MOREHOUSE COLLEGE
DEPARTMENT OF MATHEMATICS
Spring Semester 2020 [January 15 – May 8]
CALCULUS I: Math 161G/01 (CRN 43985)

<u>INSTRUCTOR INFORMATION</u>:

NAME:	Dr. B. K. NMAH
OFFICE:	Dansby 202G
OFFICE HOURS:	MW: 1:00–3:30
	T TH: 1 – 2
	OTHERS: By Appointments/Walk-ins
PHONE:	(470) 639- 0389
EMAIL:	<u>benedict.nmah@morehouse.edu</u>

<u>MEETINGS</u>: M - Th: 12:00-12:50 PM   Dansby 310
F: 12:00 – 12:50* Dansby 310 (Exams & Quizzes)
*: **Do not schedule any personal activity during this class time**.

<u>PREREQUISITE</u>:

- ACT Composite 29 or SAT Mathematics 0600   OR
- Undergraduate level <u>HMTH 120</u> Minimum Grade of C   OR
- (Undergraduate level <u>HMTH 115</u> Minimum Grade of C and
- Undergraduate level <u>HMTH 116</u> Minimum Grade of C   OR
- Undergraduate level <u>HMTH 115C</u> Minimum Grade of and
- Undergraduate level <u>HMTH 116C</u> Minimum Grade of C)

Text: <u>Calculus</u>, Fourth Ed., by Rogawski, Adams and Franzosa (W.H. Freeman & Company, 2019)

Handout on Pre-requisite Algebra and Trigonometry Skills
Technology Statement: Optional or a limited use of **basic scientific calculator** (NOT: TI-84/84 Plus **Or a TI-83/83 Plus**) is likely in the course to enhance mathematical thinking and problem solving and to judge the reasonableness of results.

Coverage: Chapters 2, 3, 4, 5, and 6

Student Learning Outcomes/Course Objectives:

After successfully completing this course, the students should be able to perform the following tasks:

Limits and Continuity
- Discuss the behavior of certain algebraic functions as the variable approaches a certain number
- Define the concepts of limit and continuous function
- Find indicated limits by using limit theorems

Differentiation
- Define and interpret the derivative of a function
- Compute the derivative by definition
- Compute the slope of and write the equation of a line tangent to a given curve at a given point by differentiation
- State and apply the differentiation formulas
- Determine the derivative of a function which is given implicitly by an equation
- Find derivatives of higher order
- Discuss the instantaneous rate of change of a quantity
- Understand the role of differentials

The Mean-Value Theorem and Applications
- State, illustrate, and prove Rolle's Theorem and the Mean Value Theorem
- Determine when a function is increasing or decreasing
- Determine if a curve is concave upward or downward at a point
- Discuss and sketch a curve
- Determine the maximum and minimum values of a function
- Discuss the motion of a particle on a straight line
- Discuss the motion of free-falling objects

Integration
- Define the indefinite and definite integral of a function
- State and apply the integration formulas
- State and apply the Fundamental Theorem of Calculus
- Find the area under a curve
- Compute certain integrals by u-substitution

Applications of the Integral
- Compute the area between two curves
- Compute the volume of a solid of revolution
- Compute the work done by a force

COURSE OUTLINE

CHAPTER 2. Limits
2.1 Limits, Rates of Change, and Tangent Lines
2.2 Limits: A Numerical and Graphical Approach
2.3 Basic Limit Laws
2.4 Limits and Continuity
2.5 Evaluating Limits Algebraically
2.6 Trigonometric Limits
2.7 Intermediate Value Theorem

CHAPTER 3. Differentiation
3.1 Definition of the Derivative
3.2 The Derivative as a Function
3.3 Product and Quotient Rules
3.4 Rates of Change
3.5 Higher Derivatives
3.6 Trigonometric Functions
3.7 The Chain Rule
3.8 Implicit Differentiation
3.9 Related Rates

CHAPTER 4. Applications of the Derivative
4.1 Linear Approximation and Applications
4.2 Extreme Values
4.3 The Mean Value Theorem and Monotonicity
4.4 The Shape of a Graph
4.5 Graph Sketching and Asymptotes
4.6 Applied Optimization
4.7 Newton's Method
4.8 Antiderivatives

Official Excuses For Class Absences:

Each Morehouse College student is expected to attend all scheduled classes regularly and be on time. However, in cases of an emergency/sickness Morehouse College's Associate Dean of Students verifies all official class excuses. Students must receive signature approval from their respective academic advisors to validate any class excuse. Valid written documentation must be submitted to justify their class absences within three (3) calendar days of the class absence.

Litmus Test For Class Excuses

Acceptable Reasons	Unacceptable Reasons
Illness/Sickness	Public Transportation Problems
Doctor's Appointment	Over-sleeping
Funeral	Car Breakdowns
Court Appearance	
Military Duties	
Family Emergencies/Weddings	
Conference with Dean/Faculty/Staff	
Official School Business	

For transient students attending Morehouse College, these policies for class excuses apply; however, the appropriate officials of the students' resident institution must provide the official class excuse.

