A. **Academic Division:** Liberal Arts

B. **Discipline:** Mathematics

C. **Course Number and Title:** MATH1050 Technical Mathematics I

D. **Course Coordinator:** Pam Robison  
   **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:**  
   MATH0074 Minimum grade of C minus  
   OR COMPASS Algebra > 30 OR ACT Math > 20  
   OR ACCUPLACER Elementary Algebra score of 58 or higher AND ACCUPLACER College Level Math score of 20 or higher

G. **Syllabus Effective Date:** Fall, 2017

H. **Textbook(s) Title:**
   *Basic Technical Math w/Calculus*
   - Author: Allyn J. Washington
   - Year: 2014
   - Edition: 10th
   - ISBN #: 9780133116533

I. **Workbook(s) and/or Lab Manual:** Supplies: TI-83 or TI-84 recommended; scientific calculator required

J. **Course Description:** A study of 1) Basic computational techniques assisted by the use of hand-held calculators including significant digits, unit conversions, roots, and radicals; 2) Basic algebra operations, equation solving, formula manipulation, applied problems, graphical solutions of equations, solving simultaneous linear equations by algebra, graphing, and Cramer’s Rule; 3) Geometry definitions, facts and formulas; 4) Graphing, including linear and non-linear functions and interpolation; 5) Algebra, including factoring and rational expressions and quadratic equations; 6) Basic trigonometric functions and their applications to right triangles; 7) Measures of central tendency and dispersion and 8) Ratios, rates, proportions and variation.
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>
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<tr>
<td>Communication – Speech</td>
<td></td>
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<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>
<td></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. Evaluate numerical and algebraic expressions using the rules and laws of algebra and signed numbers.</td>
<td>Homework, Test, Final Exam Weeks 1, 8, 11, 12, and 16</td>
</tr>
<tr>
<td>2. Use a scientific calculator to make simple numerical calculations.</td>
<td>Homework, Test, Final Exam Weeks 1-16</td>
</tr>
<tr>
<td>3. Use the Metric and U.S. standard systems to convert from one to the other.</td>
<td>Homework, Test, Final Exam Weeks 1, 8, 16</td>
</tr>
<tr>
<td>4. Simplify radicals, radical expressions, and exponents using only positive exponents.</td>
<td>Homework, Test, Final Exam Weeks 2, 3, 8, 16</td>
</tr>
<tr>
<td>5. Calculate perimeters, circumference, area and volumes of solid geometric objects.</td>
<td>Homework, Test, Final Exam Weeks 4, 8, 16</td>
</tr>
<tr>
<td>6. Prepare graphs from tables of data and linear equations.</td>
<td>Homework, Test, Final Exam Weeks 5, 8, and 16</td>
</tr>
<tr>
<td>7. Draw angles in standard position, perform operations with angles and solve for unknown parts of a right triangle.</td>
<td>Homework, Test, Final Exam Weeks 4, 6, 7, 8 and 16</td>
</tr>
<tr>
<td>8. Perform operations of polynomials including solving linear and quadratic equations.</td>
<td>Homework, Test, Final Exam Weeks 8, 9, 10, 11, 12 and 16</td>
</tr>
<tr>
<td>9. Perform operations involving fractions.</td>
<td>Homework, Test, Final Exam Weeks 9, 10 and 16</td>
</tr>
<tr>
<td>10. Solve problems involving proportions and variation.</td>
<td>Homework, Test, Final Exam Weeks 12 and 16</td>
</tr>
<tr>
<td>11. Calculate frequency distributions, measures of central tendency, standard deviation, normal distributions, linear regression, and nonlinear regression.</td>
<td>Homework, Test, Final Exam Weeks 13-16</td>
</tr>
</tbody>
</table>

M. Topical Timeline (Subject to Change):

<table>
<thead>
<tr>
<th>Weeks 1-3</th>
<th>Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fundamental Operations of Algebra</td>
</tr>
<tr>
<td></td>
<td>Calculations and Approximate Numbers &amp; Metric System</td>
</tr>
<tr>
<td></td>
<td>Exponents &amp; Approximate Numbers &amp; Metric System</td>
</tr>
<tr>
<td></td>
<td>Scientific Notation &amp; Conversion &amp; Metric System</td>
</tr>
<tr>
<td></td>
<td>Roots, Radicals &amp; Approximate Numbers &amp; Metric System</td>
</tr>
<tr>
<td></td>
<td>Algebraic Expressions – Add &amp; Subtract</td>
</tr>
</tbody>
</table>
### Algebraic Expressions
- Multiply
- Divide
- Solving Equations
- Formulas
- Application

### Week 4
- Lines & Angles
- Triangles
- Quadrilaterals
- Circles
- Solids

### Week 5
- Introduction to Functions & Rectangular Coordinates
- Graphs of Functions
- Graphing Calculator
- Graphs of Functions Defined by Tables of Data

### Weeks 6-7
- Angles
- Defining Trigonometric Functions
- Values of Trigonometric Functions
- Right Triangles
- Applications

### Weeks 7-9
- Linear Equations
- Graphs of Linear Functions
- Solving Equations Graphically
- Solving 2x2 Equations Algebraically
- Solving 2x2 Equations by Determinants

### Weeks 9-10
- Special Products
- Factoring Common Factors and Difference of Squares
- Factoring Trinomials
- The Sum and Difference of Cubes
- Multiplication and Division of Fractions
- Addition and Subtraction of Fractions
- Equations Involving Fractions

### Weeks 11-12
- Quadratic Equations: Solutions by Factoring
- Quadratic Equations: Solutions by Completing the Square
- Quadratic Equations: Solutions by the Quadratic Formula

### Week 12
- Ratios and Proportions
- Variation

### Weeks 13-16
- Frequency Distributions
- Measures of Central Tendency
- Standard Deviation
- Linear Regression
- Nonlinear Regression

### Course Assignments:

- Appendix B [Metric System and conversions]
- Chapter 1 (Give a quiz or a mini test over sections 1.1-1.6) [M. 1-12]
- Chapter 2 [M. 13-17]
  - Omit corresponding segments, similar triangles
  - Omit section 2.5
- Test 1
- Chapter 3[M. 18-21]
  - Omit section 3.2

Updated: 8/9/2017
Chapter 4 [M. 22-26]
Midterm Exam (VALUE rubric, quantitative literacy)
Chapter 5 [M. 27-31]
  Omit sections 5.5 and 5.6
Chapter 6 [M. 32-38]
  Omit section 6.4
Chapter 7 [M. 39-41]
  Omit section 7.4
Test 3
Chapter 18 [M. 42-43]
Chapter 22 [M. 44-48]
  Omit sections 22.4 and 22.5
Comprehensive Final Exam (VALUE rubric, critical thinking)

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: Homework/Quizzes 20%, Tests 60%, Final 20%

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Q. Examination Policy:

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R. Class Attendance and Homework Make-Up Policy:

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S. Classroom Expectations:

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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 though 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](http://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.