Math 1496 – Calculus I Syllabus

Semester: Fall 2018 CRN 18594
Meeting times: MWF 11:00 –11:50am, TTH 10:50– 12:05pm
Room: MCS 220
Instructor: Dr. Danny Arrigo
Email: darrigo@uca.edu
Webpage: http://danielarrigo.com
Office location: MCS 201
Office telephone No.: 450-5668
Office hours: MTWTh 2:00-4:00 pm
Textbook: Calculus – Early Transcendental 2nd Ed., Person 2015
Author: Briggs, Cochran and Gillett
Calculator: Ti 89, Ti 92, Voyage 200 (something with a computer algebra system)

Introductory Remarks
This course is the first in a three-semester calculus sequence. In this course, you will learn to analyze and work with quantities that vary. You will learn powerful techniques for studying the rate of change of variable quantities and for determining the accumulated growth of quantities. These two techniques are "differentiation" and "integration," respectively, and collectively are called "calculus;" a language that describes most of the theories in science and engineering. It would be no overstatement to assert that without calculus, few of the technical advances of the last three centuries would have occurred.

Course Description:
As a prerequisite for nearly all upper-division mathematics, this course is a requirement for majors and minors in mathematics and other majors in the natural sciences and engineering. The content includes the study of limits, continuity, derivatives, integrals, and their applications. Lecture and problem solving activities. Prerequisites: Two years of high school algebra and one year of high school trigonometry or a C or better in MATH 1390 and C or better in MATH 1392, or a C or better in MATH 1580, or equivalent. Offered: Fall, Spring.

Course Objectives:
As a prerequisite for nearly all upper-division mathematics, this course is a requirement for majors and minors in mathematics and other majors in the natural sciences and engineering. The content includes the study of limits, continuity, derivatives, integrals, and their applications.

Student Learning Outcomes:
Upon successful completion of this course, the student will be able to:

1. Explain the concept of and evaluate limits graphically, numerically, and algebraically;
2. Recognize continuous and discontinuous functions;
3. Understand the formal definition of derivative as a difference quotient and its meaning graphically, numerically, and as a rate of change;

4. Identify when a function is or is not differentiable;
5. Evaluate derivative using basic rules: power, sum, product, quotient, chain rules, and implicit differentiation;
6. Solve basic application problems using derivatives:
    a. Function behavior: increasing, decreasing, maximums, minimums, concavity, inflection points;
    b. Optimization;
    c. Related rates;
7. Explain the formal definition of definite integral as a limit of Riemann sums and its meaning graphically, numerically, and as a multiplicative sum;
8. Evaluate anti-derivatives, integrals, and definite integrals using basic rules and u-substitution;
9. Use definite integrals to find the area of a region and volume of a solid of revolution.

Course Outline:
Review: Functions- Polynomial, exponential, logarithmic, inverse, trig and inverse trig.

Chapter 2: Sections 1-6, Tangent and velocity problems, concept and computation of limits, properties of limits, continuity, one-sided limits, infinite limits, asymptotes, and the $\delta-\varepsilon$ definition of a limit.

Chapter 3: Sections 1-11, Computation of derivatives, power rule, product rule, quotient rule, chain rule, differentiation rules for trigonometric, exponential, and logarithmic functions, higher order derivatives, implicit differentiation and derivatives of inverse trigonometric functions. Related rates.

Chapter 4: Sections 1-9, Maximum and minimum values, the mean value theorem, increasing and decreasing functions, the first derivative test, concavity and the second derivative test, summary of curve sketching, optimization. Linear approximations and differentials. L'Hopital's rule, Newton's method and antiderivatives.

Chapter 5: Sections 1-5, Sums and sigma notation, areas, Riemann sums and definite integrals, The Fundamental Theorem of Calculus and integration by substitution.

Chapter 6: Sections 2-4, Area between curves, volume by disks, washers and cylindrical shells.

Grades
Your grade for this course will be determined by participation, homework, tests and a cumulative final examination. Your homework will be assigned every class and collected Friday's at the end of class. Late homework will not be accepted! The homework will count 10% of your final grade. There will be weekly problem session days (usually Friday's) where students will form small groups and work problems. A participation grade of 5% is associated with these problem session days. There will be 3 tests

throughout the semester. This will count 20% for a total of towards 60% of your final grade. The remaining 25% of your grade will be in the form of a cumulative final exam.