Class attendance will be taken daily and is mandatory. Roll will be taken at each class; students coming to class after roll call is taken will be marked absent. In the interest of maintaining a conducive learning environment, I reserve the right to bar (from entering my classroom) any student with chronic lateness (ten minutes after class starts). For the same reason, please turn off your cell phones/all electronic devices and avoid text messaging. Without exception, any such disruptions of class will result in eviction from class. All classroom guests for any lecture must be pre-approved by me.

EEO & Disability Statement:

Morehouse College is an equal opportunity employer and educational institution. Students with disabilities or those who suspect they have a disability must register with the Office of Disability Services ("ODS") in order to receive accommodations. Students currently registered with the ODS are required to present their Disability Services Accommodation Letter to faculty immediately upon receiving the accommodation. If you have any questions, contact the Office of Disability Services, 104 Sale Hall Annex, Morehouse College, 830 Westview Dr. S.W., Atlanta, GA 30314, (404) 215-2636.

Academic Dishonesty:

Morehouse College students are expected to conduct themselves with the highest level of ethics and academic honesty at all times and abide by the terms set forth in the Student Handbook and Code of Conduct. Instances of academic dishonesty, including, but not limited to plagiarism and cheating on examinations and assignments, are taken seriously and may result in a failing grade for the assignment or course and may be reported to the Honor and Conduct Review Board for disciplinary action.

Inclement Weather Policy:

In the event of inclement weather, the College will announce any closures via the emergency notification system and/or through local news outlets. Absent an official closure, students are not excused from attending class due to weather and any absences will be considered unexcused.

Homework:

Homework plays an intricate role in succeeding in any math course and acts as a means of studying mathematics. Students who do not complete homework, do not perform well on quizzes, discussions, and tests. Homework assignments will consist of problems from the textbook .

Grades & Grading Policy:

Students' course grade will be based on their performance on in-class exams, graded quizzes, and a comprehensive final exam.

1. 3 exams (Drop the lowest test score)   200 (100% per test)
2. Quizzes   100
3. Final Examination   200

Based on your overall average, your final course grade will be determined as follows:

450 - 500: A   440-449: A-   430 – 439: B+   400 - 439: B
390 - 399: C+   345 – 389: C   295- 344: D   Below 295: F

Do not discard any graded paper until you get your final course grade. This would be helpful should a grade-question arise.

Tentative Dates:

Test 1: Friday, February 14
Founder's Day Convocation: Thursday, February 13
Mid Term Week: Monday – Friday, March 2 – 6
Spring Break: Monday-Friday: March 9 - 13
Test 2: Friday, March 20
Good Friday: April 10 (No classes)
Last Day to Withdraw: Monday, March 30
Test 3: Friday, April 24
Last Day of Classes: Wednesday, April 29
Final Exam: Week of May 4 -8 (Exact Date to be announced)

Please do not miss any scheduled exam or quiz. Except for absences due to institutional functions or "unavoidable circumstances", I do not give makeups.

Syllabus is not a Contract:

This syllabus is not a contract between instructor and student, but rather a guide to course procedures.   The instructor reserves the right to amend the syllabus when conflicts, emergencies or circumstances dictate. Students will be duly notified.

Morehouse College
Department of Mathematics
Calculus I Sec 1
Syllabus Requirements

I, _____, a student in the Calculus I Sec 1, Spring 2020, have thoroughly read and fully understood the expectations and requirements associated with this course. I will abide by all of the requirements in the course, thus positioning me to successfully complete this course.

Student's Printed Name: _____

Student's Signature: _____

*Student's Email: _____

*Student's contact (cell) number:_____

*Student's Morehouse (M/institutional) number:_____

Date: _____

*: During the course of the semester I may use this information to reach out to you when warranted.

Please complete, print and turn this page in to me before the end of class today.

Instructor: Steve Pederson
Office: Dansby 301D   Phone: (470) 639-0572   email: spederso@morehouse.edu
Office Hours: MWF 11-12 and 1-2
Required Text Calculus, 4th Ed., by J. Rogawski (**don't get** "Early Trancendentals"); ebook rental is OK:
https://store.macmillanlearning.com/us/product/Calculus/p/1319050735?gclid=EAlaIQobChMIwPD11tub
5AlVHP7jBx35pwpLEAQYASABEgL-KPD_BwE

Prerequisite A grade of C or better in Math 120 (or Math 115-116) is required by the Department of Mathematics to take Math 161. C- is not sufficient. The instructor will verify prerequisites for all students. Students who do not have the prerequisite will be dropped or withdrawn from the course.

