Coordinator: Sara Rollo
   Assistant Dean: Deb Hysell

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: MATH0086 (Minimum grade of C- required) or qualifying placement test score

G. Syllabus Effective Date: Fall, 2017

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

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;

This course meets the requirements for OTM College Algebra TMM001

K. College Wide Learning Outcomes:

<table>
<thead>
<tr>
<th>College-Wide Learning Outcomes</th>
<th>Assessments - - How it is met &amp; When it is met</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication – Written</td>
<td></td>
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<tr>
<td>Communication – Speech</td>
<td></td>
</tr>
<tr>
<td>Intercultural Knowledge and Competence</td>
<td></td>
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<tr>
<td>Critical Thinking</td>
<td></td>
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<tr>
<td>Information Literacy</td>
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<tr>
<td>Quantitative Literacy</td>
<td>Quantitative Literacy VALUE Rubric, week 8, midterm exam</td>
</tr>
</tbody>
</table>

L. Course Outcomes and Assessment Methods:

Upon successful completion of this course, the student shall:

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Assessments – How it is met &amp; When it is met</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Determine whether an algebraic relation or graph represents a function and perform transformation of those functions.</td>
<td>Homework and tests regularly throughout the semester and Final Exam (Weeks 2,3, 4, 7, 8, 16)</td>
</tr>
<tr>
<td>2. Add, subtract, multiply, divide and compose a variety of functions.</td>
<td>Homework and tests regularly throughout the semester and Final Exam (Weeks 1, 2, 3, 16)</td>
</tr>
<tr>
<td>3. Analyze the graph of a variety of functions and their inverses.</td>
<td>Homework and tests regularly throughout the semester and Final Exam (Weeks 5, 6, 7, 11, 16)</td>
</tr>
<tr>
<td>4. Use the Remainder and Factor Theorems for polynomial functions.</td>
<td>Homework and tests regularly throughout the semester and Final Exam (Weeks 5, 6, 16)</td>
</tr>
<tr>
<td>5. Solve application problems.</td>
<td>Homework and tests regularly throughout the semester and Final Exam (Weeks 1, 2, 3, 4, 6, 16)</td>
</tr>
<tr>
<td>6. Solve equations and systems of equations with a variety of methods and determine symmetry using their graphs.</td>
<td>Homework and tests regularly throughout the semester and Final Exam (Weeks 1, 2, 3, 4, 6,7,8, 16)</td>
</tr>
<tr>
<td>7. Solve inequalities graphically and algebraically and solve systems of inequalities.</td>
<td>Homework and tests regularly throughout the semester and Final Exam (Weeks 1, 3, 5, 6, 16)</td>
</tr>
<tr>
<td>8. Identify and express conics in standard rectangular form and graph.</td>
<td>Homework and tests regularly throughout the semester and Final Exam (Weeks 2, 3, 16)</td>
</tr>
</tbody>
</table>
### Outcomes

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

### 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:

<table>
<thead>
<tr>
<th>NUMERIC</th>
<th>GRADE</th>
<th>POINTS</th>
<th>DEFINITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>93–100</td>
<td>A</td>
<td>4.00</td>
<td>Superior</td>
</tr>
<tr>
<td>90–92</td>
<td>A-</td>
<td>3.67</td>
<td>Superior</td>
</tr>
<tr>
<td>87–89</td>
<td>B+</td>
<td>3.33</td>
<td>Above Average</td>
</tr>
<tr>
<td>83–86</td>
<td>B</td>
<td>3.00</td>
<td>Above Average</td>
</tr>
<tr>
<td>80–82</td>
<td>B-</td>
<td>2.67</td>
<td>Above Average</td>
</tr>
<tr>
<td>77–79</td>
<td>C+</td>
<td>2.33</td>
<td>Average</td>
</tr>
<tr>
<td>73–76</td>
<td>C</td>
<td>2.00</td>
<td>Average</td>
</tr>
<tr>
<td>70–72</td>
<td>C-</td>
<td>1.67</td>
<td>Below Average</td>
</tr>
<tr>
<td>67–69</td>
<td>D+</td>
<td>1.33</td>
<td>Below Average</td>
</tr>
<tr>
<td>63–66</td>
<td>D</td>
<td>1.00</td>
<td>Below Average</td>
</tr>
<tr>
<td>60–62</td>
<td>D-</td>
<td>0.67</td>
<td>Poor</td>
</tr>
<tr>
<td>00-59</td>
<td>F</td>
<td>0.00</td>
<td>Failure</td>
</tr>
</tbody>
</table>

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. **Examination Policy:**

Click here to enter text.

