

**Department of Mathematics
Prairie View A&M University
Prairie View, Texas**

Math 2153 - Calculus for Business/Life Sciences/Social Sciences			
Department of Mathematics		College of Arts and Sciences	
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Virtual Office Hours:	<u>MWF: 1:00-1:50/ MW:4:00-4:50/ WF:8:00-8:50</u> By appointment		
Course Location:	BNKS 209		
Class Meeting Days & Times:	—MW 2:00 – 3:20 AM		
Course Abbreviation and Number:	Math 2153		
Catalog Description:	Credit 3 semester hours. Derivatives, Curving, Sketching, and optimization techniques for differentiation. Logarithms and Exponential Functions with applications, Integral Techniques and application of Integrals, Techniques and applications of Integrals, Multivariate Calculus		
Prerequisites	Math 1153		
Co-requisites:	College Algebra and Trigonometry		
Required Text:	Applied Calculus for the Managerial , Life and Social Sciences, 8 th Edition, Tan, S. T.		
Recommended Text:			
Access to Learning Resources:	PVAMU Library: phone: (936) 261-1500; web: http://www.tamu.edu/pvamu/library/ University Bookstore: phone: (936) 261-1990; web: https://www.bkstr.com/Home/10001-10734-1?demoKey=d 1. Tutorial Services Room 317, W. R. Banks Bldg		
Course Goals or Overview:			
Course Objectives:			

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At the end of this course, the student will be able to:		
	Goal	Alignment with Core Curriculum
1	Understand and discuss the Explain and evaluate concepts of limits, and evaluate them and use limits in applications	CS and EQ
2	Define and work with continuous functions	CT
3	Compute and write derivatives of analytic, trigonometric and transcendental functions and solve problems involving higher order implicit differentiation	CS and CT
4	Solve and i interpret optimization and other applied problems	CT, CS and EQ
5	and investigate functions and sketch the corresponding graphs	CS
6	Evaluate certain integrals, know the substitution rule, and apply the fundamental Theorem of Calculus	CS and EQ

Comment [SW1]: Writing derivatives fits more under EQ

Course Evaluation Methods

This course will utilize the following instruments to determine student grades and proficiency of the learning outcomes for the course.

Exams – written tests designed to measure knowledge of presented course material

Exercises – written assignments designed to supplement and reinforce course material

Projects – web development assignments designed to measure ability to apply presented course material

~~what about communication / presentation?~~

Class Participation/Presentation – daily attendance and participation in class discussions. Student presentations regarding related course/class topics.

Grading Matrix

Instrument	Value (points or percentages)	Total
Assignments	10 assignments at 10 points each	100
Quizzes	5 quizzes at 20 points each	100
Tests	2 projects at 50 points each	100
Mid Term Exam	30	30
Class Participation/ PresentationsDiscussion	20	20
Final Exam	50	50
Total:		400

Comment [SW2]: Class Presentation?

Grade Determination:

A = 400 – 360pts;

B = 359 – 320pts;

C = 319 – 280pts;

D = 279 – 240pts;

F = 239 pts or below

Course Procedures

COURSE OUTCOMES: To develop a student that is computational fluent in algebraic manipulations, function evaluations, and scientific applications.

COURSE POLICIES:

Homework (Assignments): Current homework assignments and computer lab projects will be collected only if requested in class.

No late homework or project will be accepted.

Quiz: There will be at least one quiz in any week not containing a test.

Uio33333333No make-up quizzes.

Exam: Make-up exams will be given only in cases authorized under PVAMU Regulations. In borderline cases, the instructor will decide whether or not the excuse is authorized. Also, should you miss an exam, contact the instructor before the exam. Make-up exam will only be given within one week from the day when the exam is given.

Collaboration: Discussion of concepts with others is encouraged, but all assignments must be done on your own, unless otherwise instructed. Copying is strictly forbidden. Scholastic dishonesty, such as observing the work of (or providing your work to) other students during any exam, is strongly prohibited. Disciplinary actions range from grade penalty to expulsion.

Calculators: A scientific calculator is required for this course and will be useful during quizzes, tests and homework. You are even permitted to use programmable calculators. However, most problems in this course require an answer, which is more than just a number. Little partial credit will be awarded for an unjustified, correct numerical answer to an exam or quiz problem. To win full credit for a problem, a sound derivation must accompany the correct answer. I award credit for thinking . . . and I want to see your thoughts in your answers.

