CLARK ATLANTA UNIVERSITY
SCHOOL OF ARTS AND SCIENCES
DEPARTMENT OF MATHEMATICAL SCIENCES
COURSE SYLLABUS

CMAT 111, CALCULUS I
FALL 2017

CRN	Semester Hours	Course Section	Meeting Days	Meeting Time	Meeting Location	Level *(U/G)*
	4		.			U

Instructor:_____

Office Hours	.
Office Location	
Office Telephone	
Email	

Course Description:
Real numbers, functions, limits, derivatives, definite integrals and the applications of these topics.

Prerequisites
Placement, SAT, or ACT scores, or passing CMAT 106 with C or above.

Learning Outcome: Students will apply mathematical reasoning and problem solving techniques to formulate, analyze, and solve diverse problems involving differential calculus.

Learning Goals: Students will:

I. Understand limits and evaluate limits using algebraic, graphical and numerical techniques
II. Apply theories and properties of continuity
III. Understand derivatives and use differentiation techniques for algebraic, trigonometric, inverse trigonometric, exponential, and logarithmic functions, and implicit differentiation.
IV. Use derivatives to solve theoretical and applied problems
V. Understand and use derivatives to sketch curves
VI. Understand antiderivatives
VII. Understand and use the definite integral, Rieman sums and the Fundamental Theorem of Calculus
VIII. Understand and use Integration by Substitution

Course Objectives:

Upon completion of the course, the student should be able to:

1. Use the formal definition of limit
2. Determine limits using algebraic, graphical, and numerical techniques.
3. Determine continuity at a point and on an open interval.
4. Use and explain the properties of continuity and the Intermediate Value Theorem.
5. Determine the relationship between differentiability and continuity.
6. Find limits at infinity and infinite limits, and graph the function.
7. Find the slope of the tangent line to a curve at a point and write the equation of the tangent line.
8. Find derivatives using the definition, differentiation rules and techniques, the chain rule and implicit differentiation.
9. Find the derivative of algebraic, trigonometric, exponential, logarithmic, inverse trigonometric functions, and other.
10. Find the rate of change using derivatives.
11. Find related rates and solve application problems
12. Optimize functions with relative extrema and absolute extrema.
13. Use Rolle's Theorem and the Mean Value Theorem.
14. Apply the First and Second Derivative Tests to find relative extrema.
15. Determine intervals of concavity and point of inflection.
16. Sketch Curves using derivatives and necessary theory
17. Use L'Hopital Rule.
18. Use Newton's method.
19. Find differential and use it for approximation and estimation of error.
20. Define the definite integral and use Riemann sums to approximate definite integrals.
21. Find anti-derivatives and indefinite integrals using basic integration rules.
22. State and apply the Fundamental Theorem of Calculus.
23. Integrate by substitution.

Required Text:

Calculus: Dr. Man M. Sharma and coauthors, published by Educo Int'l. Learning Portal is www.educosoft.com

Teaching/Learning Methods/Classroom Format:

Exposure to and use of technology will be an integral part of the course. This is a Web-Enhanced class, ***not an on-line class, and the class will meet at the scheduled time every class period***. Each class meeting will include lectures and student participatory activities.

Assignments:

The list of assignments with dates are available online at the course website, Educosoft.com.

Course Policies and Expectations:

1. Students are expected to attend classes regularly and punctually.
2. Register online the first week of class
3. Course Textbook and/or Web Access –**All students are required to have web access or a textbook with web access within *the first two weeks.*** Also see the Student Handbook for your "Student Responsibilities".
4. A course notebook for recording notes, examples, assignments, homework and announcements in class
5. A composition book for showing work for online assignments such as quizzes or homework
6. A scientific calculator may be required. Check with your instructor.
7. No cell phones or electronic devices may be turned on or used during class time. Please put away cell phones in a bag or off the desk during class time
8. No food or drinks are allowed in the classroom.
9. All students are to abide by the Clark Atlanta University Campus Cultural Creed and Honor Code.
10. Use of a computer (either your own or campus labs)

Course Grading:
The final course grade will be determined through the use of frequent assessments using exams, homework, midterm exam, final exam, quizzes and other participatory activities listed below. Participatory Activities may include projects, group work, presentations, interactive activities and other activities. There will be a common departmental midterm and final exam. All students are required to take the common departmental exams at the designated time. Homework assignments will be assigned as needed.