R. **Class Attendance and Homework Make-Up Policy:**

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S. **Classroom Expectations:**

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**Classroom Etiquette:**

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. **College Procedures/Policies:**

**Attendance Requirements:** All students are required to attend all scheduled classes and examinations. Each faculty member has the right to establish regulations regarding attendance that he/she considers necessary for successful study.

Students who do not attend classes may be administratively withdrawn from those classes. However, failure to attend classes does not constitute withdrawal, and students are expected to process a formal withdrawal through the Student Records Office in Kee Hall.

**Student engagement requirements:**

Student engagement is based on the “active pursuit” of learning which can be measured by class attendance, class participation (in class or online), taking required quizzes/examinations, and submission of work assignments or papers. Student engagement consists of a student attending at least 60% of the class sessions (there should be attendance throughout the term) and/or completing 75% of the assignments listed on the syllabus at the midpoint in the term. Exceptions can be made when there is on-going communication between the student and faculty member. The communication must be documented and the faculty member and student must be in agreement regarding the exception. Students not meeting the expectation will be administratively withdrawn from class. If a student believes he/she was administratively withdrawn in error, he/she may file an appeal. Being administratively withdrawn may have program and financial aid implications.

**Academic Misconduct** is any activity that tends to compromise the academic integrity of the college, or subvert the educational process. Examples of academic misconduct include, but are not limited to:

1. Violation of course or program rules as contained in the course syllabus or other information provided...
to the student; violation of program requirements as established by departments and made available to students.

2. **Plagiarism** including, but not limited to, submitting, without appropriate acknowledgment, any written, visual or oral material that has been copied in whole or in part from the work of others (whether such source is published or not) even if the material is completely paraphrased in one’s own words. This includes another individual’s academic composition, compilation, or other product, or a commercially prepared paper. Plagiarism also includes submitting work in which portions were substantially produced by someone acting as a tutor or editor.

   Such practices constitute plagiarism regardless of motive. Those who deny deceitful intent, claim not to have known that the act constituted plagiarism, or maintain that what they did was inadvertent are nevertheless subject to penalties when plagiarism has been confirmed.

3. **Cheating** and dishonest practices in connection with examinations, papers and projects, including but not limited to using unauthorized notes, study aids or information on an examination; obtaining help from another student during an examination; taking an exam or doing work for another student; providing one’s own work for another student to copy and submit as his/her own; or allowing another student to do one’s work and then submitting the work as one’s own. Also included would be altering a graded work after it has been returned, then submitting the work for re-grading; or submitting identical or similar papers for credit in more than one course without prior permission from the course instructors.

4. **Fabrication** including but not limited to falsifying or inventing any information, data or citation; presenting data that were not gathered in accordance with defined appropriate guidelines, and failing to include an accurate account of the method by which data were collected.

5. **Obtaining an Unfair Advantage** including, but not limited to stealing, reproducing, circulating, or otherwise gaining access to examination materials prior to the time authorized by the instructor; unauthorized collaborating on an academic assignment; taking, hiding or altering resource material; or undertaking any activity with the purpose of creating or obtaining an unfair advantage over another student’s academic work.

6. **Aiding and Abetting Academic Dishonesty** including, but not limited to providing material, information or other assistance to another person with the knowledge that such aid could be used in any of the violations stated above, or providing false information in connection with any inquiry regarding academic integrity.

7. **Alteration of Grades or Marks** including but not limited to, action by the student in an effort to change the earned credit or grade.

In addition, cases of academic dishonesty may involve photocopied materials. Materials used may fall under the Copyright Act. Violations of said Act may subject the user and/or the College to sanctions.

**Statement on Disabilities**: 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).

Students who encounter difficulty in any of their courses are encouraged to visit the Tutoring Resource Center (Room 119 in Fallerius Technical Education Center) for tutoring assistance, and the Student Success Center (Room 136 in Kee Hall) for academic assistance, advising services, referrals for personal counseling and Learning Disability (LD) Testing.

**Statement on Withdrawals**: As a student, you are expected to attend class. If you are unable or choose not to attend class, or if for whatever reason you are unable to keep up with the requirements of a course, you need to officially drop the class at the Student Records Office. Refund dates and withdrawal dates will vary slightly from term to term. Contact the Student Records Office for applicable dates. Additionally
these dates are posted on the academic calendar available on the college’s website, 
www.ncstatecollege.edu, under the Academics heading on the home page and are available at the Student Records Office in Kee Hall. Students should go to the Student Records Office (Room 142 in Kee Hall) to process their withdrawal from any class.

If you choose to walk away from your class without officially withdrawing from it, the faculty member teaching the class must grade your classroom performance on the material available to him or her. This normally results in an "F" grade. An "F" grade can lower your grade point average considerably depending on the total credits accumulated.