Grades During the semester there will be 6 tests (Feb. 5, Feb. 19, March 4, April 1, April 15, April 29) and a final exam. The lowest test grade will be dropped in the Final Grade computation (**the reason that the lowest test grade is dropped is in case one time you miss a test and do not qualify for a make-up test or do not follow the make-up procedure**). The time and place of the Final Exam is decided by the Registrar, not the instructor. It can not be changed. Students are responsible for knowing the time and place of the Final Exam. The Final Exam is cumulative and not optional (no exemptions). Each test will be out of 100 points and the Final Exam will be out of 250 points.

Grades will not be released over the telephone or by email. Students must collect their graded papers in person. Graded papers not collected in class will be kept at the instructor's office for students to collect. Students should keep their graded and returned papers. The final exam will be kept by the instructor. Students are welcome to see their graded final exams. Graded papers will be scanned before being returned to students.

Final Grades
final average = [non-dropped tests + final exam]/max points
("max points" is the maximum number of points that could have been obtained)

Course grades will be assigned by the scale:

Final Avg. Final Grade
98-100......A+	90-97......A	88-89......A-	
86-87.........B+	80-85......B	78-79......B-	
76-77.........C+	70-75......C	68-69......C-	
66-67.........D+	60-65......D	58-59......D-	0-57......F

Midterm Grades Computation of the midterm grade will use all tests graded by the end of the "midterm exam week". The midterm grade will use the same grading scale as the final grade.

Test Procedures During tests and the final exam:

1. Students are not allowed to use electronic devices. No cell phones, smartwatches, tablets, earbuds, earphones, and so on. Having a cell phone in your hand, on your desk, on your seat, on your lap, etc. will result in a grade of 0 for that exam or test. You will not be permitted to start a test/exam if you have a smartwatch on your arm or wrist, in your hand, on your desk, on your seat, on your lap, etc. The current time will either be projected on the screen or written on the board.
2. Students must put all books, notes, and other items in a zipped book bag or at the front of the classroom.
3. A student may leave the room and return but with a penalty: 10 test points for each 2 minutes gone or portion of 2 minutes gone; must be approved by the instructor before leaving; the instuctor must keep the student's test until they return; limit once per student per test; only one student at a time; students are not allowed to use electronic devices).
4. No items are allowed on the desktop other than pens, pencils, erasers, and the test. No scratch paper.

5. No items which block the instructor's view of your face or ears.

Not following procedures or instructions during a test or the Final Exam may result in dismissal from the test or the Final Exam and a grade of 0.

Make-up Test Policy The student MUST contact the instructor **in advance** of missing a test with written evidence in order to be considered for a make-up test for 100% credit (at least two days in advance is requested). However, just contacting the instructor in advance does not mean that the student will receive a make-up test. The reason for missing a test must be compelling and within the College Catalog's guidelines for an excused absence <u>but the instructor will decide whether or not the absence is excused</u> in terms of the make-up policy. If you do not receive permission for a make up test from the instructor <u>with an agreed upon make up test time</u>, you should assume you will not get a make up test (setting the time for the make up test is part of the approval process).

If the student contacts the instructor less than 24 hours before the test with written evidence, the request may be denied but even if it is approved, the student will only receive 80% of their raw score on the make up test. The make-up test must be taken as soon as possible, within 1 week of the original test. If granted, the make-up test will not be the same as the original test. If a student **does not** contact the instructor in advance of missing a test with written evidence in order to be considered for a make-up test, the instructor (at his sole discretion) may allow a one time make up test for 70% credit.

Homework Assignments will be made regularly but will not be collected or graded.

Food Policy No food is to be eaten during class. Drinks are allowed.

Cell Phone and Electronic Device Policy Cell phones should be silent during lecture. Do not take videos during the class. Avoid taking pictures of the board during class (after class is OK).

Policy on Appeals for Grades Once a test is returned to a student, the student may appeal the grade. The student must appeal the grade within one week of it being returned (available) to the class (**Important Exception**: all appeals must be made before the Final Exam; for example, if the last test is made available for pick up during the Reading Period, any appeal of that test must be made before the Final Exam).

The appeal should be written and must include the original unaltered paper. The appeal must be very specific about the issue. Do not change the original answer in any way (the graded papers are scanned before being returned to students- any change to the original answer during an appeal will be considered cheating and result in a grade of 0). The appealed paper is always compared to the scanned paper. The grade for an appealed paper may increase or decrease. Usually a grade change is made only if there was an error in adding up the points or the paper was graded differently than how the answer key assigns points. **Caution:** The "one-week rule" is important- for example, if you collect your Test 1 at the end of the semester it can not be appealed.

Policy on Cheating The least penalty for cheating on a test will be receiving a grade of 0 for that test. The instructor may assign an F for the course grade.