Students should complete each exam, or quiz on the scheduled date. There may be announced and unannounced quizzes. Students are required to complete homework assignments and submit as required.

Grading Scheme:

Exams	**35%**
Online Quizzes	**15%**
Homework	**15%**
Class Quizzes	**10%**
Other Assignments and/or Attendance	**5%**
Final Exam	**20%**
Total	**100%**

Final Letter Grade Criteria:
A=(90%-100%), B=(80%-89%), C=(70%-79%), D=(60%-69%), F=Less than 60%

Supplemental Readings/Additional Bibliography:
Supplemental Readings may be required by the instructor.

Week	Content	Date
1	Classes begin on January 18 Orientation for the course and Educosoft; Sections 1.2, 1.3	January 18-21
2	Sections: 1.6, 2.1, 2.2, 2.3	January 22-28
3	Sections: 2.4, 2.5, 2.6	January 29 – February 4
4	Sections: 2.7, 2.8, and Supplementary Lectures or Review	February 5-11
5	Supplementary Lectures and/or Review, and **Exam 1 (sections 2.1 – 2.8)**	February 12-18
6	Sections: 3.1, 3.2, 3.3,	February 19-25
7	Sections: 3.4, 3.5, 3.6, 7.2	February 26 –March 4
8	Supplementary Lectures or Review and **Exam 2-Midterm(sections 3.1-3.6)**	March 5-11
9	**Spring Break – No classes**	March 12-18
10	Sections: 4.1, 4.2, 4.3, 4.4,4.5 and **Founders Day Convocation**	March 19-25
11	Sections: 4.6, 4.7, 4.8	March 26-April 1
12	Sections: 4.9, 5.4, 5.5	April 2-8
13	Sections: 5.1, 5.2, 5.3, and **Good Friday – No class**	April 9-15
14	Sections 5.7 and Supplementary Lectures and **Exam 3 (sections 4.1 – 4.9, 5.1 - 5.5, 5.7)**	April 16-22
15	Sections: 5.6 and Supplementary Lectures or Review	April 23-29
16	Review and **Reading Period**	April 30 – May 6
17	**Final Exam Week**	May 7 - May 13

About Your Professor:

Required Activities:

1. **Purchase the book and register for the class at www.educosoft.com using the Access code. The access code can be purchased separately or the access code can be purchased along with a new course textbook. The access code is pasted inside the back cover of a new book. This access code must be purchased by the second week on class. Just click on the Register under New Student link of Educosoft.com and follow the instructions on the screen.**

   Or, if you are already registered as Guest, then proceed as follows.

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2. You will need to complete your assignments (tutorials, homework, and quizzes) online every week. You can use the computer labs on campus or your own computer.

3. You will receive an orientation for use of this platform in class. You may use the following references if you need further assistance.
   a. After login, click on Syllabus from the left column. Download and read the **"Getting Started Guide".**
   b. Call 1-800-96-33826 (Educo) Ext 117 for help

4. You must register on the website with your e-mail address, and use this e-mail to communicate with your instructor. You will receive messages from your instructor as a follow up on assignments through the Educo e-mail system. You may also be called via phone if you do not respond to the e-mail.

5. You are required to do your homework and a related quiz online, every week. The deadline for homework and quizzes will primarily be Sunday mid-night of each week.

6. **It is the student's responsibility to check for assigned homework, quizzes and e-mails from the instructor.**

7. Your instructor may require that students use a **Composition Notebook** to show the detailed work for online homework, quizzes, or tests. The notebook may be collected and graded. Loose paper and jumbled work will not be accepted.

8. Students are required to go through the lecture notes, different versions of related examples, and take practice tests before taking actual tests on the web.

If you experience any software technical problems please call (800) 96-EDUCO or e-mail them at contact@mail.educo-int.com. Their hours of operation on Mon-Fri 9:00 AM – 6:00 Pm EST.

Computer Labs: The following labs can be utilized for computer usage or tutorial assistance:

- McPheeters-Dennis Math. Lab, Rooms 128 and 134: ***Check the schedule on the Math. Lab door for the hours of operation.***

Use of Your own Computer

It's as easy as 1, 2, 3!

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4. Disable your pop-up blocker for www.educosoft.com as a safe website. Under Tools→ Pop-up Blocker → Pop-up Blocker settings.
5. Download Flash player, if not installed, by going to http://www.dessci.com/en/products/mathplayer/download.htm and clicking on "Download Math Player Setup".
6. Google Chrome's browser usually works very efficiently with the website.

