

MAT 271
Calculus I
Course Syllabus

Faculty Information:

Instructor: Tammy Pagan, AA, BS, MS
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Office Hours: Madison Campus: M-F; 7:54am-8:20am
Asheville Campus: M,W 11:00am - 11:50 am

Course Information:

Course Title: Calculus I
Course Number: MAT 271
Credit Hours: 4
Contact Hours: 5
Class Location: Room 114
Class Meeting Time: M - F 9:40 am - 10:30am

Common Course Library Description:

This course covers in depth the differential calculus portion of a three-course calculus sequence. Topics include limits, continuity, derivatives, and integrals of algebraic and transcendental functions of one variable, with applications. Upon completion, students should be able to apply differentiation and integration techniques to algebraic and transcendental functions. This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in natural science/mathematics.

Prerequisites: MAT 172

Textbook: *Calculus Fifth Edition*, by Stewart
ISBN:0-534-39321-7

Required of all students

Course Goal:

Upon completion, students should be able to apply differentiation and integration techniques to algebraic and transcendental functions.

Course Specific Competencies:

Upon successful completion of the course, the students will be able to:

- Identify multiple representations of functions: verbal, numerical, visual, and algebraic. Recognize and describe standard functions, including exponential and logarithmic functions, from these four points of view.
- Determine limits from descriptive graphical, numerical, and algebraic points of view. Use the definition of a limit and deal with derivatives (especially with functions defined graphically and numerically).
- Identify and differentiate all basic functions, including exponential, logarithmic, and inverse trigonometric functions
- Apply the Mean Value Theorem to deduce the basic facts concerning extreme values and shapes of curves. Apply graphing with technology to emphasize the interaction between calculus and calculators and the analysis of families of curves.
- Use the definite integral to solve the area problem and the distance problem. Apply sigma notation to solve area problems under a curve.

Reinforcement Experiences for General Education Cross-Curriculum Competencies:

The course encapsulates reinforcement experiences for the general education cross-curriculum competencies:

- Communicate effectively in speaking, writing, reading, and listening
- Locate, evaluate, and use information to analyze problems and make logical decisions
- Apply math skills and/or natural science knowledge appropriately to organize, analyze and make information useful
- Develop the ability to succeed as a self-directed learner

Grading Policy:

The class will operate according to the AB Tech course description. The seminar and assessments are built into the weekly schedule. The student is expected to play an active role in the teaching/learning process. The student will have homework and lab assignments weekly. There will be a homework and lab assignment grade. There will be at least one project assigned. There will also be chapter tests and a **cumulative final exam**. Late assignments will be deducted a letter grade for each class date they are late. ***Make up exams will not be given.*** Any test missed will be recorded as a *zero*. If, for any reason, it is necessary to withdraw from this class, it is the student's responsibility to complete the appropriate forms and submit them to the Records & Registration Office by the deadline. Failure to complete forms by the deadline or not attending class will result with a grade of an "F". The final course grade will be calculated as follows:

- 20% Homework and Lab Assignment Grade Average
- 60% Chapter Tests Grade Average
- 20% Final Exam Grade

The AB Teach course grading system will be used for recording the final course grade. A(90 %-100%), B(80%-89%), C(70%-79%), D(60%-69%), F(Below 60%)

MATHEMATICS DEPARTMENT STATEMENT:

Dear Student,

Welcome to the Mathematics Department!

We look forward to working with you and providing you with the very best education in mathematics.

We are a seven-member team that boasts a combined experience of over one-hundred-fifty years in professional education. We are extremely proud of our services and our accomplishments, and we always strive to maintain the best of quality instruction and as well as adherence to high academic standards and goals. Because of this dedication, we enjoy an excellent academic reputation with the surrounding upper-division colleges and universities in the region. It is a high priority to maintain this reputation, and consequently the value of your degree.

In order to be successful in your Math class and to ensure that other students have the learning environment they deserve, we require that you adhere to the Code of Student Conduct located in your Student Handbook, and on your syllabus. A positive learning environment makes it much easier for any student to achieve their goals.

If it is necessary for you to discuss any personal issue with your instructor, it is imperative that you do so during their office hours or during an out of class appointment. We are happy to meet with you to talk about any issue that is relevant to your participation in class, or your grade in the course. We have appropriate and time-proven suggestions that should help you.

As a student at AB-Tech, it is expected that you to keep up with the class, turn in assignments on time, and take responsibility for your education. The instructor will assist you in every way possible that does not compromise the integrity of the course itself. Our reputation depends on it.

Again, Welcome to AB-Tech and have a great semester!

R. Trent Codd, Jr.; Chairman; AA, BS, BSCS, MA, EASGC; 38 years of experience
Jerry L. Ashe; Instructor; AA, BS, MS; 22 years of experience
Jackie Caldwell; Instructor; BS, MA; 20 years of experience
Karma Crouch; Instructor; BS, MA Ed; 23 years of experience
Valerie Martin; Instructor; AA, BA, MS; 8 years of experience
Tammy Pagan; Instructor; AA, BS, MS; 20 years of experience
Robby Webb; Instructor; BA, MA; 23 years of experience

Attendance Policy;

To receive course credit, the student must attend a minimum of 80% of the contact hours. Upon accumulating absences exceeding 20% of the course contact hours, the student may be dropped from the class with a grade of "U" at the discretion of the instructor. Three tardies may constitute one absence. A tardy is defined as arriving late, leaving early, or being away from class without permission during class hours.