Student Responsibility Each student is responsible for the content of all classes, including announcements, the syllabus, instruction, tests, and homework assignments. Students are responsible for signing the Daily Roll Sheet in class (otherwise they will be counted absent). Also,

1. Students are expected to attend every class. A student with excessive absences may be withdrawn from the course. Your Final Average may be reduced by 1-2 points for each excessive unexcused absence (more than 4 unexcused absences).
2. Students are expected to be on time and ready to start class at the scheduled time.
3. Students are expected to remain present for the full lecture.
4. A student should not leave the classroom without a good reason.

5. Students who arrive late, leave early, or leave the class session for a short time must not disrupt the lecture.

6. For an absence to be Excused, the instructor must receive the original Official Excuse from Student Services. The Official Excuse should be presented within 5 days of the student's return to class.

Last Day to Withdraw: March 30, 2020 (no exceptions)

Attendance Requirements: Students are expected to attend each class meeting. Students with more than 4 unexcused absences will be referred to the Office of Student Success and may be administratively withdrawn from the course. Failure to meet minimum attendance requirements may result in the loss of the student's financial aid in accordance with federal financial aid requirements.

EEO & Disability Statement: Morehouse College is an equal opportunity employer and educational institution. The College makes reasonable accommodations for all qualified individuals with disabilities. Any student requesting academic accommodations based on his disability is required to register with our Student Counseling & Disability Center (the "Center") at 104 Sale Hall Annex, Suite 100 every semester. A disability accommodation letter can be obtained from ODS. Students are required to provide a copy of the disability accommodation letter to each of their professors upon approval of their accommodations. Please contact our Coordinator of Disability and Counseling Services with any questions at (470) 639-0231.

Academic Dishonesty: Morehouse College students are expected to conduct themselves with the highest level of ethics and academic honesty at all times and abide by the terms set forth in the Student Handbook and Code of Conduct. Instances of academic dishonesty, including, but not limited to plagiarism and cheating on examinations and assignments, are taken seriously and may result in a failing grade for the assignment or course and may be reported to the Honor and Conduct Review Board for disciplinary action.

Syllabus is not a Contract: A syllabus is not a contract between instructor and student, but rather a guide to course procedures. The instructor reserves the right to amend the syllabus when conflicts, emergencies or circumstances dictate. Students will be duly notified.

Inclement Weather Policy: In the event of inclement weather, the College will announce any closures via the emergency notification system and/or through local news outlets. Absent an official closure, students are not excused from attending class due to weather and any absences will be considered unexcused.

Morehouse College
Spring 2000 MATH 271-03 (Linear Algebra) CRN: 43994
MWF 2:00-2:50 p.m. DH 306

INSTRUCTOR: Farouk Brania.

OFFICE: Dansby Hall 303 Office hours: MWF 9-9:50 a.m., MWF 12-12:50 p.m., other times by appointment. **I invite you to come to my office to discuss any difficulties that you may encounter about the class or to ask questions. Always welcome when I am in my office.**

TELEPHONE: (470) 639-0707

E-MAIL: abrania@morehouse.edu

COURSE
Textbook: **(REQUIRED)**: Linear Algebra and its Applications 4th Edition by David C. Lay, Published by Addison Wesley.
Coverage:
Chapter 1: Systems of Linear Equations, Linear Transformations
Chapter 2: Matrix Algebra
Chapter 3: Determinants, Cramer's Rule
Chapter 4: Vector Spaces, Subspaces, Bases, Dimension
Chapter 5: Eigenvalues, Eigenvectors, and Diagonalization of a Matrix
Chapter 6: Inner Product, Orthogonality, Gram-Schmidt, and Applications
Chapter 7: Symmatric Matrices, Singular Value Decomposition

PREREQUISITE: Math 161 with a grade of at least C or by approval from the director of the Mathematics Academic Program.

HOMEWORK: The most important activity for the student in this course is work through the homework exercises in a timely manner to stay on pace with the progress of the class. This is where the learning takes place. If you encounter difficulties in the homework, feel free to ask me questions in class or preferably in my office. The homework is not collected and will not be graded.

QUIZZES: Expect a 10 to 15 minute quiz roughly each two weeks. These quizzes will follow up on the work done in the homework problems. The quizzes will count **20%** of the grade. (The lowest 1 or 2 quizzes will be dropped)

EXAMS: There will be **three 1-hour tests**. They are designed to measure the quality of knowledge that you have acquired through homework and quizzes. Each of the 2 highest tests counts **20%** and the lowest **10%** of the grade.
The **Final Exam** is cumulative and represents a synthesis of the main themes of the course. It is **30%** of the grade.

ATTENDENCE: You are expected to attend class on a regular basis. You are expected to be called to the board to present on any given day of class. If your name is called and if you are absent you will be marked off that day. If you know that you will be absent from class on a given day you will need to notify me ahead of time so that you avoid being marked off that day. But you will be called again soon after that. Also, it is imperative that you take the exams on the announced dates. I will not give make-ups except when unavailable because of service to the College or when having a serious illness or accident, which require hospitalization or similar medical care.