Study Hints:

1. Attend class regularly.
2. You should read the material from the textbook before coming to class. The accompanying assignment sheet shows the class schedule and the corresponding text material for each class meeting. If you miss a class, you are expected to find out which material was covered and to familiarize yourself with it. Please ask questions if you have any.
3. Form study groups with classmates.
4. Make use of office hours.
5. Make use of the Math Tutorial Lab in WR Banks, Room 317.
6. Study regularly instead of cramming for test.

University Rules and Procedures

Disability statement (See Student Handbook):

Students with disabilities, including learning disabilities, who wish to request accommodations in class should register with the Services for Students with Disabilities (SSD) early in the semester so that appropriate arrangements may be made. In accordance with federal laws, a student requesting special accommodations must provide documentation of their disability to the SSD coordinator.

Academic misconduct (See Student Handbook):

You are expected to practice academic honesty in every aspect of this course and all other courses. Make sure you are familiar with your Student Handbook, especially the section on academic misconduct. Students who engage in academic misconduct are subject to university disciplinary procedures.

Forms of academic dishonesty:

1. Cheating: deception in which a student misrepresents that he/she has mastered information on an academic exercise that he/she has not mastered; giving or receiving aid unauthorized by the instructor on assignments or examinations.
2. Academic misconduct: tampering with grades or taking part in obtaining or distributing any part of a scheduled test.
3. Fabrication: use of invented information or falsified research.
4. Plagiarism: unacknowledged quotation and/or paraphrase of someone else's words, ideas, or data as one's own in work submitted for credit. Failure to identify information or essays from the Internet and submitting them as one's own work also constitutes plagiarism.

Nonacademic misconduct (See Student Handbook)

The university respects the rights of instructors to teach and students to learn. Maintenance of these rights requires campus conditions that do not impede their exercise. Campus behavior that interferes with either (1) the instructor's ability to conduct the class, (2) the inability of other students to profit from the instructional program, or (3) campus behavior that interferes with the rights of others will not be tolerated. An individual engaging in such disruptive behavior may be subject to disciplinary action. Such incidents will be adjudicated by the Dean of Students under nonacademic procedures.

Sexual misconduct (See Student Handbook):

Sexual harassment of students and employees at Prairie View A&M University is unacceptable and will not be tolerated. Any member of the university community violating this policy will be subject to disciplinary action.

Attendance Policy:

Prairie View A&M University requires regular class attendance. Excessive absences will result in lowered grades. Excessive absenteeism, whether excused or unexcused, may result in a student's course grade being reduced or in assignment of a grade of "F". Absences are accumulated beginning with the first day of class.

Student Academic Appeals Process

Authority and responsibility for assigning grades to students rests with the faculty. However, in those instances where students believe that miscommunication, errors, or unfairness of any kind may have adversely affected the instructor's assessment of their academic performance, the student has a right to appeal by the procedure listed in the Undergraduate Catalog and by doing so within thirty days of receiving the grade or experiencing any other problematic academic event that prompted the complaint.

Technical Considerations for Online and Web-Assist Courses

Minimum Hardware and Software Requirements:

- Pentium with Windows XP or PowerMac with OS 9
- 56K modem or network access
- Internet provider with SLIP or PPP
- 8X or greater CD-ROM
- 64MB RAM
- Hard drive with 40MB available space
- 15" monitor, 800x600, color or 16 bit
- Sound card w/speakers
- Microphone and recording software
- Keyboard & mouse
- Netscape Communicator ver. 4.61 or Microsoft Internet Explorer ver. 5.0 /plug-ins
- Participants should have a basic proficiency of the following computer skills:
 - Sending and receiving email
 - A working knowledge of the Internet
 - Proficiency in Microsoft Word
 - Proficiency in the Acrobat PDF Reader
 - Basic knowledge of Windows or Mac O.S.

Netiquette (online etiquette): students are expected to participate in all discussions and virtual classroom chats when directed to do so. Students are to be respectful and courteous to others in the discussions. Foul or abusive language will not be tolerated. When referring to information from books, websites or articles, please use APA standards to reference sources.

Technical Support: Students should call the Prairie View A&M University Helpdesk at 936-261-2525 for technical issues with accessing your online course. The helpdesk is available 24 hours a day/7 days a week. For other technical questions regarding your online course, call the Office of Distance Learning at 936-261-3290 or 936-261-3282

Communication Expectations and Standards:

All emails or discussion postings will receive a response from the instructor within 48 hours.

