



## COURSE SYLLABUS

College Name: Science and Technology

Department Name: Mathematics and Statistics

Course Name: Calculus for Business and Technology

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### COURSE INFORMATION

- Course Number/Section: Math 112-005
- Term: Fall 2020
- Semester Credit Hours: 4
- Times and Days: None
- Class Location: None

### INSTRUCTOR CONTACT INFORMATION

- Instructor: Dr. Kossi Edoh
- Office Location: Marteena 110
- Office Phone: 336 285 2073
- Email Address: kdedoh@ncat.edu

### STUDENT HOURS

*These are times students may visit the professor without an appointment to request the assistance they need.*

*NOTE: Students are responsible for reading, understanding and following the syllabus.*

4:00 – 5:00 pm

Monday  Tuesday  Wednesday  Thursday  Friday

### COURSE PREREQUISITES

Math 111/Math 110/Math 104

### COURSE DESCRIPTION

This course includes a brief treatment of basic concepts of differential and integral calculus with applications to business, economics, social and behavioral sciences, polynomial, rational, exponential, and logarithmic functions.

### COURSE MANAGEMENT AND COMMUNICATION

The course information, and course materials, will be posted on Blackboard and major assignments will be posted on both Blackboard and WebAssign. You are responsible for regularly signing into Blackboard and Pearson to view Announcements, updates to the Syllabus, and updates for Assignments, and other information posted in Blackboard. Check the posted date or revision date of the Announcements and Syllabus to ensure that you are reading the latest version. \*\* Synchronous online sessions, when assigned, will be conducted on Blackboard Collaborate or Zoom. \*\*

## STUDENT LEARNING OBJECTIVES/OUTCOMES (SLO)

### **General Education Student Learning Objectives/Outcomes: Mathematical, Logical, and Analytical Reasoning**

- Apply quantitative and mathematical reasoning to solve problems in diverse contexts.
- Evaluate quantitative information using a variety of methods.
- Communicate quantitative or mathematical information in multiple formats.
- Employ mathematical or statistical methods to solve applied problems

#### *Assessment of GenED Student Learning Objective*

Students will be given a quiz between Fall break and Thanksgiving that requires the use of mathematical methods to solve applied problem.

#### *Course Level Student Learning Outcomes:*

Upon completion of course,

- Students will be able to evaluate limits numerically and graphically, find the rate of change and instantaneous rate of change and use the limit definition of the derivative to find the tangent of a curve.
- Students will be able to find the derivatives of polynomial functions using the product, quotient and the chain rule. Find higher-order derivatives and determine implicit derivatives to find related rates.
- Students will be able to determine the intervals of concavity and points of inflection, find the absolute maximum and minimum of a function on a closed-bounded interval, and solve and interpret applied optimization problems.
- Students will be able to calculate the derivatives of algebraic expressions and functions involving exponential and logarithmic functions, solve and interpret word problems involving exponents.
- Students will be able to find definite integrals using the fundamental theorem of calculus, use **u-substitution** in indefinite and definite integrals, and find integrals involving exponential and logarithmic functions

#### *Assessment of Student Learning:*

- (1) Students will be assigned homework problems from each section covered throughout the course for them to complete outside of class.
- (2) Students will take weekly or bi-weekly quizzes within class.
- (3) Students will be asked to work problems on the board, or otherwise share their work with their peers.
- (4) At the end of each unit, students will take an exam, and a cumulative final exam will be administered at the end of the course.
- (5) A post-test consisting of problems which represent the various concepts covered throughout the course will be administered at the end of the semester.

## REQUIRED TEXTBOOKS AND MATERIALS

*Any course-level subscriptions and tools linked in Blackboard Learn learning management system (LMS) should be listed here. The Blackboard LMS must have links to their student data privacy statement.*

### REQUIRED TEXTS:

Workbook: Calculus for Business and Technology, Edoh et. al.

### REQUIRED MATERIALS:

MylabMath - Pearson online course management system

**Other readings** (or recommended readings)

This will be posted in blackboard.

## SUGGESTED COURSE MATERIALS

### SUGGESTED READINGS/TEXTS:

Calculus and its Applications, 11<sup>th</sup> Edition, Bittinger-Ellenbogen-Surgent, Addison Wesley

### SUGGESTED MATERIALS:

**Calculator:** Only TI -83, TI -83 Plus, TI-84 and 84 Plus or equivalent calculators are allowed.

**Students are not allowed to use TI-89 or equivalent calculators**

## MINIMUM TECHNICAL SKILLS

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To succeed in this course, it is strongly recommended that you have (or learn) these skills: Using Blackboard; using email with attachments, creating, storing, organizing, and submitting files commonly used in word processing program formats, copying, pasting, and editing in word processing programs, downloading and installing software onto your computer, using spreadsheet programs, logging into various Internet applications, creating, linking to and embedding YouTube videos.