GRADING Scale:
90 or higher: A
80 or higher but less than 90: B to B+ to A-
70 or higher but less than 80: C to C+ to B-
60 or higher but less than 70: D to D+ to C-
50 or less: F to D-.

ADA accommodations:
Morehouse College is an equal opportunity employer and educational institution. The College makes reasonable accommodations for all qualified individuals with disabilities. Any student requesting academic accommodations based on his disability is required to register with our Student Counseling & Disability Center (the "Center") at 104 Sale Hall Annex, Suite 100 every semester. A disability accommodation letter can be obtained from ODS. Students are required to provide a copy of the disability accommodation letter to each of their professors upon approval of their accommodations. Please contact our Coordinator of Disability and Counseling Services with any question at (470) 639-0231.

Disclaimer:

A syllabus is not a contract. The instructor reserves the right to alter the course requirements and/or assignments based on new materials, class discussions, or other legitimate pedagogical objectives.

MA 271

Dr. George Yuhasz

Contact info:

Email:	George.Yuhasz@morehouse.edu
Phone:	(470)639-0406
Office:	203A Dansby Hall
Office Hours:	11:30-1:30PM Monday and Wednesday; 12:30-1:30PM Tuesday; 8:30-9:30AM Thursday; and by appointment

Graded Material:

Category	Notes
Tests	There will be 4 tests. No tests will be dropped.
Final Exam	The final exam will be cumulative. The exam will be written by me. The final exam date is tbd. No one will be excluded from the final exam.
Homework	There will be 8 homework problem sets. Each set will consist of 5-6 problems from the sections recently covered. The homework can be turned in on paper or via blackboard. The homework will be graded more for completion than correctness.

Final Numeric Score

The final numeric score will be the maximum of the following two grading schemes.

Category	Computation A	Computation B
Tests	The lowest test will be 10%. The highest test will be 20%. Each of the remaining tests will be 15% each. The total percentage of the tests is 60%.	The highest test will be 25%. The other three tests will be 15% The total percentage of the tests is 70%.
Final Exam	The final will be 25%	The final will be 30%
Homework	The homework will be 15%	The homework will be 0%

Final Letter Grade:

The final numeric score will translate the following letter score. The scale may become more slightly more forgiving depending on natural break points in the class distribution.

Letter Grade	Numeric Range
A	93 and above

A-	90-93
B+	87-90
B	83-87
B-	80-83
C+	77-80
C	73-77
C-	70-73
D+	67-70
D	63-67
D-	60-63
F	Below 60

Tests:

	Tentative Date	Sections covered
Test 1	February 7	1.1-1.7
Test 2	February 28	1.8-1.9, 2.1-2.5, 3.1-3.3
Test 3	March 30	2.8-2.9, 4.1-4.7, 5.1-5.2
Test 4	April 24	6.1-6.6, 7.1-7.2

Test Day Procedures:

When taking the test, your bag must be placed in the front of the room. You will be provided a clear plastic ziploc bag before the test. You will put your name on the name sticker, place your phone in the ziploc, close the ziploc and place the ziploc on my desk. All other small electronic devices with commmunication capabilities (Apple Watch, tablet, laptop ...) should be in your bag or your ziploc. If you do not turn in a phone, you must sit in the front of the room. No one may have a phone at their desk and if discovered, your test will end immediately and you will receive a 0 for the test. I reserve the ability to assign seating for the whole class or an individual student.

Make-Up Test Procedures:

All official college excused and previously arranged instructor excused absences on a test day during the semester will be honored and the student will be allowed to make up the test. Test make ups will be scheduled as quickly as possible with the goal being the test is made up no more than one week after the test is given in class. All tests will be held by the instructor until all make up tests have been taken or two weeks have passed since the test. Missed tests without official college excuses or previously arranged instructor excuses are not guaranteed make up tests. Instructor discretion will be used and two instances of such absences will mean no make up test for the second absence and beyond. Missing your arranged make up date without prior notification of your

instructor will be treated in the same manor as missing the test without an official college excuse or previously arranged instructor excuse.

Attendance Requirements:

Students are expected to attend each class meeting. Students with more than 3 unexcused absences will be referred to the Office of Student Success and may be administratively withdrawn from the course. Failure to meet minimum attendance requirements may result in the loss of the student's financial aid in accordance with federal financial aid requirements.

EEO & Disability Statement:

Morehouse College is an equal opportunity employer and educational institution. The College makes reasonable accommodations for all qualified individuals with disabilities. Any student requesting academic accommodations based on his disability is required to register with our Student Counseling & Disability Center (the "Center") at 104 Sale Hall Annex, Suite 100 every semester. A disability accommodation letter can be obtained from ODS. Students are required to provide a copy of the disability accommodation letter to each of their professors upon approval of their accommodations. Please contact our Coordinator of Disability and Counseling Services with any questions at (470) 639-0231.

