I.　BASIC COURSE INFORMATION

A.　Course Description - Calculus I - Math 2413.　Four semester-hours credit. Limits and continuity; the Fundamental Theorem of Calculus; definition of the derivative of a function and techniques of differentiation; applications of the derivative to maximizing or minimizing a function; the chain rule, mean value theorem, and rate of change problems; curve sketching; definite and indefinite integration of algebraic, trigonometric, and transcendental functions, with an application to calculation of areas.　Prerequisite: Math 2412 Pre-Calculus Math or equivalent preparation.

B.　Intended Audience
Science, Mathematics and Engineering Majors.

C.　Instructor
Instructor's Name:　Ronnie Hall
Office Location:　S203-C
Office Hours: 2:15 pm – 3:15 pm MTWR
Phone: (936) 633-5260
E-mail: rhall@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. Develop solutions for tangent and area problems using the concepts of limits, derivatives, and integrals.
2. Draw graphs of algebraic and transcendental functions considering limits, continuity, and differentiability at a point.
3. Determine whether a function is continuous and/or differentiable at a point using limits.
4. Use differentiation rules to differentiate algebraic and transcendental functions.
5. Identify appropriate calculus concepts and techniques to provide mathematical models of real-world situations and determine solutions to applied problems.
6. Evaluate definite integrals using the Fundamental Theorem of Calculus.
7. Articulate the relationship between derivatives and integrals using the Fundamental Theorem of Calculus.

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 develop solutions for tangent and area problems using the concepts of limits, derivatives, and integrals will be assessed through embedded test questions.
2. The student=s ability to draw graphs of algebraic and transcendental functions considering limits, continuity, and differentiability at a point will be assessed through embedded test questions.
3. The student=s ability to determine whether a function is continuous and/or differentiable at a point using limits will be assessed through embedded test questions.

4. The student=s ability to use differentiation rules to differentiate algebraic and transcendental functions will be assessed through embedded test questions..
5. The student=s ability to identify appropriate calculus concepts and techniques to provide mathematical models of real-world situations and determine solutions to applied problems will be assessed through an out-of-class worksheet.
6. The student=s ability to evaluate definite integrals using the Fundamental Theorem of Calculus will be assessed through embedded test questions.
7. The student=s ability to articulate the relationship between derivatives and integrals using the Fundamental Theorem of Calculus will be assessed through an out-of-class worksheet.

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), Eightth 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 2413 Assignments**.

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

1. Academic Assistance B 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 Ms. Sellestine Hunt, Room 200 of the Student Center. At a post-secondary institution, you must self-identify as a person with a disability; Special Student Support Services 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, Student Center, Room 101 or 936-633-5292.

2. Attendance B 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 Registrar=s Office 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.   <u>COURSE</u> <u>OUTLINE</u>**: Description of the Course Activities including due dates, schedules, and deadlines.**
   See attached: COURSE CONTENT AND TOPICS, and MATH 2413 - ASSIGNMENTS

VII.   <u>EVALUATION</u> <u>AND</u> <u>GRADING</u>
   A.   Grading Criteria (percents, extra credit, etc.)
   1.   Four major exams: 64.5%
        Daily grades: 16.1%
        Out-of-class assignment - 3.2%
        Comprehensive final exam: 16.1%
   2.   Those who drop the course on or before September 13th will not receive a grade for the class.   Those dropping between September 14th and November 6th (inclusive) will receive a W in the course.   November 6th is the last day for dropping a course.   <u>Dropping is your responsibility</u>.
   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 2413, Calculus I

Lesson	Section	Description
1	1.4	The Tangent and Velocity Problems
2	1.5	The Limit of a Function
3	1.6	Calculating Limits Using the Limit Laws
4	1.8	Continuity
5		**Test 1 (Sections 1.4 - 1.8, omit 1.7)**
6	2.1	The Derivative
	2.2	The Derivative as a Function
7	2.3	Differentiation Formulas
8	2.4	Derivatives of Trigonometric Functions
9	2.5	The Chain Rule
	2.6	Implicit Differentiation
10	2.7	Rates of Change in the Natural and Social Sciences
11	2.8	Related Rates
12	2.9	Linear Approximations and the Differential
13		**Text 2 (Sections 2.1 - 2.9)**
14	3.1	Maximum and Minimum Values
15	3.2	The Mean Value Theorem
	3.3	How Derivatives Affect the Shape of a Graph
16	3.4	Limits at Infinity: Horizontal Asymptotes
17	3.5	Summary of Curve Sketching
	3.6	Graphing with Calculus and Calculators
18	3.7	Optimization Problems
19		**Test 3 (Sections 3.1 - 3.7)**
20	3.9	Antiderivatives
21	4.1	Areas and Distances
22	4.2	The Definite Integral
23	4.3	The Fundamental Theorem of Calculus
24	4.4	Indefinite Integrals and the Net Change Theorem
25	4.5	The Substitution Rule

