

**Angelina College**  
**Division of Science and Mathematics**  
**MATH 1325 Calculus for Business & Social Sciences**  
**Instructional Syllabus – SPR 2017**

**I. BASIC COURSE INFORMATION:**

- A. MATH 1325 Calculus for Business & Social Sciences:** This course is the basic study of limits and continuity, differentiation, optimization and graphing, and integration of elementary functions, with emphasis on applications in business, economics, and social sciences. This course is not a substitute for Math 2413, Calculus I.

Prerequisite: MATH 1314 – College Algebra or Math 1324 – Mathematics for Business and Social Sciences

- B.** The intended audience includes students majoring in business, management, economics, or the life or social sciences.
- C. Instructor:** Avrila Klaus  
**Office Location/Hours:** by arrangement  
**Phone:** 903-841-8694 (text if no answer)  
**E-mail Address:** aklaus@angelina.edu (CC ebrillblaiddes@gmail.com if you wish)

**II. INTENDED STUDENT OUTCOMES:**

- A. Core Objectives Required for this Course** (Only the core objectives to be assessed are listed.)

- 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**

1. Apply calculus to solve business, economics, and social sciences problems.
2. Apply appropriate differentiation techniques to obtain derivatives of various functions, including logarithmic and exponential functions.
3. Solve application problems involving implicit differentiation and related rates.
4. Solve optimization problems with emphasis on business and social sciences applications.
5. Determine appropriate technique(s) of integration.
6. Integrate functions using the method of integration by parts or substitution, as appropriate.
7. Solve business, economics, and social sciences applications problems using integration techniques.

### **III. ASSESSMENT MEASURES**

#### **A. Assessments for the Core Objectives**

[As required, each core objective shall be assessed using a standardized rubric.] [The judgment of how the objectives were met will be in accordance to the pre-designated “developing” level of attainment for this course. In the paragraphs below, an assignment may be an essay, matching or multiple choice questions.]

- 1. Critical thinking:** Students will be required via written questions (such as essay, matching or multiple choice questions) to demonstrate the proper use of critical thinking.
- 2. Communication:** Students will be instructed in the proper written format and organization of different types of mathematical applications. Students will be instructed how to format and organize visual information (i.e., graphs, tables, etc.). Written responses to written questions will be assessed to determine the level of pertinent knowledge of each student with respect to written, oral, and visual responses.
- 3. Empirical and Quantitative Skills (EQS) -** Students will be instructed on using empirical and quantitative skills and “critical thinking” to draw conclusions from their written, visual, and oral communications as they apply to real world applications. Written questions will be assessed to determine the level of pertinent knowledge of each student with respect to this objective.

#### **B. Assessments for Course Learning Outcomes**

**The Course Learning Outcomes for all Sections of para. II. B. are listed below along with how each shall be assessed:**

1. Apply calculus to solve business, economics, and social sciences problems. This Learning Outcome will be assessed via written questions (such as essay, matching or multiple choice questions) to determine the level of pertinent knowledge of each student with respect to these outcomes. A course-specific standardized rubric shall be used.
2. Apply appropriate differentiation techniques to obtain derivatives of various functions, including logarithmic and exponential functions. This Learning Outcome will be assessed via written questions (such as essay, matching or multiple choice questions) to determine the level of pertinent knowledge of each student with respect to these outcomes. A course-specific standardized rubric shall be used.
3. Solve application problems involving implicit differentiation and related rates. This Learning Outcome will be assessed via written questions (such as essay, matching or multiple choice questions) to determine the level of pertinent knowledge of each student with respect to these outcomes. A course-specific standardized rubric shall be used.
4. Solve optimization problems with emphasis on business and social sciences applications. This Learning Outcome will be assessed via written questions (such as essay, matching or multiple choice questions) to determine the level of pertinent knowledge of each student with respect to these outcomes. A course-specific standardized rubric shall be used.
5. Determine appropriate technique(s) of integration. This Learning Outcome will be assessed via written questions (such as essay, matching or multiple choice questions) to determine the level of pertinent knowledge of each student with respect to these outcomes. A course-specific standardized rubric shall be used.
6. Integrate functions using the method of integration by parts or substitution, as appropriate. This Learning Outcome will be assessed via written questions (such as essay, matching or multiple choice questions) to determine the level of pertinent knowledge of each student with respect to these outcomes. A course-specific

standardized rubric shall be used.

7. Solve business, economics, and social sciences applications problems using integration techniques. This Learning Outcome will be assessed via written questions (such as essay, matching or multiple choice questions) to determine the level of pertinent knowledge of each student with respect to these outcomes. A course-specific standardized rubric shall be used.