Academic Dishonesty:

Morehouse College students are expected to conduct themselves with the highest level of ethics and academic honesty at all times and abide by the terms set forth in the Student Handbook and Code of Conduct. Instances of academic dishonesty, including, but not limited to plagarism and cheating on examinations and assignments, are taken seriously and may result in a failing grade for the assignment or course and may be reported to the Honor and Conduct Review Board for disciplinary action.

Grievance Resolution Policy:

For students who experience class-related issues and/or concerns (i.e. conflict with professor, disagreements with grading policies & advisement, etc.), there is a grievance resolution process set in place to reconcile any unresolved disagreements. This process begins with the course professor to discuss your concerns and a possible remedy. If a mutual agreement cannot be met between the student and course professor, the student may request that the matter be reviewed by the Academic Program Director (APD). This step involves the completion of a Student Grievance Form, provided by the APD or one of the Division Support Specialists. After reviewing the concern presented by the student, the APD will contact the professor to discuss a possible resolution and make recommendations for both parties involved. If the student does not agree with the APD's recommendation, he or she may request a review by the Division's Grievance Committee. The Grievance Committee will then review the submitted grievance along with any previous recommendations before making a final decision. The process stated provides a fair review of the student's concern in an attempt to quickly resolve any disputes. It is anticipated that most matters will be handled within 10 business days, however, additional time may be necessary pending faculty availability and scheduling.

Office Hours

My office hours are listed above. Office hours are for you the student to come and discuss the class, the material and anything pertinent to you and your performance in the class with me. You can come asa group or individually. The meeting can be with an open door or private depending on what you wish and the topic. If you cannot make the office hours listed above, we can set up a meeting outside of those hours subject to my availability.

Syllabus is not a Contract:

A syllabus is not a contract between instructor and student, but rather a guide to course procedures. The instructor reserves the right to amend the syllabus when conflicts, emergencies or circumstances dictate. Students will be duly notified.

Inclement Weather Policy:

In the event of inclement weather, the College will announce any closures via the emergency notification system and/or through local news outlets. Absent an official closure, students are not excused from attending class due to weather and any absences will be considered unexcused.

MOREHOUSE COLLEGE
DEPARTMENT OF MATHEMATICS

COURSE OUTLINE
DIFFERENTIAL EQUATIONS (MATH 321)

TEXTBOOK:
A First Course in Differential Equations with Modeling Applications
Author: Dennis G. Zill; Edition: 10TH : Publisher: Brooks/Cole CENGAGE Learning

GENERAL OBJECTIVES

The primary objectives of Math 321 are:

(1) to expose the student to some of the more commonly used techniques for finding explicit solutions of ordinary differential equations:
(2) to introduce several numerical techniques for finding approximate solutions to ordinary differential equations and;
(3) to explore some of the applications of ordinary differential equations to the physical, behavioral and engineering sciences.

TOPICAL OUTLINE

I. DIFFERENTIAL EQUATIONS AND THEIR SOLUTION (Chapter 1)
    A. Classification of Differential Equations
    B. Solutions and Initial Value Problems

II. FIRST ORDER DIFFERENTIAL EQUATIONS (Chapter 2)
    A. Direction Fields and Autonomous Equations
    B Separable Equations
    C. Linear Equations and Bernoulli Equations
    D, Exact Equations and Special Integrating Factors
    E. Solutions by Substitutions
    F. Euler's Method
    G Selected Applications (From Chapter 3)
        (1) Growth and Decay
        (2) Mixtures

III. HIGHER ORDER DIFFERENTIAL EQUATIONS (Chapters 4)
    A. Fundamental Solutions of Homogeneous Equations
    B. Reduction of Order
    C. Homogeneous Linear Equations with Constant Coefficients
    D. Nonhomogeneous Differential Equations E. Method of Undetermined Coefficients
    F. Variation of Parameters
    G. Cauchy- Euler Equations

IV. MODELING WITH HIGHER- ORDER DIFFERENTIAL EQUATIONS (Chapter5)
    A. Spring/Mass Systems
    B. Elementary Electric Circuits

V. SERIES SOLUTIONS OF LINEAR DIFFERENTIAL EQUATIONS (Chapter 6)
A. Power Series Solutions About an Ordinary Point
B. Solutions About Singular Points (Optional)
C. Bessel's Equation and/or Legendre's Equation (Optional)

VI THE LAPLACE TRANSFORM (Chapter 7)
A. Definition and Properties of the Laplace Transform
B. Inverse Laplace Transform
C. Transforms of Derivatives
D. Solving Initial Value Problems Using Laplace Transforms
E. Operational Properties I and II
    (1) A Piecewise –Defined Function
    (2) Solving Initial Value Problems with Piecewise-Defined Functions
    (3) Solving Integral Equations
F. The Dirac Delta Function

