I. Calculus II

II. Prerequisite: Math 2431 with a grade of “C” or better.


IV. Catalog Description:

This course includes the study of techniques of integration, applications of the definite integral, an introduction to differential equations, polar graphs, and power series.

V. General Notes:

Use of Technology:

All course sections in the Calculus sequence, other than those sections meeting in the computer lab on a daily basis, will require that the student have a TI-83/84 graphing calculator. Instructors teaching sections which meet in the computer lab on daily basis may elect to require a graphing calculator as specified above. Many classrooms also have a TI-84 emulator called IT-SmartView loaded on the classroom computer.

The mathematical software package Mathematica should be available on all computers at school and is available from home use for one year to all faculty and students. The students can receive a copy of the student version of Mathematica in the open computer labs. Other software packages may be available in some labs.

As a result of taking this course, the student should be able to use technology to:
1. Approximate definite integrals using a built-in integration feature.
3. Investigate series representations of functions, their graphs, and the convergence or divergence of series.
4. Approximate values of functions and definite integrals using Taylor series.
5. Graph curves in Polar Coordinates.

It is strongly recommended that the instructor assign at least one substantial out of class project or computer assignment. The assignment should require the student to demonstrate problem solving ability and should involve a writing component.

The textbook is supported by Enhanced Webassign (EWA). The use of EWA is optional.
- New books may come with a EWA pass code.
- Students without a pass code may purchase pass codes online or from the bookstore.
- In addition to the pass code, students need a Class Key from their instructor.
- Instructors who do not already have a EWA account can go to www.webassign.net to sign up for their free EWA account.
- Instructors who plan to require assignments out of EWA, will need to set-up their course and assignments.
- Instructors who do not plan to require EWA, can give the Class Key for the generic section to students who purchased the code. This will enable students to practice problems in EWA, have access to the e-book, and use other supporting material.
- Many of the exercises in each section of the text are assignable as online homework, including free response, multiple choice, and multi-part formats.

**EDGE Initiatives:**

Engage students in real world meaningful learning by incorporating activities such as the following as a way to assess the relevance of what students learn in class to applications outside of class:

- students **with job experience related to Calculus** share with the class (musicians, construction, graphic design, etc.)
- students **research applications or share news stories** that involve calculus
- students **build an open rectangular box** of maximum volume from a rectangular piece of cardboard, where a square area is cut out from each corner of the cardboard
- students **build a dog house** of maximum interior area given a fixed amount of lumber

**VI. Course Outline:**

The following outline includes suggested homework assignments. Instructors may wish to assign more problems than are listed here. Instructors may assign alternate problems (even instead of odds for example), but all topics on this list should be covered. Note that this is a suggested list of problems. **Instructors MUST assign all the problems whether they are in WebAssign or not.**

**Chapter 5 – Integrals**

5.2: 2, 6, 8, 10, 14, 18, 20, 22, 24, 27, 28, 29, 32, 34, 36, 38, 39, 40, 42, 44f, 52

5.3: 3, 6, 9, 12, 15, 18, 19, 20, 25, 26, 27, 28, 33, 35, 37, 47, 50, 53, 54, 59

5.4: 2-4, 6, 7-9, 10, 12, 13, 15-18, 19, 30

5.5: 3, 9, 10, 14, 17, 22, 23, 29, 32, 34, 35, 42, 44, 47, 50, 59, 61, 64

5.6: 1, 2, 6, 9, 15, 18, 21, 24, 26-28, 32, 35, 36, 40, 41, 43

5.7: 1-6, 11-13, 15-18, 19, 22, 25, 28, 31, 34, 35

**Appendix G:** 2, 6, 9, 12, 16, 18, 21, 24, 27, 30, 40, 43
Chapter 6 – Applications of Integration

6.1: 1, 3-7 (odd), 9, 11, 13-27 (odd), 33-37 (odd)
6.2: 1, 3, 5-11 (odd), 13, 15, 17, 21, 25a, 31-35 (odd), 38
6.3: 1-5, 7, 8, 9, 11, 13, 15, 17, 29-33, 35, 37
6.4: 1, 3, 5, 7, 17, 20, 27, 29
6.5: 1, 2, 6, 7, 9, 12, 14, 15
6.6: 1-7, 9, 11, 13, 15, 17, 19, 38 (optional), 39 (optional), 45, 47

Chapter 7 – Differential Equations

7.1: 1, 3-11 (odd), 13
7.2: 1, 3-7 (odd), 9-13 (odd), 19, 21, 23
7.3: 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 23, 39, 43, 45, 47
7.4: 1-5, 7, 9-17 (odd)
7.5: 1, 3, 5, 7, 9

Polar Coordinates (Not in WebAssign)

Appendix H.1: 1-9 (odd), 13-21, 27, 29, 33, 37, 43, 48, 51, 59, 63
Appendix H.2: 1, 3, 6, 7, 9, 12, 15-29 (odd), 30, 31, 35, 37

Chapter 8 – Infinite Sequences and Series

8.1: 3-10, 11-19 (odd), 20, 21-25 (odd), 31, 35, 39, 42, 45, 49, 50
8.2: 3-19 (odd), 20, 23, 25, 27, 31, 35, 36, 39, 41, 53, 65
8.3: 3-10, 13-23 (odd), 28, 32, 37
8.4: 2, 3, 5, 7, 8, 15, 17, 21-29 (odd), 30, 37-39
8.5: 1, 2, 4, 5, 7, 9, 10, 13, 19, 20, 22, 25, 27
8.6: 1, 2, 3, 5, 8, 11, 12, 15, 19, 21, 25, 27, 35, 38
8.7: 2, 3, 4, 6, 7, 11, 15, 21, 25, 27, 35, 43, 47, 52, 61, 62
8.8: 1-7, 9, 11, 14, 16, 22, 27

Optional Sections –

6.7 Applications to Economics and Biology: 2, 3, 8, 10, 12, 13, 15
6.8 Probability: 1-4, 5, 6, 7, 8-11, 12

VII. Evaluation Methods:

The course grade will be determined by the individual instructor using a variety of evaluation methods. A portion of the course grade will be determined through the use of frequent assessment using such means as tests, quizzes, projects, or homework as developed by the instructor. Some of these methods will require the student to demonstrate ability in problem solving and critical thinking as evidenced by explaining and interpreting solutions. These methods will include the appropriate use of graphing calculators or PC software as required in the course. A comprehensive final examination is required which must count at least one-fifth and no more than one-third of the course grade. The final examination will include items that require the student to demonstrate ability in problem solving and critical thinking as evidenced by detailed, worked-out solutions.

VIII. Effective Date: January, 2012
Reviewed by Committee: November, 2012