## STUDENT ATTENDANCE POLICY FOR ONLINE COURSES

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In order to achieve maximum benefit from educational activities, you will be expected to attend class on a regular basis. Class attendance in this online course is defined as active participation in academically-related course activities. Active participation may consist of course interactions with the content, fellow classmates, and/or the instructor. Examples of academically-related course activities include, but are not limited to:

- Completing and submitting assignments, quizzes, exams and other activities within Blackboard or through Blackboard (3<sup>rd</sup>- party products).
- Completing exercises in Blackboard or through instructor-selected publisher websites in which participation is tracked.
- Participating in course-related asynchronous discussion forums, blogs, wikis, or other text-based communications.

- Participating in course-related synchronous online chats, discussions, or meeting platforms such as Blackboard Collaborate in which participation is tracked.
- Completing interactive tutorials offered through Blackboard or other interactive content sources.
- Sending or responding to course-related messages through Blackboard Course Messages.

You will be responsible for completing at least one, if not more, of the above activities every week. Your attendance/participation record will reflect the weekly activities that you have or have not completed in the course.

Attendance will not be determined by the last date you logged into the course. Logging in and out of a course does not constitute active participation. Your last date of “attendance” will be measured using the date that the last activity in this course was completed.

You should complete the weekly activities by the designated due dates so that you receive full credit for weekly attendance and/or participation.

## DROPPING AND ADDING

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You are responsible for understanding and knowing the procedures deadlines and dates for registration, adding, switching, or dropping courses, beginning of classes, university holidays and breaks, exam dates, last day of classes, and other items found on the [University Academic Calendar](#).

## COMMUNICATION POLICIES

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As your instructor, I commit to:

- Provide feedback on your assignments within **3-5** days of the due date.
- Respond to emails within 24-48 hours - however I expect you to post general class questions in the Q&A blog.
- Occasionally participate in discussion groups, although these are largely student-lead discussions.
- Initiate and moderate Blackboard Collaborate sessions, though I expect you to participate fully in the discussions.

## ACADEMIC INTEGRITY

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Enrollment in the class means that you agree to abide by the expectations of North Carolina A&T State University about academic integrity. Academic Integrity violations include, but are not limited to, avoidance of cheating, plagiarism and improper or illegal use of technology. Your presentations, assignments, and quizzes are expected to be your own work. Any questions about these should be directed to the professor. It is permissible to request assistance from a librarian when doing database research as long as the selection and organization of the research for the presentation is your own work.

Academic dishonesty includes, but is not limited to, the following:

- a. Cheating or knowingly assisting another student in committing an act of cheating or other academic dishonesty;
- b. Plagiarism (unauthorized use of another’s words or ideas, as one’s own), which includes, but is not limited to, submitting exams, theses, reports, drawings, laboratory notes or other materials as one’s own work when such work has been prepared by or copied from another person;
- c. Unauthorized possession of exams or reserved library materials; destroying or hiding source, library or laboratory materials or experiments or any other similar actions;

- d. Unauthorized changing of grades, or marking on an exam or in an instructor’s grade book or such change of any grade record;
- e. Aiding or abetting in the infraction of any of the provisions anticipated under the general standards of student conduct; and
- f. Assisting another student in violating any of the above rules.

A student who has committed an act of academic dishonesty has failed to meet a basic requirement of satisfactory academic performance. Thus, academic dishonesty is not only a basis for disciplinary action, but may also affect the evaluation of a student’s level of performance. Any student who commits an act of academic dishonesty is subject to disciplinary action. In instances where a student has clearly been identified as having committed an act of academic dishonesty, an instructor may take appropriate disciplinary action, including a loss of credit for an assignment, exam or project; or awarding a grade of “F” for the course, subject to review and endorsement by the chairperson and dean. Repeated offenses can lead to dismissal from the university.

For specific information refer to your Student Handbook. Also, refer to the most current Undergraduate and Graduate Bulletin for the academic dishonesty policy.

The North Carolina A&T State University’s Academic Honor Code will be enforced.