If you need further assistance, please see the "Getting Started Guide" link on the home page of Educosoft and view the "System Requirements" file.

CLARK ATLANTA UNIVERSITY
SCHOOL OF ARTS AND SCIENCES
DEPARTMENT OF MATHEMATICAL SCIENCES
COURSE SYLLABUS

CMAT 112, CALCULUS II
SPRING 2017

CRN	Semester Hours	Course Section	Meeting Days	Meeting Time	Meeting Location	Level *(U/G)*
	4					U

Instructor _____

Office Hours	
Office Location	
Office Telephone	
Email	

Course Description:
Integrals, Derivatives, Sequences, Series, and the applications of these topics.

Prerequisites
Placement or passing CMAT 111 with C or above.

Learning Outcome: Students will apply mathematical reasoning and problem solving techniques to formulate, analyze, and solve diverse problems involving integral calculus.

Learning Goals: Students will be able to:

1. Understand and evaluate integrals using techniques of integration
2. Solve application problems which require integration
3. Understand and evaluate the convergence of sequences and series

Required Text:
Calculus, Seventh Edition, Educo International, Inc., Sharma, Gupta, Mansour, Panahi

Assignments:
The list of assignments with dates are available online at the course website, Educosoft.com

Teaching/Learning Methods/Classroom Format:
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Upon completion of the course, the student should be able to:

Evaluate integrals using basic integration rules
Use integrals to find the area between curves.
Use integrals to find the volume by slicing and cylindrical shells techniques.
Use integrals to find arc length.
Use integrals to find the area of surfaces of revolution.
Solve application problems
Find indefinite integral of exponential functions
Find indefinite integral of hyperbolic functions.
Evaluate integrals using integration by parts.
Evaluate integrals using trigonometric substitutions.
Evaluate integrals of rational functions.
*Find numerical approximation to integrals.
Evaluate improper integrals.
Find derivatives from parametric equations and graph.
Evaluate integrals for area and length using parametric form.
*Apply polar representations to graphs, derivatives, area and length.
Determine the convergence or divergence of sequences.
Determine the convergence or divergence of series.
Determine the convergence or divergence of positive-term series and alternating series.
Determine the absolute convergence and conditional convergence of series.
Determine the convergence or divergence of power series.
Find the power series representations of functions.
Find the MacLaurin series and Taylor series of functions.

*Will be covered as time permits

Course Policies and Expectations:

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COURSE SYLLABUS

CMAT 112, CALCULUS II
SPRING 2017

CRN	Semester Hours	Course Section	Meeting Days	Meeting Time	Meeting Location	Level *(U/G)*
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Instructor _____

Office Hours	
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Course Description:

Integrals, Derivatives, Sequences, Series, and the applications of these topics.

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2. Download Flash player, if not installed, by going to http://www.dessci.com/en/products/mathplayer/download.htm and clicking on "Download Math Player Setup".
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CLARK ATLANTA UNIVERSITY
SCHOOL OF ARTS AND SCIENCES
DEPARTMENT OF MATHEMATICAL SCIENCES
COURSE SYLLABUS

CMAT 212, DIFFERENTIAL EQUATIONS
FALL 2018

CRN	Semester Hours	Course Section	Meeting Days	Meeting Time	Meeting Location	Level *(U/G)*
26637	3	1	Tues/Thurs.	1:40 -2:55	CMWARE 313	U

Instructor:

Office Hours	TBA
Office Location	McPheeters – Dennis 141
Office Telephone	
Email	

Course Description:
This course explores basic concepts concerning differential equations. The major topics include: definition and classification of differential equations, linear equations with constant and variable coefficients, methods of undetermined coefficients, variation of parameters, Cauchy-Euler equations, and other methods for solving nonlinear equation, series solutions, and selected applications.

