NORTHEASTERN TECHNICAL COLLEGE
COURSE OUTLINE

COURSE:  PREFIX NO.  |  EFFECTIVE DATE  |  NEXT REVIEW DATE
MAT 130  |  Summer 2014  |  Summer 2015

TITLE:  CREDITS  |  CONTACTS  |  CLASS - LAB - TOTAL
Elementary Calculus  |  3  |  3  -  0  -  3

PREREQUISITES:  MAT 110 and MAT 111 with a grade of "C" or better

DESCRIPTION:  This course includes the following topics: differentiation and integration of polynomials, rational, logarithmic, and exponential functions; and interpretation and application of these processes.

TEXTBOOK(S) OR ALTERNATIVE:  Calculus and its Applications, 10th edition, Bittinger.

MATERIALS (specifying those to be purchased by student):  Textbook A TI-83, TI-83+, or TI-84+ graphing calculator, and the Mathematics Department approved electronic course management system are required.

COLLATERAL READING:

CLASS MANAGEMENT ACTIVITIES (Attendance, tardies, testing, academic dishonesty, 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.

**ID Policy:** It is mandatory that every student wears his/her ID at all times when on the Cheraw 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.

**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**

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<th>WEEK</th>
<th>SECTION</th>
<th>TOPICS/DESCRIPTIONS</th>
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<td>1-3</td>
<td>1.1</td>
<td>Limits: Numerical &amp; Graphical Approach</td>
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<td>1.2</td>
<td>Algebraic Limits &amp; Continuity</td>
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<td>Differentiation Using Limits of Difference Quotients</td>
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<td>Differentiation Techniques: The Power &amp; Sum-Difference Rules</td>
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<td>Differentiation Techniques: The Product &amp; Quotient Rules</td>
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<td>The Chain Rule</td>
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<td>1.8</td>
<td>Higher Order Derivatives</td>
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TEST 1

| 4-6  | 2.1     | Using First Derivatives to Find Maximum and Minimum Values & Sketch Graphs |
|      | 2.2     | Using Second Derivatives to Find Maximum and Minimum Values & Sketch Graphs |
|      | 2.3     | Graph Sketching: Asymptotes & Rational Functions |
|      | 2.4     | Using the Derivatives to Find Absolute Maximum & Minimum Values |
WEEK  SECT  TOPICS/DESCRIPTIONS

4-6  2.5  Maximum-Minimum Problems: Business & Economic Problems
     2.6  Marginals & Differentials
     2.7  Implicit Differentials
     3.5  The Derivatives of $a^x$ & $\log_a x$
     3.6  An Economic Application: Elasticity of Demand

7-10  4.1  The Area under a Graph
      4.2  Area, Antiderivatives, & Integrals
      4.3  Area & Definite Integrals
      4.4  Properties of Definite Integrals
      4.5  Integration Techniques: Substitution
      4.6  Integration Techniques: Integration by Parts
      4.7  Integration techniques: Table
      5.1  An Economics Application: Consumer Surplus & Producer Supplies
      5.2  Applications of the Integration of Growth and Decay Models

Review for Final Exam if time will allow.

FINAL EXAM

STUDENT LEARNING OUTCOMES/OBJECTIVES OF COURSE:
The student will be able to:
  1. Find the derivatives and integrals of a polynomial, rational, exponential or logarithmic function
  2. Interpret and solve application problems involving differentiation and integration of a function.

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

INSTRUCTIONAL METHODS TO COMPLETE OBJECTIVES: Lectures covering course material will be supplemented by exercises to be completed outside of class.

GENERAL EDUCATION OUTCOME: Graduates will be able to sue a systematic approach to solve problems.

EVALUATIVE METHODS TO APPRAISE OBJECTIVES: The overall course grade will be weighted as follows:
Proctored Tests  60%
Homework/Quiz  15%
Final Exam  25%
No test grade will be dropped under any circumstances.

**Make-Up Test Procedures:** 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.

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

- 100 - 90 = A
- 89 - 80 = B
- 79 - 70 = C
- 69 - 60 = D
- Below 60 = F