## GRADING POLICY

### ASSIGNMENTS AND GRADING POLICY

92% and above	A		70% - 77%	C
90% - 91%	A-		68% - 69%	C-
88% - 89%	B+		66% - 67%	D+
82% - 87%	B		60% - 65%	D
80% - 81%	B-		0% - 59%	F
78% - 79%	C+			

### GRADING ALLOCATION

Course grades are based on a weighted grading scale of 100%. The breakdown for the course is as follows: *[Faculty, please adjust according to your course.]*

There will be four one-hour tests during the semester and a final examination. Students will be assigned homework problems from the text or MyLab Math. In addition, there will be quizzes, and possibly projects and/or classroom activities. Exams will be announced approximately two weeks prior to the exam date. It is the responsibility of the student to notify the instructor in advance if the student cannot attend a regularly scheduled exam. Quizzes will be posted on ***MyLab Math or Blackboard.***

Course grades are based on a weighted grading scale of 100%. The breakdown for the course is as follows:

- Four Tests 45%
- Homework 25%
- Quizzes 15%
- Final Exam 15%

## COURSE POLICIES

### USE OF BLACKBOARD AS THE LEARNING MANAGEMENT SYSTEM

Blackboard is the primary online instructional and course communications platform. Students can access the course syllabus, assignments, grades, and learner support resources. Students are encouraged to protect their login credentials, complete a Blackboard orientation and log in daily to course.

### MAKE-UP EXAMS

Makeup exams will be given provided you have an acceptable written excuse. Student must notify the Instructor as soon as possible, preferably before the exam or first day student returns to class. Excused absences will comply with the following university policy on makeup work: “Sickness (verification needed); death of relative (immediate family); participation in an approved university related activity; acting in the capacity of a university representative (band, choir, sports, related travel, etc.); extraordinary circumstances including court appearances, family emergency~ at the discretion of the professor, etc. require a signed statement. NOTE: “Other reasons for class absences are not acceptable.”

See << Update Academic Year >> *Undergraduate Bulletin*:

<https://www.ncat.edu/provost/academic-affairs/bulletins/index.php>

### EXTRA CREDIT

There will be extra credit for demonstrated effort, class participation and extra credit built into class exams

### LATE WORK

Assignments will normally be due at least a week after they are assigned on MyLabMath. No late assignments will be accepted without proper excuse. Students are expected to seek the necessary assistance including making use of student hours to complete assignments and on time. 10% will be deducted each day after the assignment due date

### SPECIAL ASSIGNMENTS

- Completing and submitting assignments, quizzes, exams, and other activities within Blackboard or through Blackboard (3rd-party products).
- Participating in course-related synchronous online chats, discussions, or meeting platforms such as Blackboard Collaborate in which participation is tracked.

### COMPLIANCE WITH THE AMERICANS WITH DISABILITIES ACT

North Carolina A&T State University is committed to following the requirements of the Americans with Disabilities Act Amendments Act (ADAAA) and Section 504 of the Rehabilitation Act. If you need an academic accommodation based on the impact of a disability, you must initiate the request with the Office of Accessibility Resources (OARS) and provide documentation in

accordance with the Documentation Guidelines at N.C. A&T. Once documentation is received, it will be reviewed. Once approved, you must attend a comprehensive meeting to receive appropriate and reasonable accommodations. If you are a student registered with OARS, you must complete the Accommodation Request Form to have accommodations sent to faculty.

OARS is located in Murphy Hall, Suite 01. We can be reached at 336-334-7765, or by email at [accessibilityresources@ncat.edu](mailto:accessibilityresources@ncat.edu). Additional information and forms can be found on the web at <https://www.ncat.edu/provost/academic-affairs/accessibility-resources/index.php>.

**Please note:** Accommodations are not retroactive and begin once the Disability Verification Form is provided to faculty.

## TITLE IX

North Carolina A&T State University is committed to providing a safe learning environment for all students—free of all forms of discrimination and harassment. Sexual misconduct and relationship violence in any form are inconsistent with the university’s mission and core values, violate university policies, and may also violate federal and state law. Faculty members are considered “Responsible Employees” and are required to report incidents of sexual misconduct and relationship violence to the Title IX Coordinator. If you or someone you know has been impacted by sexual harassment, sexual assault, dating or domestic violence, or stalking, please visit the Title IX website to access information about university support and resources. If you would like to speak with someone confidentially, please contact the Counseling Services 336-334-7727 or the Student Health Center 336-334-7880.