#### IV. **INSTRUCTIONAL PROCEDURES:**

The course is 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.

#### V. **COURSE REQUIREMENTS AND POLICIES -**

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

1. Required Textbook: Finite Mathematics and Calculus with Applications, 11<sup>th</sup> ed., Lial, Hungerford, Holcomb, Mullins, Pearson publisher. An electronic copy is acceptable. Ref. 2 below.
2. Access to [www.angelina.mylabsplus.com](http://www.angelina.mylabsplus.com) is required. The access code is included with a new book bought at the AC bookstore or it may be purchased separately. The access code may also be purchased with a major credit card on the publisher's website [www.angelina.mylabsplus.com](http://www.angelina.mylabsplus.com). An electronic copy of the text is provided as part of the MyLabsPlus access.
3. Specific equipment required of all students- A graphing calculator with “nDeriv”, “fnInt”, “dy/dx”,  $\int f(x)dx$ , “Draw:Tangent” or equivalent commands **is required**. Classroom demonstrations and instruction will support the use of calculator models TI-83+ or model TI-84; hence, one of these models is highly recommended.
4. Additional text(s) and supplementary materials for the individual instructor: See instructor.
5. Specific equipment required by the individual instructor: Cartesian-coordinate Graph Paper, straight edge.

##### B. **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, in Student Center, Room 101, (936) 633-5292 or by email [shudman@angelina.edu](mailto:shudman@angelina.edu).
2. **Attendance** – Attendance is required as per Angelina College Policy and will be recorded every day. Any student with two(2) or more consecutive, or three(3) or more 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

- \$ No eating, drinking, or smoking is allowed in any classroom.
- \$ Children and other guests are not allowed in the classroom. Any child care problems must be handled outside the classroom. Children are not allowed to wait in the hall unsupervised. See Student Services for ongoing problems.
- \$ On most questions on assignments or tests, it is necessary for you to show your work completely. The instructor's concern is usually with procedures, not just with answers.
- \$ Daily quizzes may be given without notice and cannot be made up. These may include homework quizzes.
- \$ Students are expected to do all assignments and be prepared to discuss them during the next class period.
- \$ *Please turn off beepers, cellular phones, i-pods, and other non-calculator electronic devices and store them out of sight.*
- \$ Students are expected to participate in the class room through courteous, relevant comments and questions.
- \$ Behavior that interferes with the learning environment is not tolerated.
- \$ Any student or students caught cheating (plagiarism, collusion, copying, etc.) on an exam or an assignment will receive a zero for that exam or assignment.
- \$ Conferences outside of class are available by appointment

### VI. COURSE OUTLINE:

- A. See attachment entitled "Course Outline and Topics"

### VII. EVALUATION AND GRADING

#### A. Grading Criteria (*percentages, extra credit, etc.*) –

1. Your numerical grade will be a weighted average based on the following:
  - a. **3-TESTS:** (weight = 1.0 with **100 points max. per exam**). The material tested on exam is given on the "Course Outline and Topics" attached to the end of this syllabus. Make-up exams are not routinely given.
2. **Homework and Quizzes:** (weight = 1.0 with **100 max. points total**). Homework will be completed on MyLabsPlus and is required.
  - a. MyLabsPlus comes with new books from the AC bookstore. The access code may also be purchased with a major credit card on the website [www.angelina.mylabsplus.com](http://www.angelina.mylabsplus.com).
  - b. Each homework assignment shall be completed within the allotted time.
  - c. The homework may be done on your home computer. There are limited campus sites available at the library and at the math labs in Rooms S223 and S110. These may be used on a limited space available basis. (No printing or surfing may be done except in the library.)
3. **Final Exam:** (weight 1.0 with **100 points max. on the Final**)
4. **Note:** Those who drop the course on or before the last-date-to-drop will receive a grade of "W". Dropping a course is the student's responsibility.

**B. Determination of Grade (*assignment of letter grades*) –**

**Total possible points = 300(TESTS) + 100(MML homework) + 100(FINAL EXAM) = 500**

Letter grades will be assigned according to the numerical grade scale below:

90% - 100% of the possible points = A (minimum of 450 pts.)

80% - 89% of the possible points = B (minimum of 400 pts.)

70% - 79% of the possible points = C (minimum of 350 pts.)

60% - 69% of the possible points = D (minimum of 300 pts.)

Below 60% of the possible points = F (less than 300 pts.)

