

**Angelina College
Science and Mathematics Division
Mathematics 2414 Calculus II
Instructional Syllabus**

I. BASIC COURSE INFORMATION**A. Course Description:**

Calculus II. Four semester-hours credit. Differentiation and integration of transcendental functions; parametric equations and polar coordinates; techniques of integration; sequences and series; improper integrals. Prerequisite: Math 2413 Calculus I

B. Intended Audience

Science, Mathematics and Engineering Majors.

C. Instructor

Instructor's Name: Susan Bradley

Office Location: S203-B

Office Hours: As posted on the office door

Phone: (936) 633-55405

E-mail: sbradley@angelina.edu

II. INTENDED STUDENT OUTCOMES**A. Core Objectives Required for this Course**

1. **Critical Thinking:** to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information.
2. **Communication:** to include effective development, interpretation and expression of ideas through written, oral, and visual communication.
3. **Empirical and Quantitative Skills:** to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions.

B. Course Learning Outcomes for all Sections

Upon successful completion of this course, students will:

1. Use the concepts of definite integrals to solve problems involving area, volume, work, and other physical applications.
2. Use substitution, integration by parts, trigonometric substitution, partial fractions, and tables of anti-derivatives to evaluate definite and indefinite integrals.
3. Define an improper integral.
4. Apply the concepts of limits, convergence, and divergence to evaluate some classes of improper integrals.
5. Determine convergence or divergence of sequences and series.
6. Use Taylor and MacLaurin Series to represent functions.
7. Use Taylor or MacLaurin series to integrate functions not integrable by conventional methods.
8. Use the concept of polar coordinates to find areas, lengths of curves, and representations of conic sections.

III. Assessment Measures**A. Assessments for the Core Objectives**

1. **Critical Thinking:** Students will complete an out-of-class worksheet. A rubric will be used to assess critical thinking skills and correctness of the project.
2. **Communication:** Students will make a classroom presentation of a calculus problem and will complete an out-of-class worksheet. A rubric will be used to assess oral and visual communication skills during the classroom presentation, and a rubric will be used to assess written communication skills on the worksheet.
3. **Empirical and Quantitative Skills:** Students will complete an out-of-class worksheet. A rubric will be used to assess empirical and quantitative skills and correctness of the worksheet.

B. Assessments for Course Learning Outcomes

1. The student's ability to use the concepts of definite integrals to solve problems involving area, volume, work, and other physical applications will be assessed through imbedded test questions.
2. The student's ability to use substitution, integration by parts, trigonometric substitution, partial fractions, and tables of anti-derivatives to evaluate definite and indefinite integrals will be assessed through embedded test questions.
3. The student's ability to define an improper integral will be assessed through embedded test questions.
4. The student's ability to apply the concepts of limits, convergence, and divergence to evaluate some classes of improper integrals will be assessed through embedded test questions.
5. The student's ability to determine convergence or divergence of sequences and series will be assessed through embedded test questions.
6. The student's ability to use Taylor and MacLaurin Series to represent functions will be assessed through embedded test questions.
7. The student's ability to use Taylor or MacLaurin series to integrate functions not integrable by conventional methods will be assessed through an out-of-class worksheet.
8. The student's ability to use the concept of polar coordinates to find areas, lengths of curves, and representations of conic sections will be assessed through embedded test questions.

IV. **INSTRUCTIONAL PROCEDURES**

This course will be taught using a combination of lectures, discussions, and practice exercises. The amount of time spent using any one technique will vary from class to class and from lesson to lesson as determined to be most appropriate by the instructor. The graphing calculator will be utilized as appropriate in classroom demonstrations.

V. **COURSE REQUIREMENTS AND POLICIES**

A. **Required Textbooks, Materials and Equipment**

1. Text(s) and supplementary materials
 - Calculus, by James Stewart (Cengage), 8th Edition.
2. Specific equipment required of all students
 - A TI (Texas Instruments) graphing calculator is required or highly recommended. The TI-84 graphing calculator will be used by the instructor in all classroom demonstrations.

B. **Assignments**

1. Specific assignments required for all students (term papers, homework, speeches, participation in community activities, etc.)
 - See the attached: **Course Content and Topics**
2. Appropriate due dates, schedules, deadlines, etc. as determined by the individual instructor
 - See the attached **Math 2414 Assignments**.

C. **Course Policies - This course conforms to the policies of Angelina College as stated in the Angelina College Handbook.**

1. Academic Assistance - If you have a disability (as cited in Section 504 of the Rehabilitation Act of 1973 or Title II of the Americans with Disabilities Act of 1990) that may affect your participation in this class, you should see Sellestine Hunt – Associate Dean of Student Services, Student Center Room 200. At a post-secondary institution, you must self-identify as a person with a disability; Ms. Hunt will assist you with the necessary information to do so. To report any complaints of discrimination related to disability you should contact Mr. Steve Hudman – Dean of Student Affairs, Student Center, Room 101, or 936-633-5292 or by e-mail shudman@angelina.edu.

2. Attendance - Attendance is required as per Angelina College Policy and will be recorded every day. Any student with three (3) consecutive absences or four (4) cumulative absences may be dropped from the class. Records will be turned in to the academic dean at the end of the semester. Do not assume that non-attendance in class will always result in an instructor drop. **You must officially drop a class or risk receiving an F.** This is official Angelina College Policy.