You can send email anytime that is convenient to you, but I check my email messages continuously during the day throughout the work-week (Monday through Friday). I will respond to email messages during the work-week by the close of business (5:00 pm) on the day following **my receipt** of them. Emails that I receive on Friday will be responded to by the close of business on the following Monday.

Submission of Assignments:

Assignments, Papers, Exercises, and Projects will distributed and submitted through your online course. Directions for accessing your online course will be provided. Additional assistance can be obtained from the Office of Distance Learning.

Discussion Requirement:

Because this is an online course, there will be no required face to face meetings on campus. However, we will participate in conversations about the readings, lectures, materials, and other aspects of the course in a true seminar fashion. We will accomplish this by use of the discussion board.

Students are required to log-on to the course website often to participate in discussion. It is strongly advised that you check the discussion area daily to keep abreast of discussions. When a topic is posted, everyone is required to participate. The exact use of discussion will be determined by the instructor.

It is strongly suggested that students type their discussion postings in a word processing application and save it to their PC or a removable drive before posting to the discussion board. This is important for two reasons: 1) If for some reason your discussion responses are lost in your online course, you will have another copy; 2) Grammatical errors can be greatly minimized by the use of the spell-and-grammar check functions in word processing applications. Once the post(s) have been typed and corrected in the word processing application, it should be copied and pasted to the discussion board.

COURSE OUTLINE: As time permits, the course will be covering Chapters 1- 8

Tentative Instructional Outline: MATH 2153.

Week Number	Activities
1	PRELIMINARIES. Precalculus Review I. Precalculus Review II. The Cartesian Coordinate System. Straight Lines. 2. FUNCTIONS, LIMITS, AND THE DERIVATIVE. Functions and Their Graphs. The Algebra of Functions. Functions and Mathematical Models. Limits. One-Sided Limits and Continuity. The Derivative.
2	DIFFERENTIATION. Basic Rules of Differentiation. The Product and Quotient Rules. The Chain Rule. Marginal Functions in Economics. Higher-Order Derivatives. Implicit Differentiation and Related Rates. Differentials. <u>Student Presentation regarding evaluation of rules.</u>
3	APPLICATIONS OF THE DERIVATIVE. Applications of the First Derivative. Applications of the Second Derivative. Curve Sketching. Optimization I. Optimization II. Student Presentation of Derivative
4	5. EXPONENTIAL AND LOGARITHMIC FUNCTIONS. Exponential Functions. Logarithmic Functions. Compound Interest. Differentiation of Exponential Functions. Differentiation of Logarithmic Functions. Exponential Functions as Mathematical Models. <u>Student Presentation regarding organization of Mathematics Models.</u>
5	6. INTEGRATION. Antiderivatives and the Rules of Integration. Integration by Substitution. Area and the Definite Integral. The Fundamental Theorem of Calculus. Evaluating Definite Integrals. Area between Two Curves. Applications of the Definite Integral to Business and Economics. <u>Student Group project and presentation expressing the use of integration in business.</u>
6	7. ADDITIONAL TOPICS IN INTEGRATION. Integration by Parts. Integration Using Tables of Integrals. Numerical Integration. Improper Integrals. Volumes of Solids of Revolution.

Comment [SW3]: Student presentations each week?

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Week Number	Activities
7	8. CALCULUS OF SEVERAL VARIABLES. Functions of Several Variables. Partial Derivatives. Maxima and Minima of Functions of Several Variables. The Method of Least Squares. Constrained Maxima and Minima and the Method of Lagrange Multipliers. Total Differentials. Double Integrals. Applications of Double Integrals. <u>Student presentation to interpret derivative.</u>
8 AND 9	9. DIFFERENTIAL EQUATIONS. Differential Equations. Separation of Variables. Applications of Separable Differential Equations. Approximate Solutions of Differential Equations Student work problems as a class on board in class to evaluate.
10 AND 11	10. PROBABILITY AND CALCULUS. Probability Distributions of Random Variables. Expected Value and Standard Deviation. Normal Distributions.
12 AND 13	11. TAYLOR POLYNOMIALS AND INFINITE SERIES. Taylor Polynomials. Infinite Sequences. Infinite Series. Series with Positive Numbers. Power Series and Taylor Series. <u>Student presentation to explain More on Taylor Series- and Newton's Method.</u>
14 AND 15	12. TRIGONOMETRIC FUNCTIONS. Measurement of Angles. The Trigonometric Functions. Differentiation of Trigonometric Functions. Integration of Trigonometric Functions. <u>Student presentations and projects reviewing class/course studies.</u>
15	FINAL EXAMS, per University Schedule.

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