VI SYSTEMS OF LINEAR DIFFERENTIAL EQUATIONS (Chapter 8)
A. Solving Systems by Elimination (Chapter 4, Section 4.8)
B. Homogeneous Linear Systems (Chapter 8)
C. Nonhomogeneous Linear Systems (Optional; Chapter 8)

VIII. NUMERICAL METHODS FOR DIFFERENTIAL EQUATIONS (Chapter 9)
A. The Fourth Order Runge-Kutta Method
B. A Multistep Method (Optional)

REFERENCES

1. Introduction to Ordinary Differential Equation by Shepley L. Ross; Fourth Edition, John Wiley and Sons
2. Fundamentals of Differential Equations by Nagle, Saff, and Snider; Addison Wesley Publishers; Seventh Edition.
3. Differential Equations, Theory, Technique, and Practice by Simmons and Krantz; McGraw Hill Publishers; First Edition.

STUDENT RESPONSIBILITIES
(1) Attend class regularly and take notes
(2) Complete all assignments on time. Assignments should be handed in at the beginning of the class.
(3) Take all exams when scheduled or notify instructor
in advance of conflicts.
(4) Maintain a high level of personal integrity, including
honesty on all graded work.

MOREHOUSE
COLLEGE

Course Syllabus
Math 321 Section 1, Differential Equations (CRN 43996)
SPRING 2020

Instructor: Dr. Tuwaner Lamar
Office: 304B Dansby Hall
Phone: (470)639-0423
Email: Tuwaner.Lamar@morehouse.edu
Office Hours:

M	2:00 – 4:00 p.m.,
T	8:00 –10:00 p.m. Online,
W	1:00–2:00 p.m.,
F	2:00 – 4:00 p.m. and
	other times by appointment; online appointments, too.

Class Time and Location: MWF 11:00 – 11:50 a.m., 300 Dansby Hall
Online Class Meetings if needed:

        https://global.gotomeeting.com/join/207665677
        United States: +1 (571) 317-3122
        Access Code: 207-665-677

Prerequisite: MTH 162 (Calculus II) with grade of C or better.

Textbook: Zill, *A First Course in Differential Equations*, 10th edition, Brooks/Cole, 2009, ISBN 978-1-111-82705-2.

Online: WebAssign via Blackboard

Text coverage
    Chapter 1 - Introduction to Differential Equations: Sections 1.1 - 1.3
    Chapter 2 - First-Order Differential Equations: Sections 2.1 – 2.4
    Chapter 3 – Modeling with First-Order Differential Equations: Section 3.1
    Chapter 4 – Higher-Order Differential Equations: Sections 4.1-4.7
    Chapter 5 - Modeling with Higher-Order Differential Equations: Section 5.1
    Chapter 7 - The Laplace Transform: Sections 7.1-7.4
    Chapter 8 – Systems of Linear First-Order Differential Equations 8.1-8.4
    Chapter 9 – Numerical Solutions of Ordinary Differential Equations: Sections 9.1-9.2

Attendance Requirements: Students are expected to attend each class meeting. Students who meet the threshold of (one) 1 unexcused hour of class time for each credit hour assigned to the course will be referred to the Office of Student Success and may be administratively withdrawn from the course. Therefore, a student with two (2) unexcused hours absent from a 2 credit hour course or a student with three (3) unexcused hours absent from a 3 credit hour course is in violation of the attendance policy. Failure to meet minimum attendance requirements may result in the loss of the student's financial aid in accordance with federal financial aid requirements. (**Note:** *Attendance is met if you are on time to class and stay until class is dismissed. Do your best not to schedule appointments that require you to come to class late or leave class early.*)

Academic Dishonesty: Morehouse College students are expected to conduct themselves with the highest level of ethics and academic honesty at all times and abide by the terms set forth in the Student Handbook and Code of Conduct. Instances of academic dishonesty, including, but not limited to plagiarism and cheating on examinations and assignments, are taken seriously and may result in a failing grade for the assignment or course and may be reported to the Honor and Conduct Review Board for disciplinary action.

Make-up Policy: Make-ups are given in the event of a documented emergency only. Please contact me immediately or have a family member contact me if you are unable to. Penalty of 5% per day, up to a maximum of 35%, will be deducted from your grade in the case of undocumented make-ups.

Grade: Your grade will consist of four (4) Tests (35%), WebAssign Online Assignments (10%), a cumulative Mid-term Exam (15%), two projects (10%) and a cumulative Final Exam (30%). Your Mid-term Exam grade will replace the lower of Test 1 and Test 2 grades, if it is higher. Your Final Exam grade will replace your lowest test grade and midterm exam grade, if it is higher.