## TECHNICAL SUPPORT

If you experience any problems with your A&T account, you may call Client Technology Services (formerly Aggie Tech Support and Help Desk) at 336-334-7195, or visit <https://hub.ncat.edu/administration/its/dept/ats/index.php>. Blackboard support 866-520-6877

## FIELD TRIP POLICIES / OFF-CAMPUS INSTRUCTION AND COURSE ACTIVITIES

*If applicable:*

Off-campus, out-of-state and foreign instruction and activities are subject to state law and university policies and procedures regarding travel and risk-related activities. Information regarding these rules and regulations may be found at <https://www.ncat.edu/campus-life/student-affairs/index.php>.

## STUDENT HANDBOOK

<https://www.ncat.edu/campus-life/student-affairs/departments/dean-of-students/student-handbook.php>

## STUDENT TRAVEL PROCEDURES AND STUDENT TRAVEL ACTIVITY WAIVER

[https://hub.ncat.edu/administration/student-affairs/staff-resources/student\\_activity\\_travel\\_waiver.pdf](https://hub.ncat.edu/administration/student-affairs/staff-resources/student_activity_travel_waiver.pdf)

## OTHER POLICIES (e.g., Copyright Guidelines, Confidentiality, etc.)

## STUDENT HANDBOOK

<https://www.ncat.edu/campus-life/student-affairs/departments/dean-of-students/student-handbook.php>

[Graduate Catalog](#)

## **SEXUAL MISCONDUCT POLICY**

<https://www.ncat.edu/legal/title-ix/sexual-harassment-and-misconduct-policies/index.php>

## **FAMILY EDUCATIONAL RIGHTS AND PRIVACY ACT (FERPA)**

<https://www.ncat.edu/registrar/ferpa.php>

## **STUDENT COMPLAINT PROCEDURES**

<https://www.ncat.edu/current-students/student-complaint-form.php>

## **STUDENT CONDUCT AND DISCIPLINE**

North Carolina A&T State University has rules and regulations that govern student conduct and discipline meant to ensure the orderly and efficient conduct of the educational enterprise. It is the responsibility of each student to be knowledgeable about these rules and regulations.

Please consult the following about specific policies such as academic dishonesty, cell phones, change of grade, disability services, disruptive behavior, general class attendance, grade appeal, incomplete grades, make up work, student grievance procedures, withdrawal, etc.:

- Undergraduate Bulletin  
<https://www.ncat.edu/provost/academic-affairs/bulletins/index.php>
- Graduate Catalog  
<https://www.ncat.edu/tgc/graduate-catalog/index.php>
- Student Handbook  
<https://www.ncat.edu/campus-life/student-affairs/departments/dean-of-students/student-handbook.php>

## **ACADEMIC DISHONESTY POLICY**

Academic dishonesty includes but is not limited to the following:

1. Cheating or knowingly assisting another student in committing an act of cheating or other academic dishonesty;
2. Plagiarism (unauthorized use of another's words or ideas as one's own), which includes but is not limited to submitting exams, theses, reports, drawings, laboratory notes or other materials as one's own work when such work has been prepared by or copied from another person;
3. Unauthorized possession of exams or reserved library materials; destroying or hiding source, library or laboratory materials or experiments or any other similar actions;
4. Unauthorized changing of grades, or marking on an exam or in an instructor's grade book or such change of any grade record;
5. Aiding or abetting in the infraction of any of the provisions anticipated under the general standards of student conduct;
6. Hacking into a computer and gaining access to a test or answer key prior to the test being given. A&T reserves the right to search the emails and computers of any student



suspected of such computer hacking if a police report of the suspected hacking was submitted prior to the search; and

- Assisting another student in violating any of the above rules.

A student who has committed an act of academic dishonesty has failed to meet a basic requirement of satisfactory academic performance. Thus, academic dishonesty is not only a basis for disciplinary action but may also affect the evaluation of a student's level of performance. Any student who commits an act of academic dishonesty is subject to disciplinary action.

In instances where a student has clearly been identified as having committed an act of academic dishonesty, an instructor may take appropriate disciplinary action, including a loss of credit for an assignment, exam or project; or awarding a grade of "F" for the course, **subject to review and endorsement by the chairperson and dean.**

## ASSIGNMENTS AND ACADEMIC CALENDAR

Include topics, reading assignments, due dates, exam dates, withdrawal dates, pre-registration and registration dates, all holidays and convocations.\*