3. Additional Policies Established by the Instructor

1. Class attendance is required and necessary.
2. Punctuality is appreciated and expected. The instructor is not obligated to admit you after class has begun.
3. The use of tape recorders is allowed only with the express permission of the instructor. If you wish to use such a device in the classroom, please discuss it with your instructor outside of class.
4. Guests not officially enrolled in the course, including the children of students, are not allowed in the classroom
5. Cell phones, pagers, and similar electronic devices are not appropriate in the classroom.
6. All work to be graded must be done in pencil on regulation size notebook or graph paper.
7. Class participation, questions, and discussion are encouragement appreciated, and necessary.
8. On most tests, it is necessary for you to show your work completely. Our concern is usually with procedures, not just with answers.
9. Daily quizzes cannot be made up.
10. Students are expected to do all assignments and be prepared to discuss them during the next class.

VI. COURSE OUTLINE: Description of the Course Activities including due dates, schedules, and deadlines. See attached: COURSE CONTENT AND TOPICS, and MATH 2414 - ASSIGNMENTS

VII. EVALUATION AND GRADING

A. Grading Criteria (percents, extra credit, etc.)

1. Three major exams: 60%
Daily grades: 20%
Comprehensive final exam: 20%
2. Those who drop the course on or before February 3rd will not receive a grade for the class. Those dropping between February 4th and April 4th (inclusive) will receive a W in the course. April 4th is the last day for dropping a course. Dropping is your responsibility.
3. No make-up test are authorized. The final exam grade will be used a second time to replace any one missed test or the lowest test grade during the semester.

B. Determination of Grade (assignments of letter grades)

Grades will be assigned according to the scale below.

90 - 100% = A

80 - 89% = B

70 - 79% = C

60 - 69% = D

Below 60% = F

The instructor reserves the right to adjust grades upward from this scale.

The instructor may modify the provisions of the syllabus to meet individual class needs by informing the class in advance as to the changes being made.

Course Content and Topics
Mathematics 2414, Calculus II

<u>Lesson</u>	<u>Topics</u>
1	5.1 Areas Between Curves
2	5.2 Volumes
3	5.3 Volumes by Cylindrical Shells
4	5.4 Work; 5.5 Average Value of a Function
5	6.2 Exponential Functions and Their Derivatives; 6.4 Derivatives of Logarithmic Functions
6	6.6 Inverse Trigonometric Functions
7	6.8 Indeterminate Forms and l'Hospital's Rule
8	Review
9	Test 1
10	7.1 Integration by Parts; 7.2 Trigonometric Integrals
11	7.3 Trigonometric Substitution
12	7.4 Integration of Rational Functions by Partial Fractions
13	7.5 Strategy for Integration; 7.6 Integration Using Tables and Computer Algebra Systems
14	7.7 Approximate Integration
15	7.8 Improper Integrals
16	8.1 Arc Length
17	8.3 Applications to Physics and Engineering; 8.4 Applications to Economics and Biology
18	Review
19	Test 2
20	11.1 Sequences; 11.2 Series
21	11.3 The Integral Test and Estimates of Sums; 11.4 The Comparison Tests
22	11.5 Alternating Series; 11.6 Absolute Convergence and the Ratio and Root Tests
23	11.7 Strategy for Testing Series; 11.8 Power Series
24	11.9 Representation of Functions as Power Series
25	11.10 Taylor and MacLaurin Series
26	11.11 Applications of Taylor Polynomials
27	Review
28	Test 3
29	Review
30	Comprehensive Final Exam

MATH 2414 - ASSIGNMENTS
Spring, 2017

<u>Lesson</u>	<u>Date</u>	<u>Section</u>	<u>Page</u>	<u>Assignments</u>
1	1/18	5.1	362	1, 3, 5, 7, 11, 13, 15, 17, 23, 47, 53
2	1/23	5.2	374	1-21 odd; 31
3	1/25	5.3	381	1-9 odd; 13, 15, 29, 37, 41
4	1/30	5.4	386	1, 4, 5, 7, 9, 13, 15, 17, 21
		5.5	391	1, 7, 9, 11, 13, 15, 17, 19
5	2/1	6.2	418	31, 32, 36, 37, 40, 41, 43, 53, 57, 59
		6.4	436	2, 4, 5, 6, 8, 9, 11, 27, 43, 45
6	2/6	6.6	481	1-17 odd; 22, 23-31 odd; 35, 37, 39
7	2/8	6.8	499	1, 3, 8, 9, 10, 13, 19, 25, 27, 43, 45, 47, 56, 61, 75
				Review
8	2/13			
9	2/15			Test 1
10	2/20			
11	2/22			
12	2/27			
13	3/1			
14	3/6			
15	3/8			
16	3/20			
17	3/22			
18	3/27			
19	3/29			
20	4/3			
21	4/5			
22	4/10			
23	4/12			
24	4/17			
25	4/19			
26	4/24			

<u>Lesson</u>	<u>Date</u>	<u>Section</u>	<u>Page</u>	<u>Assignments</u>
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27	4/26			
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28	5/1			
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29	5/3			
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30	5/10			
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COMPREHENSIVE FINAL EXAM (8:00 a.m. - 10:00 a.m.)

* Assignment is to be turned in for a grade.