Prerequisite: CMAT 112 Calculus II with grade of C or above or Co-requisite: CMAT 211 Calculus III

Course Objectives:

Students should be able to:

1. Define the term differential equation
2. Classify differential equations
3. Identify and solve linear equations with constant coefficients
4. Identify and solve linear equations with variable coefficients
5. Solve differential equations using the method of undetermined coefficients
6. Solve differential equations using the method of variation of parameters
7. Solve differential equations using Laplace transforms
8. Discuss, explore and solve application problems
9. Solve or analyze solutions of specified differential equations using various techniques (nonlinear equations, Cauchy-Euler, Series Solutions, other)

To give students the mathematical prerequisites for advanced mathematics courses by insuring that students:

10. Develop confidence in their problem solving abilities.
11. Connect mathematics, its ideas, and how it can be applied to real life situations
12. Improve mathematical reasoning skills
13. Master concepts fundamental to modeling and problem solving
14. Improve communication skills [reading, writing, presentation of ideas]
15. Develop an appreciation for the history of mathematics

Learning Outcomes:

The primary purpose of this course is to introduce students to differential equations, the conditions under which they have unique solutions, the difference between linear and nonlinear equations, methods of solution to several "named" and particular classes of equations, and to understand how the properties of certain equations can be analyzed by the use of qualitative methods.

Required Text: Fundamentals of Differential Equations, 9th edition; Authors: Nagle, Saff, Snider; Publisher: Pearson

Teaching/Learning Methods/Classroom Format:

The course will include lectures, and student participatory activities. Announcements, homework, and other interaction may be given via Canvas and MyMath Lab .

Assignments: A list of assignments will be provided in class. Students will be assigned homework assignments from various sources which include the textbook, MyMathLab, and other sources. Students may be required to view specified web videos and complete homework assignments based on their content.

Course Grading:
Exams: All examinations are scheduled for a specific date determined by the course instructor. Students must complete each exam on the scheduled date. **There will be no individual makeup exams.** One exam score will be dropped for all students. If a student misses an exam for any reason, this will be the exam score which is dropped. If a student takes all exams, the lowest exam score will be dropped.

Homework: Students will be given a list of homework problems for each topic covered. The regular completion of homework assignments is important to success on exams, and overall comprehension of course concepts. Course assignments may consist of textbook problems, MyMathLab assignments, writing assignments, reading assignments, computer projects, group projects or assignments from other sources. Selected written assignments will be collected and assigned a grade.

Projects/Presentations/Groupwork/Quizzes/Other: Students may be required to research and present a topic to the class. Selected projects may be assigned to individuals and/or specified groups. There may be announced and unannounced quizzes. No make-up work will be given. Students are expected to complete work and presentations for the assigned date. Students not present on the day of presentations will receive no credit for the assignment. Students will be asked to engage in other interactive classroom activities designed to facilitate learning.

Participation: Classroom activities are worthwhile and necessary for complete comprehension of the course's objectives. Excessive absences and lateness will affect the final grade the student receives for the course.

		Standard Grading Scale
Exams	65%	90 - 100 A
Final Exam	15%	
Other		80 - 89 B
(Quizzes, Homework, Project/Presentation, Interactive Work, Written Summaries, Other)	10%	
MyMathLab	10%	70 - 79 C
Total	100%	60 - 69 D
		0 - 59 F

Course Policies and Expectations:

1. Course Textbook – The textbook is required.
2. A course notebook for recording notes, examples, assignments and announcements
3. Regular Class Attendance and Punctuality; You should arrive to class early or at least on time
4. Regular Consistent completion of homework
5. Attending Mathematics Tutorial Lab as needed
6. A scientific calculator may be needed for some assignments; Calculators will not be used on aa assignments.
7. No cell phones should be turned on, used, on the desk, or accessible during class time
8. No food or drink should be brought to class
9. Be respectful of all individuals you encounter during class time and at all times
10. Students may need to access Canvas website for information and possible assignments
11. Also see the Student Handbook for your "Student Responsibilities".

Supplemental Readings/Additional Bibliography:
Will be assigned as needed.

Course Outline and Schedule:

Introduction - Differential Equations, Their Solutions; Mathematical Models	One week
First Order Differential Equations	Two weeks
Review/Exam 1	One week
Second-Order Linear Equations	Two weeks
Review/Exam 2 – Midterm	One Week
Higher-Order Linear Differential Equations	Two weeks
Laplace Transforms	Two weeks
Mathematical Models, Applications, Nonlinear D.E., Series Solutions	Three weeks
Review/Exam 3	One Week
Additional Topics covered as time permits	
Final Exam	

About Your Professor:

Any Additional Items Needed:
Scientific calculator may be required for certain assignments. No cell phone calculators will be used on any assessments that allow the use of calculators.

*Changes in syllabus may occur if necessary.