<u>Lesson</u>	<u>Section</u>	<u>Description</u>
26		**Test 4 (Sections 3.9 - 4.5)**
27	6.2	Exponential functions and Their Derivatives
	6.4	Derivatives of Logarithmic Functions
28	6.6	Inverse Trigonometric Functions
	6.8	Indeterminate Forms and L=Hospital=s Rule
29		Review
30		**Comprehensive Final Exam**

MATH 2413 - ASSIGNMENTS
Fall, 2017

Lesson	Date	Section	Page	Assignments
1	08/28	1.4	49	#'s 1, 3, 4, 5, 8
2	08/30	1.5*	59	#'s 2, 4, 7, 8, 12, 14, 16, 17, 20, 31, 32, 44
3	09/06	1.6	70	#'s 1, 2, 4, 5, 12, 14, 18, 22, 26, 28, 33, 35, 44
4	09/11	1.8*	91	#'s 2, 4, 6, 7, 9, 12, 14, 16, 21, 24, 30, 42, 49
5	09/13			**Test 1 (Sections 1.4 - 1.8, omit 1.7)**
6	**09/18**	2.1	113	#'s 1, 3, 6, 9, 12, 14, 17, 27, 37, 48
		2.2	125	#'s 2, 3, 6, 9, 13, 17, 19, 21, 31
7	09/20	2.3*	140	#'s 1, 4, 7, 8, 9, 12, 17, 18, 24, 27, 30, 36, 46, 50, 52, 53, 59, 62, 64, 70, 74, 80, 83, 85, 92
8	09/25	2.4*	150	#'s 2, 3, 4, 5, 10, 12, 13, 16, 18, 23, 25, 32, 35, 37
9	09/27	2.5	158	#'s 1, 2, 4, 5, 7-14, 17, 21, 26, 31, 34, 47, 50, 52, 65
		2.6	166	#'s 1, 4, 5, 10, 11, 14, 22, 26, 35, 37
10	10/02	2.7	178	#'s 1, 5, 8, 9, 14, 23, 29, 30
11	10/04	2.8*	185	#'s 2, 3, 4, 10, 12, 16, 15, 16, 18, 20, 23, 25, 30, 33, 39, 43
12	**10/09**	2.9	192	#'s 1, 2, 6, 9, 11, 12, 13, 15, 16, 23, 24, 31, 36
13	10/11			**Test 2 (Sections 2.1 - 2.9)**
14	10/16	3.1*	211	#'s 1, 3, 4, 6, 7, 10, 11, 12, 16, 19, 20, 23, 26, 28, 30, 34, 37, 45, 46, 53, 55, 59
15	10/18	3.2	219	#'s 1, 3, 6, 7, 10, 12, 13, 16
		3.3*	227	#'s 2, 3, 6, 7, 8, 9, 10, 14, 15, 18, 20, 31, 34, 41
16	10/23	3.4	241	#'s 2, 3, 7, 10, 12, 16, 17, 20, 21, 24, 25, 30, 35, 39, 40, 58
17	10/25	3.5	250	#'s 1, 3, 8, 11, 15, 21, 24, 33, 35, 45, 52
		3.6	257	#'s 1, 2, 6, 7
18	10/30	3.7*	264	#'s 1, 3, 7, 8, 13, 14, 18, 22, 34, 37, 40, 51
19	**11/01**			**Test 3 (Sections 3.1 - 3.7)**
20	11/06	3.9	282	#'s 1, 4, 7, 8, 10, 13, 15, 16, 20, 21, 23, 24, 28, 30, 33, 37, 38, 46, 54, 55, 59
21	11/08	4.1*	303	#'s 2, 3, 4, 14, 15, 18, 21, 24
22	11/13	4.2*	316	#'s 1, 3, 7, 9, 10, 17, 20, 21, 22, 24, 26, 33, 36, 37, 41, 42, 47, 48, 51, 55 Worksheet*
23	11/15	4.3*	327	#'s 2, 5, 8, 9, 11, 15, 16, 17, 19, 20, 25, 26, 29, 32, 39, 42,

Lesson	Date	Section	Page	Assignments
				49, 54 Worksheet*
24	11/20	4.4	336	#'s 2, 5, 7, 8, 10, 20, 24, 29, 30, 33, 39, 47, 49, 50, 58
25	11/27	4.5	346	#'s 1, 4, 7, 9, 14, 16, 18, 19, 23, 26, 36, 39, 47
26	**11/29**			**Test 4 (Sections 3.9 - 4.5)**
27	12/04	6.2	418	#'s 31, 32, 36, 37, 40, 41, 43, 52, 53, 54, 57, 59, 65
		6.4	436	#'s 2, 4, 5, 6, 8, 9, 12, 14, 17, 18, 26, 27, 43, 45
28	12/06	6.6	481	#'s 22-25, 29, 31, 33, 37, 38
		6.8	499	#'s 1, 8, 9, 10, 13, 18, 25, 27, 45, 47, 57, 61
29	12/08			**Review**
30	**12/12**			**COMPREHENSIVE FINAL EXAM (11:00 a.m. - 1:00 p.m.)**

*These assignments are due to be turned in at the beginning of the next class period.