COURSE OUTLINE

<table>
<thead>
<tr>
<th>COURSE</th>
<th>PREFIX NO.</th>
<th>EFFECTIVE DATE</th>
<th>NEXT REVIEW DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAT</td>
<td>140</td>
<td>FALL 2012</td>
<td>FALL 2013</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TITLE:</th>
<th>CREDITS</th>
<th>CONTACTS</th>
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<tbody>
<tr>
<td>Analytical Geometry and Calculus I</td>
<td>4</td>
<td>CLASS - LAB - TOTAL</td>
</tr>
<tr>
<td></td>
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<td>4 0 4</td>
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PREREQUISITES: MAT 110 and MAT 111 with grade of "C" or better

DESCRIPTION: This course includes the following topics: derivatives and integrals of polynomials; rational, logarithmic, exponential, trigonometric and inverse trigonometric functions; curve sketching; maxima and minima of functions; related rates; work; and analytical geometry.

TEXTBOOK(S) OR ALTERNATIVE: Calculus: Early Transcendental Functions, 5th edition by Larson and Edwards, 2011

MATERIALS (specifying those to be purchased by student): A calculator is required.

COLLATERAL READING: None

CLASS MANAGEMENT ACTIVITIES (Attendance, tardies, testing, etc.):
Academic Dishonesty: Students are expected to do their own work. Please refer to the NETC Student Code and Grievance Procedure for a definition of academic dishonesty and an outline of the disciplinary action that may result.

Attendance: Students are expected to attend all scheduled classes and are responsible for all class work, homework, notes, etc., whether or not they are present. In the event of extenuating circumstances, such as illness, you are allowed to miss up to 8 hours. The student will be dropped after missing more than 8 hours of scheduled classes. If an instructor drops a student for excessive absences at any time during the semester, a grade of “F” will be assigned. If the student withdraws from the course, a grade of “W” or “WF” will be assigned as outlined in the college catalog. There is no such thing as an excused absence!! If you exceed the allowed number of absences, you will be dropped.

Tardies: A student is considered tardy if not present for roll call which is taken at the beginning of the class. Three tardies constitute one (1) hour of absence.
Classroom Etiquette:
1. Electronic communication devices (pagers, cell phones, etc.) are NOT allowed in the classroom. On-call emergency personnel should see the instructor for an exemption.

2. No visible food or drinks are allowed in the classrooms.

3. No radio or headphones are allowed in the classrooms.

Student ID Policy: It is mandatory that every student wear his/her ID at all times when on campus. During the first week of classes, the instructor will issue a reminder to wear the ID. This reminder is a warning.

After the first week of classes, instructors are required to dismiss students without an ID from class. The student may get his/her ID (or a new one in Student Services for $3.00) and return to class before the midpoint of the class. If the student cannot get an ID and return to class by the midpoint, the instructor will record the absence.

DISABILITIES STATEMENT:
Students with disabilities are encouraged to contact the Dean of Student Services to discuss needs or concerns as they pursue an academic program and participate in campus life. The Dean of Student Services will provide guidance regarding official documentation of disabilities and/or accommodation of needs. (See College Catalog.)

MAKE-UP TEST PROCEDURE:
No make-up tests are given except in extenuating circumstances. The student is responsible for contacting the instructor prior to the time the test is scheduled to arrange a meeting to discuss the process of making up the missed test.

RESOURCES (A-V, persons, tools/equipment):

COURSE TOPICAL OUTLINE (List topics and sub-topics of course) and Calendar or approximate length of time devoted to topic.

TENTATIVE CLASS OUTLINE

<table>
<thead>
<tr>
<th>WEEKS</th>
<th>SECTION</th>
<th>DESCRIPTION</th>
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</thead>
<tbody>
<tr>
<td>1-2</td>
<td>1.1</td>
<td>Graphs and Models</td>
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<tr>
<td></td>
<td>1.2</td>
<td>Linear Models and Rates of Change</td>
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<tr>
<td></td>
<td>1.3</td>
<td>Functions and Their Graphs</td>
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</table>
Course Outline
MAT 140
Page 3

1.4 Fitting Models to Data
1.5 Inverse Functions
1.6 Exponential and Logarithmic Functions

TEST 1

3-5
2.1 A Preview of calculus
2.2 Finding Limits Graphically and Numerically
2.3 Evaluating Limits Analytically
2.4 Continuity and One-Sided Limits
2.5 Infinite Limits

TEST 2

6-9
3.1 The Derivative and the Tangent Line Problem
3.2 Basic Differentiation Rules and Rates of Change
3.3 Product and Quotient Rules and Higher-Order Derivatives

<table>
<thead>
<tr>
<th>WEEKS</th>
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<tbody>
<tr>
<td>3.4</td>
<td></td>
<td>The Chain Rule</td>
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<tr>
<td>3.5</td>
<td></td>
<td>Implicit Differentiation</td>
</tr>
<tr>
<td>3.7</td>
<td></td>
<td>Related Rates</td>
</tr>
<tr>
<td>3.8</td>
<td></td>
<td>Newton’s Method</td>
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TEST 3

10-12
4.1 Extrema on an Interval
4.2 Rolle’s Theorem and the Mean Value Theorem
4.3 Increasing and Decreasing Functions and the First Derivative Test
4.4 Concavity and Second Derivative Test
4.5 Limits at Infinity
4.6 A Summary of Curve Sketching
4.7 Optimization Problems
4.8 Differentials

TEST 4

13-15
5.1 Antiderivatives and Indefinite integration
5.2 Area
5.3 Riemann Sums and the Definite Integral
5.4 The Fundamental Theorem of Calculus
5.5 Integration by Substitution
5.6 Numerical Integration
STUDENT LEARNING OUTCOMES:
The student will apply the techniques of differentiation and integration for polynomial, rational, logarithmic and exponential functions with an emphasis on problem solving, interpretation, and application of these processes.

COLLEGE WIDE COMPETENCIES:
Apply mathematical/computational skills to solve problems.

INSTRUCTIONAL METHODS TO COMPLETE LEARNING OUTCOMES:
Lectures covering course material will be supplemented by exercises to be completed outside of class. Emphasis will be placed on problem solving techniques and understanding underlying theory.

EVALUATIVE METHODS TO APPRAISE OBJECTIVES:
The final grade for MAT 140 will be the mean of the grades of the topical tests. No test grades will be dropped.

GRADING SCALE: The grade point scale that will be used is as follows:

A = 93 - 100
B = 85 - 92
C = 77 - 84
D = 70 - 76
F = Below 70