Each course syllabus must contain the following elements:

CLARK ATLANTA UNIVERSITY
SCHOOL OF ARTS AND SCIENCES
DEPARTMENT OF MATHEMATICAL SCIENCES
COURSE SYLLABUS

CMAT 214, LINEAR ALGEBRA
FALL 2018

CRN	Semester Hours	CourseSection	Meeting Days	Meeting Time	Meeting Location	Level *(U/G)*
20893	3	1	MWF	12:00pm	CMW 302	U

Instructor Dr. Gary Chung

Office Hours	***Office hours must be announced in class and posted on office door.*** 10:20-11:00 MWF; 2:00-3:00 MW and by appointment for other times.
Office Location	MD 143
Office Telephone	(404) 880-8545
Email	gchung@cau.edu

Course Description:
This is an introduction to linear algebra. We will cover those chapters related to the topics about matrices, determinants, vector spaces, linear transformations etc. Since practice of exercise problems is important in the learning of mathematics, students are expected to do homework problems, and as an encouragement to get credit for working out the problem(s).

Prerequisites *(if applicable)*
CMAT 106

Course Objectives:
The objective of this course is to let the students learn the necessary concepts and techniques in linear algebra that are useful in the fields such as sciences and engineering, as well as in the study of more advanced mathematics.
The student will:

1. Solve systems of linear equations using various methods including Gaussian/Gauss-Jordan elimination and inverse matrices.
2. Perform matrix algebra, invertibility, and the transpose and understand vector algebra in $\mathbf{R}_n$.
3. Determine relationship between coefficient matrix invertibility and solutions to a system of linear equations and the inverse matrices.
4. Define special matrices: diagonal, triangular, and symmetric
5. Understand determinants and their properties.
6. Understand real vector spaces and subspaces and apply their properties.
7. Understand linear independence and dependence of vectors.
8. Find basis and dimension of a vector space,and understand change of basis.
9. Find a basis for the row space, column space and null space of a matrix and find the rank and nullity of a matrix.
10. Compute linear transformations, kernel and range, and inverse linear transformations, and find matrices of general linear transformations.
11. Find the dimension of spaces such as those associated with matrices and linear transformations.
12. Find eigenvalues and eigenvectors and use them in applications.
13. Diagonalize, and orthogonally diagonalize symmetric matrices
14. Evaluate the dot product, norm, angle between vectors, and orthogonality of two vectors in $\mathbf{R}_n$.
15. Compute inner products on a real vector space and compute angle and orthogonality in inner product spaces.
16. Create orthogonal and orthonormal bases: Gram-Schmidt process and use bases and orthonormal bases to solve application problems.

Learning Outcomes:
After completing this course, the students should have a general knowledge of linear algebra and be able to challenge himself/herself with the real-world problems encountered in the fields mentioned above.

Required Text:
Linear Algebra and Its Applications plus New MyMathLab with Pearson eText -- Access Card Package, 5/E by Lay, Lay & McDonald, 5th edition, Addison Wesley.

Teaching/Learning Methods/Classroom Format: *(lectures, videos, outside speakers, etc.)*
Lectures, exercise problems sessions

Assignments:
Homework assignments will be using MyMathLab:

Go to www.Pearson.com/mylab using the following course ID:
Chung59991
to create your account for the course. Then do the Homework as instructed by your instructor.

Included below are the Student Registration Instructions linear Algebra- fall 2018:

1. Go to www.pearson.com/mylab .
2. Under Register, select **Student** .
3. Confirm you have the information needed, then select **OK! Register now** .
4. Enter your instructor's course ID: chung59991 , and **Continue** .
5. Enter your existing Pearson account **username** and **password** to **Sign In** .

- You have an account if you have ever used a MyLab or Mastering product.
- If you don't have an account, select **Create** and complete the required fields.

6. Select an access option.

- Enter the access code that came with your textbook or that you purchasedseparately from the bookstore.
- If available for your course,
  - Buy access using a credit card or PayPal.
  - Get temporary access.

7. From the You're Done! page, select **Go To My Courses** .
8. On the My Courses page, select the course name **Linear Algebra - fall 2018** to startyour work.

To sign in later:

1. Go to www.pearson.com/mylab .
2. Select **Sign In** .
3. Enter your Pearson account **username** and **password,** and **Sign In** .
4. Select the course name **Linear Algebra - fall 2018** to start your work.

To upgrade temporary access to full access:

1. Go to www.pearson.com/mylab .
2. Select **Sign In** .
3. Enter your Pearson account **username** and **password,** and **Sign In** .
4. Select **Upgrade access** for **Linear Algebra - fall 2018 .**
5. Enter an access code or buy access with a credit card or PayPal.

