



COURSE SYLLABUS

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SECTION 1: COURSE INFORMATION

Format: 15 weeks.

Course ID: MATH-2244

Course Title: Calculus 2

College: College of Natural and Health Sciences

Prerequisites: Grade of C or higher in MATH-2144 Calculus 1

Credit Hours: 4

Instructor: See the online course in MyFIRE for instructor contact information and availability.

Course Description

This course involves the study of antiderivatives, definite integrals, improper integrals, sequences, series, transcendental functions, and polar coordinates.

Course Overview

Students will acquire knowledge of concepts of calculus, and they will develop skills necessary for solving problems and doing exercises involving these concepts.

Course Workload

Time spent on course assignments will vary by student depending on familiarity with course content, reading rate of speed, writing rate of speed, and other individual factors. Based on averages for most students, it is estimated that the course workload estimate for this course is 12 hours per week.

Course Materials

Now, instead of registering for your Math classes and then buying your MyLabMath access separately, the required **access** will be ordered for you, and will be combined with your tuition as a course fee. This enables you to know the full cost of your math courses upfront (with no surprises about additional out of pocket costs for required course materials—keep in mind, the print text is now an optional upgrade for students...rather than an included component in the delivery). Once you register for MATH 2144, login to MyFire and find your MyLabMath course ready to go with the included eText.

If you have questions about the cost of your course materials, please access your financial statement through the Student Information System. The cost will be listed as a textbook fee. If after checking your financial statement you have additional questions, please contact SEU's bookstore @ (863) 669-4412.

REQUIRED: Hass, J., Heil, C., Weir, M. D., Estrugo, J. L. Z., & Thomas, G. B. (2019). Thomas calculus: early transcendentals. Harlow, United Kingdom: Pearson Education.

REQUIRED: MyLabMath (accessed through MyFire)

REQUIRED: Class notes (accessed through MyFire)

OPTIONAL: The use of a non-graphing calculator is permitted in all course work.

Phones may not be used as a calculator when testing.

Required and optional textbooks are accessed and ordered through [SEU's bookstore](#).

Disclaimer: The resources utilized in this course provide information, thoughts and insights that should encourage critical thinking on the part of the student. Please note as well that as an Assembly of God institution, Southeastern University does not necessarily endorse specific personal, religious, philosophical, or political positions found in these resources.

Course Topics

The purpose of this course is to introduce, reinforce, and measure learning on the following topics:

This course is designed to give students a broad-based general overview of mathematics, especially those majoring in the liberal arts, elementary education, and the social sciences. The course is designed to give students a variety of instructional tools to help students become proficient in mathematics and apply it to everyday life.

- Antiderivatives
- Integration
- Infinite Series
- Polar Coordinates

Intended Learning Outcomes

As a result of reading, study, and assessments in this course, the student should be able to:

1. Solve mathematical problems using antiderivatives.
2. Apply techniques of integration to practical problems.
3. Demonstrate the correct usage of transcendental functions, to include logarithmic and exponential functions.
4. Understand principles of inverse trigonometric functions.
5. Apply concept of infinite series to solve problems.
6. Show how to calculate areas of plane regions and lengths of curves in polar coordinates.

Late Work

All homework for a given Exam will be due at the beginning of class on the day it is tested. These assignments cannot be made up!

If a student misses an exam that is NOT an extreme, documented emergency the student will receive a zero for that exam.

A test may be made up only if the professor is contacted and provided with official, dated documentation of an EXTREME circumstance within 48 hours. Otherwise, the missed exam will be a zero in the grade book.

Examples of EXTREME circumstances are as follows:

- Written proof of HOSPITAL/ER stay. No nurse's notes, etc.
- Written proof of subpoena/jury duty
- Involved in an accident; must bring in police report
- Death in immediate family (parent, grandparent, sibling); must bring in documentation

Students who miss an exam due to a school-sanctioned, Provost-approved event, including all athletic events, MUST notify the instructor a minimum of one week in advance and MUST take the exam PRIOR to leaving on the school event unless notified in writing (handwritten or electronic) otherwise by the instructor.