Grading Scale	Letter Grade
100-96	A+
95-90	A
89-87	A-
86-85	B+
84-80	B
79-77	B-
76-75	C+
74-70	C
69-67	C-
66-65	D+
64-60	D
59-50	D-
49-0	F

EEO & Disability Statement: Morehouse College is an equal opportunity employer and educational institution. Students with disabilities or those who suspect they have a disability must register with the Office of Disability Services ("ODS") in order to receive accommodations. Students currently registered with the ODS are required to present their Disability Services Accommodation Letter to faculty immediately upon receiving the accommodation. If you have any questions, contact the Office of Disability Services, 104 Sale Hall Annex, Morehouse College, 830 Westview Dr. S.W., Atlanta, GA 30314, (404) 215-2636.

Withdrawal Policy: The last day you can withdraw from this course is March 30, 2020.

Cell Phones/Laptops: Turn off, or do not bring to class, electronics that will distract you and the class. You are expected to give your full undivided attention while class is in session. Electronics can and will occasionally be used for learning activities.

Inclement Weather Policy: In the event of inclement weather, the College will announce any closures via the emergency notification system and/or through local news outlets. Absent an official closure, students are not excused from attending class due to weather and any absences will be considered unexcused.

Grievance Resolution Policy: For students who experience class-related issues and/or concerns (i.e. conflict with professor, disagreements with grading policies & advisement, etc.), there is a grievance resolution process set in place to reconcile any unresolved disagreements. This process begins with the course professor to discuss your concerns and a possible remedy. If a mutual agreement cannot be met between the student and course professor, the student may request that the matter be reviewed by the Academic Program Director (APD). This step involves the completion of a Student Grievance Form, provided by the APD or one of the Division Support Specialists. After reviewing the concern presented by the student, the APD will contact the professor to discuss a possible resolution and make recommendations for both parties involved. If the student does not agree with the APD's recommendation, he or she may request a review by the Division's Grievance Committee. The Grievance Committee will then review the submitted grievance along with any previous recommendations before making a final decision. The process stated provides a fair review of the student's concern in an attempt to quickly resolve any disputes. It is anticipated that most matters will be handled within 10 business days, however, additional time may be necessary pending faculty availability and scheduling.

The primary objectives of Math 321 are:

    (1) to expose the student to some of the more commonly used techniques for finding explicit solutions of ordinary differential equations:

    (2) to introduce several numerical techniques for finding approximate solutions to ordinary differential equations and;

    (3) to explore some of the applications of ordinary differential equations to the physical, behavioral and engineering sciences.

Tentative Schedule

	Monday	Tuesday	Wednesday	Thursday	Friday
Jan	13	14	15 1.1, 1.2	16	17 1.2, 1.3
	20 King Holiday	21	22 2.1, 2.2	23	24 2.2
Jan	27 Test 1 Review	28 Test 1 WebAssign Online Assignments due with grade of 80% or better.	29 Test 1 In-class Test 1 Online opens in WebAssign at end of class	30	31 2.3 Test 1 Online closes in WebAssign at the beginning of class.
Feb	3 2.4	4	5 3.1	6	7 4.1
	10 Test 2 Review	11 Test 2 WebAssign Online Assignments due with grade of 80% or better.	12 Test 2 In-class Test 2 Online opens in WebAssign at end of class.	13	14 4.2 Test 2 Online closes in WebAssign at the beginning of class.
	17 4.3	18	19 4.4	20	21 4.5 Project 1 Due
	24 4.6	25	26 4.7	27	28 4.7
Mar	2 Mid-term Exam Review	3 Mid-term Exam WebAssign Online Assignments due with grade of 80% or better.	4 Mid-term Exam In-class Mid-term Exam Online opens in WebAssign at end of class.	5	6 Mid-term Exam Online closes in WebAssign at the beginning of class.
	9 **Spring**	10	11	12	13 **Break**
	16 5.1	17	18 5.1, 9.1	19	20 9.2
	23 7.1, 7.2	24	25 7.2, 7.3	26	27 7.4
Mar/Apr	30 Test 3 Review	31 Test 3 WebAssign Online Assignments due with grade of 80% or better.	1 Test 3 In-class Test 3 Online opens in WebAssign at end of class.	2	3 8.1 Test 3 Online closes in WebAssign at the beginning of class.
	6 8.2	7	8 8.3	9	10 Good Friday
	13 8.3, 8.4	14	15 8.4 Project 2 Due	16	17
	20 Test 4 Review	21 Test 4 WebAssign Online Assignments due with grade of 80% or better.	22 Test 4 In-class Test 4 Online opens in WebAssign at end of class.	23	24 Test 4 Online closes in WebAssign at the beginning of class. Final Exam Review
Apr/May	27 Final Exam Review	28	29 Final Exam Review	30	1 Reading Period
	4 <----------- Final	5	6 Exam	7	8 Week ----------->

Syllabus is not a Contract: A syllabus is not a contract between instructor and student, but rather a guide to course procedures. The instructor reserves the right to amend the syllabus when conflicts, emergencies or circumstances dictate. Students will be duly notified.