Course Grading:
We are going to have three tests counting 47% (with one lowest test score dropped), Attendance 7%, homework 18%, and the comprehensive final exam 28% for the calculation of final grade. No make-ups will be given for the tests. Class attendance will be checked regularly.

Course Policiesand Expectations:
No make-ups will be given for the tests. Class attendance will be checked regularly.

Supplemental Readings/Additional Bibliography:
None

Course Outline and Schedule: *(dates, weeks, topics)*

Weeks 1, 2: Linear Equations in Linear Algebra

Weeks 3, 4: Matrix Algebra, test#1

Weeks 5, 6: Matrix Algebra (continued), Determinants

Weeks 7, 8: Vector Spaces, test#2

Week 9, 10: Vector Spaces (continued): Change of Basis and Applications to Markov Chains

Weeks 11, 12: Eigenvalues and Eigenvectors, test#3

Weeks 13, 14: Orthogonality and Least Squares

Week 15: Singular Value Decomposition

About Your Professor:

Any Additional Items Needed:

CLARK ATLANTA UNIVERSITY

Course Syllabus – CMAT 211
DR. Temesgen Kebede

Office Hours	To be arranged (Appointment necessary for extended discussions)
Office Location	**MD-148**
Office Telephone	**(404)880-8190**
Email	tkebede@cau.edu

Course Number/Section		**Course Title**	**Credit Hours**	**Semester**	**Time**	**Level *(U/G)***
CMAT CRN:26701	211 Sec-01	Calculus III	4	Spring 2019	8:00-9:15(TR) 1:00-1:50 (W)	U

Brief Description	The third of the three Science and Engineering Calculus series.
Prerequisites	Calculus II or Equivalent

Instructor:

Course Description: This course covers the foundations of Differential and Integral Calculus of Several Variables and their applications in science and engineering. The topics include, Limits and Continuity of Functions of Several Variables, Partial Derivatives, Differentiability, Linearization and Differential Approximation, Chain Rule, Implicit Differentiation in Several Variables, Directional Derivatives, Gradient Vector, Level Curves and Level Surfaces, Physical Applications, Dot, Cross & Scalar Triple Products of Vectors, Lines, Planes and Surfaces in Space, The TNB Frame, Maxima , Minima and Saddle Points, Lagrange Multipliers, Two and Three Dimensional Multiple Integrals in Cartesian, Polar, Cylindrical and Spherical Coordinates, Jacobians and Change of Variables in Multiple Integrals, Surface and Line Integrals, Stokes' and Gauss' Theorems.

Required Textbook/Readings:

Textbook: Calculus with early transcendentals, Thomas 13th Edition.

Course Requirements:

1. Course Textbook – **No one will be admitted to class without a textbook after the first two weeks!** Bring your textbook to every class session. Also see the Student Handbook for your "Student Responsibilities".
2. A course notebook for recording notes, examples, assignments, homework and announcements
3. Regular Class Attendance
4. A scientific calculator

Computer Labs:

The following labs can be utilized for tutorial assistance:

- McPheeters-Dennis Math Lab, Room 128 and Room 131: See posted schedule for the lab hours

Grading and Other Policies and Expectations:

The final course grade will be determined through the use of frequent assessments using tests, quizzes, midterm exam, final exam and other items listed below. The final exam is a common departmental exam and every student is required to take this exam at the designated time. The final exam will be comprehensive.

Students must complete each exam, test, or quiz on the scheduled date. There may be announced and unannounced quizzes.

Students are expected to attend all necessary classes and to be on time. All students are to abide by the Clark Atlanta University Campus Cultural Creed (CAU Student Handbook 2006 – 2008, pg. 6). Additionally, the student must adhere to the rules set by the Course Instructor.

Grading Schemes: (**Tentative**)

Quizzes/Homework	10%
Tests	30%
Participation/Other	5%
Mid-term	10%
Final Exam	45%
Total	100%

Final Letter Grade Criteria:
A=(90%-100%), B=(80%-89%), C=(70%-79%), D=(60%-69%), F=Less than 60%
The most important activity in the class will not be copying notes but discussing concepts and digesting them by solving different variations of examples on the given concept. So be prepared to relate concepts with problems and also logically write solutions.
You will be given a zero for any missed exam, test, quiz, or homework assignment that is issued by the instructor. **No make-ups will be given for in-class quizzes and exams.**

Important Dates:

January 16	**Classes Begin**
January 21	MLK-Holiday
January 25	Final Cancellation of Class to be Financially Enrolled
March 4-8	Mid-Term Examination
March 11-15	Spring Break
March 21	Founders Day Convocation
May1	Last Day of Classes
May 6-10	Final Examinations

(Common exam for all classes)

Teaching/Learning Methods:
The course will include lectures and student participatory activities. Exposure to and use of technology will be an integral part of the course.