Extra Credit

None Accepted

SECTION 2: SOUTHEASTERN POLICIES

Academic Policies

View this link to see Southeastern's Policies regarding SEU's Mission and Vision Statements, Title IX Statement, Student Services, Class Participation, Official Email, MyFIRE Use, Technical Difficulties, Technical Support, Disability Statement, Academic Honesty, Course Evaluation, Official Withdrawal, Grading Scale, and Netiquette.


SECTION 3: COURSE SCHEDULE

The **Course Schedule** provides a listing of your work in this course. The assessments are listed by Module and include the due dates and point values.


Note: Assignments are due by 11:59 p.m. EST on the due date, unless otherwise noted.

AIM, LEARN, AND APPLY DESCRIPTIONS


Aim

 When you see the Aim icon, you will be introduced to topics and ideas that will be covered throughout this module. The AIM will also provide you with a glimpse into your learning objectives and an introduction to this module.

Learn

 When you see the Learn icon, all of your reading assignments will be listed and may include additional resources that your instructor is providing to help you complete the activities and assessments for the module.

Apply

 When you see the Apply Icon, it will be time to demonstrate your learning for the module. The items here are those in which you'll be graded and may include discussions, activities, assignments, quizzes, exams, and projects.

MODULE 1: Chapter 5

1/12/22 - 1/27/22



- Discuss the course syllabus
- Discuss the Student Acknowledgement Quiz
- Discuss how to log into MyLabMath
- Complete sections 5.1-5.6

Upon completion of this Chapter, student will be able to:

- Estimate Area with Finite Sums
- Use Sigma Notation

- Understand Definite Integrals and Their Rules
- Find Exact Areas Under and Between Functions



- Read: Course Syllabus, sections 5.1-5.6
- Locate the Student Acknowledgement Quiz in MyFire
- Locate the MyLabMath link in MyFire
- Locate the Shared Documents link in MyFire



- Complete Student Acknowledgement Quiz in MyFire (for attendance)
- Due: Friday, Week 1 at 11:55pm EST (you will be automatically dropped from the course if this is not completed)

All MyMathLab Homework from the semester combined to count as one test grade (100 pts)

- Section 5.1 Area and Estimating with Finite Sums
- Section 5.2 Sigma Notation and Limits of Finite Sums
- Section 5.3 The Definite Integral

- Section 5.5 Indefinite Integrals and the Substitution Method
- Section 5.6 Definite Integral Substitutions and the Area Between Curves

Test 1 Chapter 5 - Due: January 27 (100 pts)

MODULE 2: Chapter 6**1/28/22 - 2/14/22**

Upon completion of Chapter 6, students will be able to:

- Use integration to find volumes
- Use integration to find arc length
- Use integration to find surface area



- Section 6.1 Volumes Using Cross-Sections
- Section 6.2 Volumes Using Cylindrical Shells
- Section 6.3 Arc Length
- Section 6.4 Areas of Surfaces of Revolution



MyMathLab Homework Assignments – Due: February 14

- Section 6.1 Volumes Using Cross-Sections
- Section 6.1 Volumes Using Cross-Sections
- Section 6.2 Volumes Using Cylindrical Shells
- Section 6.3 Arc Length
- Section 6.4 Areas of Surfaces of Revolution

MODULE 3: Chapter 7.3 and 8
2/15/22 - 3/15/22



Upon Completion of Chapter 7.3 and 8, students will be able to:

- Understand hyperbolic functions
- Develop techniques for integration



Reading – Textbook or eText:

- Section 7.3 Hyperbolic Functions
- Section 8.2 Using Integration Formulas
- Section 8.3 Integration by Parts
- Section 8.4 Trigonometric Integrals
- Section 8.5 Integration of Rational Functions by Partial Fractions
- Section 8.8 Improper Integrals



MyMathLab Homework Assignments – Due: March 15

All MyMathLab Homework from the semester combined to count as one test grade (100 pts)

- Section 7.3 Hyperbolic Functions
- Section 8.1 Using Basic Integration Formulas
- Section 8.2 Using Integration Formulas
- Section 8.3 Integration by Parts
- Section 8.4 Trigonometric Integrals
- Section 8.7 Numerical Integration
- Section 8.8 Improper Integrals