The following are the *tentative* dates for the tests (there will be no make-up tests):
Tests: Sept. 25, Oct. 23 and Nov. 20
Final Exam: Monday Dec. 10, 2-4pm.

Grade		Grade Scale	
Homework:	10%	90% - 100%	A
Tests (3)	60%	80% - 89%	B
Participation	5%	70% - 79%	C
Final	25%	60% - 69%	D
	100%	0% - 59%	F

Final Date to Withdraw - Nov. 9, 2018
Final date to officially withdraw from Aug. 23 – Dec. 14 classes from the university with a W grade unless already dropped for non-attendance. After this date, no withdrawals are permitted and no W grades are recorded.

Lecture Format
Typically, we will have lectures MW from 11 – 11:50pm and TTh 10:50 – 12:05pm. At the end of every class, homework will be assigned. Fridays will be reserved for homework days (please do not wait until Friday to complete our homework). In addition, sample tests will be made available and a review session will be held the day before the test.

Attendance
Attendance is highly recommended. If you are absent for approximately 10% without a valid excuse, where appropriate, you will be dropped from the course. It is a good idea to form small groups to work together in doing homework problems. You will learn from each other and your progress will be more rapid. However, joint work (or copying) during tests and exams is forbidden.

University policy on Academic Integrity and Academic Misconduct
The University of Central Arkansas affirms its commitment to academic integrity and expects all members of the university community to accept shared responsibility for maintaining academic integrity. Students in this course are subject to the provisions of the university's Academic Integrity Policy, approved by the Board of Trustees as Board Policy No. 709 on February 10, 2010, and published in the *Student Handbook*. Penalties for academic misconduct in this course may include a failing grade on an assignment, a failing grade in the course, or any other course-related sanction the instructor determines to be appropriate. Continued enrollment in this course affirms a student's acceptance of this university policy.

Plagiarism
Plagiarism can be defined as the use of someone else's words without proper acknowledgement of that use. If you use someone else's words or the written words of the instructor in the assignment, you must put them in quotations and provide a reference for the source. Paraphrasing the words of others by only changing a few words is also considered plagiarism. For more information about plagiarism, please see UCA's statement on plagiarism at http://uca.edu/academicaffairs/files/2012/08/Plagiarism.pdf. Plagiarism is academic misconduct and will result in appropriate disciplinary action.

The Americans with Disabilities Act statement
The University of Central Arkansas adheres to the requirements of the Americans with Disabilities Act. If you need an accommodation under this Act due to a disability, please contact the UCA Disability Resource Center, 450-3613. If the instructor of this class needs to be informed of your disability in order to assist with any appropriate accommodations, please contact the instructor during the first week of classes.

Building Emergency Plan statement
An Emergency Procedures Summary (EPS) for the building, in which this class is held, will be discussed during the first week of this course. EPS documents for most buildings on campus are available at http://uca.edu/mysafety/bep. Every student should be familiar with emergency procedures for any campus building in which he/she spends time for classes or other purposes.

The Title IX disclosure
If a student discloses an act of sexual harassment, discrimination, assault, or other sexual misconduct to a faculty member (as it relates to "student-on-student" or "employee-on-student"), the faculty member cannot maintain complete confidentiality and is required to report the act and may be required to reveal the names of the parties involved. Any allegations made by a student may or may not trigger an investigation. Each situation differs and the obligation to conduct an investigation will depend on those specific set of circumstances. The determination to conduct an investigation will be made by the Title IX Coordinator. For further information, please visit: https://uca.edu/titleix. **Disclosure of sexual misconduct by a third party who is not a student and/or employee is also required if the misconduct occurs when the third party is a participant in a university-sponsored program, event, or activity.*

Departmental Policy
Use of cell phones (including texting), MP3 players, web browsers, ear buds/plugs is NOT ALLOWED during class time. Cell phones must be set to silent/vibrant mode while in class. Instructors may also disallow use of any other technology not relevant to the instruction. Use of any type of laptop during class time requires consent of the instructor.

Other Policies
Students should familiarize themselves with all policies listed in the UCA *Student Handbook*, such as the Sexual Harassment Policy and Academic Policies.