Incomplete ("I") Grade Processing

"An incomplete grade ("I") is given when has been enrolled in a course for an entire semester but has not completed all the requirements. The "I" is typically given only when the student has an official excuse for not taking the final examination or has not completed course requirements for reasons that are acceptable to the instructor, but is otherwise doing **passing work**. In awarding an "I" grade, the instructor must submit an Incomplete Grade Assignment Form to the Office of the University Registrar... An "I" grade should be removed by the end of the semester following the one in which it was assigned, but must be removed no later than one year from the end of the semester in which the "I" was assigned. Removal of an "I" does not assure a passing grade in the course. " *The Undergraduate Academic Regulations and Procedures Student Handbook*

	Course Objectives: Upon completion of the course, the student should be able to:	
1	Understand and Master Domain, Range, Limits, and Continuity in the context of Several Independent Variables.	
2	Master Partial Derivatives and Their Calculation.	
3	Master Linearization, Differential Approximations and their Practical Applications.	
4	Master Directional Derivatives and the Gradient Vector.	
5	Master The Physical Applications of Directional Derivatives and the Gradient Vector.	
6	Master Dot, Cross and Scalar Triple Products and their Geometric /Physical Applications.	
7	Master Equations (Parametric and Cartesian) of Lines and Planes in Three Dimensions.	
8	Master the TNB Frame associated to Space Curves.	
9	Master Maxima, Minima and Saddle points of a Function of Two Independent Variables.	
10	Master solving typical problems related to item 9.	
11	Master Lagrange's Undetermined Multiplier Method.	
12	Master solving typical problems related to item 10.	
13	Understand Double and triple Integrals as Riemann Sums.	
14	Master Evaluating Double and Triple Integrals.	
15	Master The Change of Variables Formula, Jacobians and Different Coordinate Systems.	
16	Master Line Integrals, Green's Theorem, Conservative Fields and their Potentials.	
17	Understand Flux Integrals, Gauss' and Stokes' Theorems .	

Topics:

UNIT 1: Partial Derivatives

- Functions of Several Independent Variables.
- Domain, Range, Limits and Continuity in Several Independent Variables.
- Partial Derivatives, Several Practice Problems.
- Differentiability, Linearization, Differential Approximations.
- The Chin Rule and Implicit Differentiation in Several Independent Variables.
- Directional Derivatives, the Gradient Vector and Tangent Planes.
- Maxima, Minima and Saddle Points, Practical Problems.
- Lagrange Multiplier Method, Practical Problems.

UNIT 2: Vector Methods and Vector Valued Functions in R2 and R3

- Vectors in R2 and R3, Dot and Cross products, Scalar Triple Products.
- Lines, Planes and Surfaces in Space.
- Polar, Cylindrical and Spherical Coordinate Systems.
- Vector Valued Functions, Space Curves and the Unit Tangent Vector.
- Curvature, Torsion and the TNB Frame

UNIT 3: Multiple Integrals and Integration of Vector Fields.

- Double and Triple Integrals as Riemann Sums in Cartesian Coordinate System.
- Double Integrals in Polar Coordinate System, Change of Variables Formula and the Jacobian Determinant.
- Triple Integrals in Cylindrical and Spherical Coordinate Systems.
- Line Integrals, Green's Theorem, Conservative Fields and their Potentials.
- Flux Integrals, Gauss' and Stokes' Theorems.

About Your Professor: Your Professor is a very approachable and most helpful instructor. His areas of interest include Mathematical Physics and Dynamical Systems.

IMPORTANT

If you believe you qualify for course adaptations or special accommodations under the Americans with Disabilities Act, it is your responsibility to contact the CAU Disabled Student Support Services office and provide the appropriate documentation. If you have already documented a disability or other condition that qualify you for special accommodations, or if you have emergency medical information or special needs I should know about, please notify me during the first week of class. You can schedule an appointment to meet with me.