MONTH	DAY	SUBJECT	READING IN TEXT, ACTIVITY, HOMEWORK, EXAM
Aug-19	W	Overview of Algebra (From Workbook Module 1)	Read Section R.1
		<b>Chapter R Functions, Graphs and Models</b>	
Aug-21	F	R.1 Graphs and Equations	Read Section R.2
Aug-24	M	R.2 Functions and Models	Read Section R.3
		R.3 Finding Domain and Range	Read Section R.4
Aug-26	W	R.4 Slope and Linear Functions	Read Section R.5
		R.5 Non-Linear Functions and Models	Read Section R.6
Aug-28	F	R.6 Exponential and Logarithmic Functions	Read Section R.7
		R.7 Mathematical Modeling and Curve Fitting	Read Section 1.1
		<b>Chapter 1 Differentiation</b>	
Aug-31	M	1.1 Limits: A Numerical and Graphical Approach	Read Section 1.2
Sep-2	W	1.2 Algebraic Limits and Continuity	Read Section 1.3
Sep-4	F	1.3 Average Rates of Change	Read Section 1.4
Sep 7	M	1.4 Differentiation Using Limits of Difference Quotients	Read Section 1.5
<b>Sep-9</b>	W	<b>Quiz1</b>	
<b>Sep-11</b>	F	<b>Test 1</b>	
Sep-14	M	1.5 Leibniz Notation and the Power Sum-Difference Quotients	Read Section 1.6
Sep-14	M	1.6 The Power and Sum-Difference Rules	Read Section 1.7
Sep-16	W	1.7 The Chain Rule	Read Section 1.8
Sep-18	F	1.8 Higher-Order Derivatives	Read Section 3.1
		<b>Chapter 3 Applications of Differentiation</b>	
Sep-21	M	3.1 Using First Derivatives to Find Maximum and Minimum Values and Sketch Graphs	Read Section 3.2
Sep-23	W	3.2 Using Second Derivatives to Find Maximum and Minimum Values and Sketch Graphs	Read Section 3.3
Sep-25	F	3.3 Graph Sketching: Asymptotes and Rational Functions	Read Section 3.4
		3.4 Optimization: Finding Absolute Max and Min Values	Read Section 3.5

MONTH	DAY	SUBJECT	READING IN TEXT, ACTIVITY, HOMEWORK, EXAM
Sep-28	M	3.5 Optimization: Business, Economics, and General Applications	Read Section 3.6
Sep-30	W	3.6 Marginals, Differentials and Linearization	Read Section 3.7
		3.7 Elasticity of Demand	Read Section 3.8
Oct-2	F	3.8 Implicit Differentiation and Logarithmic Differentiation	Read Section 3.9
		3.9 Related Rates	Read Section 2.1
<b>Oct-5</b>	M	<b>Quiz 2</b>	
<b>Oct 7</b>	W	<b>Test 2</b>	
		<b>Chapter 3 Exponential and Logarithmic Functions</b>	
Oct-9	F	2.1 Exponential Logarithmic Functions	Read Section 2.2
Oct-12,14	M,W	2.2 Derivative of Exponential Functions	Read Section 2.3
Oct 16	F	2.3 Derivative of Natural Logarithmic Functions	Read Section 2.4
Oct-19	M	2.4 Applications: Uninhibited and Limited Growth Models	Read Section 2.5
Oct-21	W	2.5 Applications: Exponential Decay	Read Section 2.6
Oct-23,26	F,M	2.6 Derivatives of $a^x$ and $\log_a x$	Read Section 4.1
<b>Oct-28</b>	W	<b>Quiz 3</b>	
<b>Oct-30</b>	F	<b>Test 3</b>	
		<b>Chapter 4 Integration</b>	
Nov-2	M	4.1 Anti-differentiation	Read Section 4.2
Nov-4	W	4.2 Anti-derivatives as Areas	Read Section 4.3
Nov-6	F	4.3 Area and Definite Integrals	Read Section 4.4
Nov-9	M	4.4 Properties of Definite Integrals	Read Section 4.5
Nov-11	W	4.5 Integration Techniques: Substitution	Read Section 5.4
		4.6 Integration Techniques: Tables	
		<b>Chapter 5 Application of Integrations</b>	
		5.1 Consumer Surplus and Producer Surplus	
		5.2 Applic. of Integrating Growth and Decay Models	
		5.3 Improper Integrals	
Nov-13	F	5.4 Probability	Read Section 5.5
Nov-16	M	5.5 Probability: Expected Value; Normal Distribution	
		5.6 Volume	
		5.7 Differential Equations	
<b>Nov-18</b>	W	<b>Quiz 4</b>	
<b>Nov-20</b>	F	<b>Test 4</b>	
<b>Nov-23</b>	M	<b>Review for Finals</b>	
<b>Finals Week</b>		<b>Final</b>	Exam

\* These descriptions and timelines are subject to change at the discretion of the instructor