Test 3 Chapter 7.3, 8 - Due: March 15

MODULE 4: Chapter 10**3/16/22 - 4/7/22**

Upon completion of Chapter 10, students will be able to:

- Represent sequences
- Determine convergence and divergence
- Understand the meaning of infinite sums and methods to calculate them
- Test convergence of unknown series by comparison to known series
- Determine absolute convergence
- Recognize and work with power series



Reading – Textbook or eText:

- Section 10.1 Sequences
- Section 10.2 Infinite Series
- Section 10.3 The Integral Test
- Section 10.4 Comparison Tests
- Section 10.5 Absolute Convergence; The Ratio and Root Tests
- Section 10.6 Alternating Series and Conditional Convergence
- Section 10.8 Taylor and Maclaurin Series
- Section 10.9 Convergence of Taylor Series
- Section 10.10 Applications of Taylor Series



MyMathLab Homework Assignments – Due: April 7

All MyMathLab Homework from the semester combined to count as one test grade (100 pts)

- Section 10.1 Sequences
- Section 10.2 Infinite Series
- Section 10.3 The Integral Test
- Section 10.4 Comparison Tests
- Section 10.5 Absolute Convergence; The Ratio and Root Tests
- Section 10.7 Power Series
- Section 10.8 Taylor and Maclaurin Series
- Section 10.9 Convergence of Taylor Series
- Section 10.10 Applications of Taylor Series

Test 4 Chapter 10 - Due: April 7

MODULE 5: Chapter 11
4/8/22 - 4/20/22



Upon completion of Chapter 11, students will be able to:

- Parameterize plane curves
- Understand and work with polar coordinates



Reading – Textbook or e Text

- Section 11.1 Parameterizations of Plane Curves
- Section 11.2 Calculus with Parametric Curves

- Section 11.4 Graphing Polar Coordinate Equations
- Section 11.5 Areas and Lengths in Polar Coordinates



MyMathLab Homework Assignments – Due: April 20

All MyMathLab Homework from the semester combined to count as one test grade (100 pts)

- Section 11.1 Parameterizations of Plane Curves
- Section 11.2 Calculus with Parametric Curves
- Section 11.3 Polar Coordinates
- Section 11.4 Graphing Polar Coordinate Equations
- Section 11.5 Areas and Lengths in Polar Coordinates

SECTION 4: ASSESSMENTS

MyLabMath Homework

Description

Practice is foundational to mastery in mathematics. Expect to spend a minimum of two hours studying out of class for each hour in class.

You will be required to complete homework assignments online through MyFire. There are many resources to help you through the homework problems but be sure to attempt the problem yourself first. You are encouraged to work the sections throughout the unit.

Mastery is built by encountering different problems. You will encounter problems in the homework that are similar to what we do in class, and you will also see problems meant to extend ideas. Take your time. Make mistakes and learn from them. Ask questions.

All homework for each section is due the day and time of the given exam for that unit.

Total Possible Points

100

Grade Weight

All homework combined is worth 1/6 of final grade. **This cannot be dropped.**

Chapter Tests

Description

The test will paper/pencil and will be given in class. A scientific calculator may be used (no graphing calculators). Phones should be placed in backpacks. Use of a phone during testing will result in a zero for the test.

There will be five tests throughout the course of the semester covering the following items:

- | | | |
|----|-----------------|------------|
| 1. | Chapter 5 Test | 100 points |
| 2. | Chapter 6 Test | 100 points |
| 3. | Chapter 8 Test | 100 points |
| 4. | Chapter 10 Test | 100 points |
| 5. | Chapter 11 Test | 100 points |

Total Possible Points

400

Grade Weight

All Chapter tests combined will be worth 4/6 of the final grade. The lowest of the five chapter tests will be dropped from your final grade.

Cumulative Final Exam

Description

The last week of the semester students will receive a cumulative review set of problems. Students with more than 3 exams scheduled on one day can petition the instructor and department chair/college dean to take one of the exams another day.

Total Possible Points

100

Grade Weight

The final exam is worth $\frac{1}{6}$ of your final grade. This cannot be dropped.

Appendix A

None