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

**VIII. SYLLABUS MODIFICATION** – 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.

**FYI**

Angelina College's campus security is available 24 hours a day by contacting 936-676-2563. Please use this number only as necessary for security issues.

Should classes for Angelina College be cancelled due to weather emergencies or other contingencies, notification will be available through local television and radio. Notification for day classes will be available by 6:00 am and for night classes by 3:00 pm. You may also call the main switchboard (936-639-1301) for information.

Class	Date	Content & Topics [Math with Applications, L/H/H/M, 11 <sup>th</sup> ed.]	For Homework Assignments Go To <a href="http://www.angelina.mylabsplus.com">www.angelina.mylabsplus.com</a>
1	01/17	Syllabus Review: 3.1 Functions, 3.2 Graphs of Functions 3.3 Applications of Linear Functions [C, R, P, & marginals]	TERMS: Variable cost, fixed cost, revenue, profit, marginal cost, marginal revenue, marginal profit. Graph linear functions via TI YN= feature. <b><i>Bring your calculator to every class.</i></b>
2	01/19	11.1 Limits [via numerical methods and via limit properties]	Generate numerical function values via TI TABLE or YN{...} .
3	01/24	11.1 Limits continued... 11.2 One-Sided Limits and Limits Involving Infinity	11.2 One-sided limits, infinite limits, & limits at infinity
4	01/26	11.3 Rates of Change	11.3 Average vs. instantaneous & meaning of marginal cost, etc.
5	01/31	11.4 Tangent Lines and Derivatives[via slope or limit definition]	In addition, TI features: Draw Tangent(), nDeriv & dy/dx may be used as per instructor's directions.
6	02/02	Test 1: CH 11.1 – 11.4	
7	02/07	11.5 Techniques for Finding Derivatives[using rules]	Notations for derivatives. <b>RULES:</b> constant rule, power rule, constant times a function rule, sum-or-difference rule
8	02/09	11.6 Derivatives of Products and Quotients[using rules]	<b>RULES:</b> product rule, quotient rule. <b>TERM:</b> average cost.
9	02/14	11.7 The Chain Rule[or the rule for taking the derivative of a composite function]	<b>RULES:</b> general chain rule[2 formats], generalized power rule
10	02/16	11.8 Derivatives of Exponential and Logarithmic Functions[by rules]	<b>RULES:</b> $e^x$ , $e^{g(x)}$ , $\ln x$ , $\ln g(x)$ , $\ln  g(x) $
11	02/21	11.9 Continuity and Differentiability	Continuity at a point, Continuity on open and closed intervals, relationship between continuity and differentiability
12	02/23	Wrap-up Topics, Complete Class Activity, or Answer Questions	
13	02/28	Test 2: CH 11.5 – 11.9	
14	03/02	12.1 Derivatives and Graphs	<b>TERMS:</b> Intervals on which functions are increasing & decreasing, critical numbers, local extrema, First Derivative Test.
15	03/07	12.2 The Second Derivative[and higher derivatives]	
16	03/09	12.3 Optimization Applications	<b>TERMS:</b> Extreme-Value Theorem, absolute extrema, The Critical-Point Theorem, economic lot size(optional)
17	03/21	12.4 Implicit Differentiation	<b>TERMS:</b> Explicitly defined function, implicitly defined function
18	03/23	12.5 Related Rates	<b>TERMS:</b> General definition of "related rates"
19	03/28	12.6 Curve Sketching	
20	03/30	Wrap-up Topics, Complete Class Activity, or Answer Questions	
21	04/04	<b>TEST # 3 CH 12.1-12.6</b>	
22	04/06	13.1 Antiderivatives	Antiderivative Rules
23	04/11	13.2 Integration by Substitution	May "work" when CH 13.1 rules do not.
24	04/13	13.3 Area and the Definite Integral	Using only the area interpretation of the definite integral, $f(x) \geq 0$ .
25	04/18	13.4 The Fundamental Theorem of Calculus	Relates area under $f(x)=F'(x)$ to the total change in $F(x)$ for $[a,b]$ .
26	04/20	13.5 Applications of Integrals	
27	04/25	13.5 Applications of Integrals– cont. & Gini Index Activity(opt.)	13.6 Table of Integrals (optional)
28	04/27	XX.X Integration by parts [Instructor to provide info]	NOTE: MML HW is from Lial/G/R text 9 <sup>th</sup> ed - CH16.1
29	05/02	Wrap-up Topics, Complete Class Activity, or Answer Questions	
30	Final	<b>COMPREHENSIVE FINAL EXAM CH 11.1 – CH 16.1</b>	