MATH 2413 Calculus I-2A3

CREDIT

4 Semester Credit Hours (4 hours lecture)

MODE OF INSTRUCTION
Online

PREREQUISITE/CO-REQUISITE:
Passed MATH 2412 Pre-Calculus or equivalent course with a "C" or better.

COURSE DESCRIPTION
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.

COURSE OBJECTIVES
Upon successful completion of this course, the student will be able to:

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.

CORE OBJECTIVES MEASURED

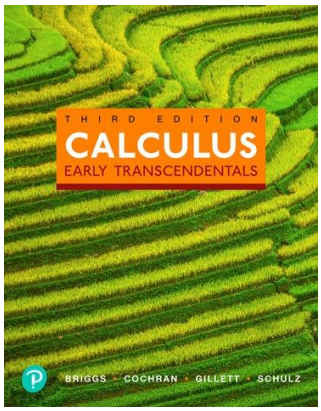
1. **Critical Thinking Skills**: To include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information.
2. **Communication Skills**: To include effective development, interpretation and expression of ideas through written, oral, and visual communication.
3. **Empirical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

Approved: Initials/date

INSTRUCTOR CONTACT INFORMATION

Instructor:	Chris Sams
Email:	casams@lit.edu
Office Phone:	409-247-5186
Office Location:	TC Rm. 240
Office Hours:	Summer hrs. MTWRF virtual by appt.

REQUIRED TEXTBOOK AND MATERIALS



18-Week access $89.99
ISBN- 13:9780136679103

24-Month access $149.99
ISBN- 13:9780138118532

(Comes inclusive with ELE bundle for $42)
Calculator of your choice. (Ask instructor for available resources)

ATTENDANCE POLICY

Attendance is required, online students should login and work on assignments 2-3 times per week, minimum.

DROP POLICY

If you wish to drop a course, you are responsible for initiating and completing the drop process by the specified date as listed in the College Calendar on the Student Success web page. If you stop coming to class and fail to drop the course, you will earn an "F" in the course.

COURSE CALENDAR

Week of	TOPIC	ASSIGNMENTS (Due on this Date)
June 1,2	Syllabus 1.1 Review of Functions 1.2 Representing Functions	
June 3,4	1.3 Inverse, Exponential, and Logarithmic Functions 1.4 Trigonometric Functions and Their Inverses	
June 5,8	2.1 The Idea of Limits 2.2 Definitions of Limits	
June 9,10	2.3 Techniques for Computing Limits 2.4 Infinite Limits	
June 11,12	2.5 Limits at Infinity 2.6 Continuity	Jun. 16th last day to drop w/ refund
June 15-19	2.7 Precise Definitions of Limits 3.1 Introducing the Derivative **Test 1 (Ch. 1&2) Due Jun. 19**	**All Ch. 1&2 Assignments Due Jun. 19th**
June 22-24	3.2 The Derivative as a Function 3.3 Rules of Differentiation 3.4 Product and Quotient Rules	Jun. 22nd last day to drop w/o penalty
June 25-26	3.5 Derivatives of Trig Functions 3.6 Derivatives as Rates of Change 3.7 The Chain Rule	
Jun 29-Jul 3	3.8 Implicit Differentiation 3.11 Related Rates **Test 2 (Ch. 3) Due Jul. 3rd**	**All Ch. 3 Assignments Due Jul. 3rd**
July 6-10	4.1 Maxima and Minima 4.2 Mean Value Theorem 4.3 What the derivatives Tells Us	
July 13-17	4.4 Graphing Functions 4.5 Optimization Problems	**Jul 17 Last day to drop.**
July 20-24	4.6 Linear Approximation and Differentials 4.7 L'Hôpital's Rule 4.9 Antiderivatives	
July 27-31	**Test 3 (Ch. 4) Due Jul. 31st** 5.1 Approximating Areas under Curves 5.2 Definite Integrals	**All Ch. 3 Assignments Due Jul. 31st**
Aug 3-7	5.3 Fundamental Theorem of Calculus 5.4 Working with Integrals 5.5 Substitution Rule	
Aug 11-13	**Core Assessment**	**Due Aug 13th**

COURSE EVALUATION

Final grades will be calculated according to the following criteria:

- Test 60%
- Assignments 20%
- Core Assessment 20%

GRADE SCALE

- 90-100 A
- 80-89 B
- 70-79 C
- 60-69 D
- 0-59 F

TECHNICAL REQUIREMENTS

For the latest technical requirements, including hardware, compatible browsers, operating systems, etc., review the Minimum Computer and Equipment Requirements on the LIT Online Experience page. A functional broadband internet connection, such as DSL, cable, or WiFi is necessary to maximize the use of online technology and resources.

DISABILITIES STATEMENT

The Americans with Disabilities Act of 1990 and Section 504 of the Rehabilitation Act of 1973 are federal anti-discrimination statutes that provide comprehensive civil rights for persons with disabilities. LIT provides reasonable accommodations as defined in the Rehabilitation Act of 1973, Section 504 and the Americans with Disabilities Act of 1990, to students with a diagnosed disability. The Special Populations Office is located in the Eagles' Nest Room 129 and helps foster a supportive and inclusive educational environment by maintaining partnerships with faculty and staff, as well as promoting awareness among all members of the Lamar Institute of Technology community. If you believe you have a disability requiring an accommodation, please contact the Special Populations Coordinator at (409)-951-5708 or email specialpopulations@lit.edu. You may also visit the online resource at Special Populations - Lamar Institute of Technology (lit.edu).

STUDENT CODE OF CONDUCT STATEMENT

It is the responsibility of all registered Lamar Institute of Technology students to access, read, understand and abide by all published policies, regulations, and procedures listed in the *LIT Catalog and Student Handbook*. The *LIT Catalog and Student Handbook* may be accessed at www.lit.edu. Please note that the online version of the *LIT Catalog and Student Handbook* supersedes all other versions of the same document.

ARTIFICIAL INTELLIGENCE STATEMENT

Lamar Institute of Technology (LIT) recognizes the recent advances in Artificial Intelligence (AI), such as ChatGPT, have changed the landscape of many career disciplines and will impact many students in and out of the classroom. To prepare students for their selected careers, LIT desires to guide students in the ethical use of these technologies and incorporate AI into classroom instruction and assignments appropriately. Appropriate use of these technologies is at the discretion of the instructor. Students are reminded that all submitted work must be their own original work unless otherwise specified. Students should contact their instructor with any questions as to the acceptable use of AI/ChatGPT in their courses.

STARFISH

LIT utilizes an early alert system called Starfish. Throughout the semester, you may receive emails from Starfish regarding your course grades, attendance, or academic performance. Faculty members record student attendance, raise flags and kudos to express concern or give praise, and you can make an appointment with faculty and staff all through the Starfish home page. You can also login to Blackboard or MyLIT and click on the Starfish link to view academic alerts and detailed information. It is the responsibility of the student to pay attention to these emails and information in Starfish and consider taking the recommended actions. Starfish is used to help you be a successful student at LIT.

ADDITIONAL COURSE POLICIES/INFORMATION