Carthage Mathematics Department
Course Summary for Math 1220 Calculus II

1. Credits: 4
2. Semesters Offered: Fall, Spring
3. Text(s): *Thomas' Calculus: Early Transcendentals, Single Variable* by Hass, Heil, and Weir, 14th edition, with MyMathLab, Pearson, 2018.
4. Topics Covered:
    a. Limits reviewed
    b. Derivatives reviewed
    c. Antiderivatives reviewed
    d. Finite Sums, Riemann Sums
    e. The Fundamental Theorem of Calculus
    f. Numerical Integration
    g. Applications of the Definite Integral, including area, volume, centroids, and probability
    h. Techniques of Integration
    i. Improper integrals and comparison tests
    j. Sequences and Series, including Taylor Series
    k. Introduction to parametric and polar equations
5. Skills Enhanced:
    a. Technical writing
        i. At instructor's discretion, approximately 8 pages of written work expected.
        ii. Complete sentences, clear exposition, and correct notation emphasized.
        iii. Revisions based on feedback from instructor are strongly encouraged.
    b. Computer skills
        i. Mathematica: integration, numerical integration, sums
        ii. Word: appropriate formatting, mathematical conventions
        iii. Excel: using spreadsheets as a computational tool
6. Sample Syllabus:
    a. Sections 2.2-2.6, assuming knowledge of sections covered in Math 1120
    b. Sections 3.1-3.6, 3.9, assuming knowledge from Math 1120
    c. Section 3.11.
    d. Section 4.5 assuming knowledge from Math 1120
    e. Sections 5.1-5.6, assuming knowledge from Math 1120
    f. Sections 6.2, 6.4, assuming knowledge from Math 1120
    g. Section 6.5, 6.6
    h. Sections 8.1-8.5, 8.7-8.9
    i. Sections 10.1-10.8
    j. Sections 11.1-11.4
7. Miscellanea
    a. Math 1220 is expected to meet four days per week, for approximately 200 minutes per week, even though the course is scheduled for 295 minutes per week. It is appropriate but not expected that the instructor use more than 200 minutes for instructional purposes.
8. Course Goals: By the end of the course, students should be able to do the following.
    a. Use appropriate techniques of integration to compute reasonable antiderivatives.
        i. Assessment: The final exam includes questions that require this knowledge.
    b. Use the Fundamental Theorem of Calculus correctly and where appropriate.
        i. Assessment: The final exam includes questions that require this ability.
    c. Apply integral calculus to appropriate situations.

         i. Assessment: The final exam includes questions that require this knowledge.
d.   Write calculus material using correct notation and appropriate form.
         i. Assessment: Homework is evaluated on correctness of writing as well as computation.
         ii. Assessment: Formal writing assignments are evaluated for correctness of writing as well as computation.
e.   Demonstrate sufficient knowledge of the course content.
         i. Assessment: Exams, quizzes, and homework assignments. Sufficient knowledge is required to obtain a passing grade. The knowledge must be demonstrated on homework and exams.