Important Dates:

Spring Semester – 2009*

Classes begin	January 6 th
Martin King Jr. Day	January 19 st
Last Day to Drop for Partial Refund	January 22 nd
Professional Development (no classes 12 pm- 5 pm)	February 17 th
Last Day to Apply for Spring Graduation	February 27 th
Student Break	March 13 th *
Last Day to Withdraw from Class w/o Penalty	April 7 th
Spring Break	April 13 th -18 th
Activity Day – Earth Day	April 24 ^h
Last Day of Classes/Exams	May 12 th *
Spring Graduation	May 15 th

*Up to three days may be made up at the end of the semester for inclement weather. All dates are subject to change.

Activity Schedule:

This schedule will be used for most approved and announced student activities.

Normal Class Time	Activity Day Schedule
<u>8:00 am</u>	<u>8:00 – 8:40 am</u>
<u>8:30 am</u>	<u>8:20 – 9:00 am</u>
<u>9:00 am</u>	<u>8:45 – 9:25 am</u>
<u>9:30 am</u>	<u>9:05 – 9:45 am</u>
<u>10:00 am</u>	<u>9:30 – 10:10 am</u>
<u>10:30 am</u>	<u>9:50 – 10:30 am</u>
<u>11:00 am</u>	<u>10:15 – 10:55 am</u>
<u>11:30 am</u>	<u>10:35 – 11:00 am (note 25 minutes)</u>

11:00 am - 1:00 pm Scheduled Activities!!

Activity Schedule Continued:

Normal Class Time	Activity Day Schedule
<u>12:00 pm</u>	<u>1:00 – 1:40 pm</u>
<u>12:30 pm</u>	<u>1:20 - 2:00 pm</u>
<u>1:00 pm</u>	<u>1:45 – 2:25 pm</u>
<u>1:30 pm</u>	<u>2:05 – 2:45 pm</u>
<u>2:00 pm</u>	<u>2:30 – 3:10 pm</u>
<u>2:30 pm</u>	<u>2:50 – 3:30 pm</u>
<u>3:00 pm</u>	<u>3:15 – 3:55 pm</u>
<u>3:30 pm</u>	<u>3:35 – 4:15 pm</u>
<u>4:00 pm</u>	<u>4:00 pm</u>

Tobacco Free Campus:

Asheville - Buncombe Technical Community College is committed to providing students and employees with a safe and healthy environment.

It is the policy of Asheville-Buncombe Technical Community College that tobacco use is not permitted on ABTech's campuses. ABTech is tobacco-free.

Inclement Weather Schedule:

The college will close when weather conditions are such that driving is hazardous. The following procedure will be observed for inclement weather conditions:

1. Announcements concerning school operation will be made by 6:30 am on local radio and TV stations for the day classes. A voice message will be recorded on the switchboard. If it appears that the ice or snow may be cleared by mid-morning, the schedule to follow will be used and all College personnel and students should report by 10 am.
2. Closing or delaying the day programs does not automatically close evening classes. Announcements will be made on radio stations and the College switchboard no later than 3 pm concerning the evening classes.
3. When weather conditions dictate early dismissal of the day or evening classes, the announcement will be made by telephone to each building on campus.
4. Adjustments in the College Calendar for the days missed because of inclement weather will be made at the end of the semester.
5. Important: If weather conditions become worst after the 6:30 am announcement, an additional announcement closing school for the day will be made no later than 8:30 am. Oak Student Center will open at 8 am for early arrivals.

Inclement Weather Schedule:

Normal Class Time	Delayed Opening
<u>8:00 am</u>	<u>10:00 - 10:40 am</u>
<u>8:30 am</u>	<u>10:20 - 11:00 am</u>
<u>9:00 am</u>	<u>10:45 - 11:25 am</u>
<u>9:30 am</u>	<u>11:05 - 11:45 am</u>
<u>10:00 am</u>	<u>11:30 am - 12:10 pm</u>
<u>10:30 am</u>	<u>11:50 am - 12:30 am</u>
<u>11:00 am</u>	<u>12:15 - 12:55 pm</u>

11:30 am	12:35 – 1:15 pm
12:00 pm	1:00 – 1:40 pm
12:30 pm	1:20 – 2:00 pm
1:00 pm	1:45 – 2:25 pm
1:30 pm	2:05 – 2:45 pm
2:00 pm	2:30 – 3:10 pm
2:30 pm	2:50 – 3:30 pm
3:00 pm	3:15 – 3:55 pm
3:30 pm	3:35 – 4:15 pm
4:00 pm	4:00 pm

Code of Student Conduct:

Academic Dishonesty - You may not deceive any official of the college by cheating on any assignment, exam, or paper. This includes plagiarism, which is the intentional theft or unacknowledged use of another's words or ideas. Plagiarism includes (but not limited to) paraphrasing or summarizing another's words or *works* without proper acknowledgement, using direct quotes of material without proper acknowledgement, or purchasing/using a paper or *presentation* written or *produced* by another. The faculty at AB Tech *may* also consider presenting as original work a paper written for one class to satisfy a requirement in another class to be academic dishonesty.

Code of Classroom Conduct:

AB Tech is an institution for adult learning. It is a partnership between instructors with the desire to teach and students with a desire to learn. In order to create an appropriate environment for teaching and learning, there must be respect for the instructor and fellow students. The list that follows is guidelines for classroom behavior, which the College has established to ensure that the learning environment is not compromised.

1. **Attendance:** You are expected to be in class the entire class time. Do not enter late or leave early. Rare exceptions may be excused, particularly under emergency circumstances, but you should be prepared to explain your tardiness to the instructor after class. Likewise, the need to leave early should be explained to the instructor before class.
2. **Absences:** Inform the instructor in advance if you know you are going to miss class. Also, take responsibility for getting missed assignments from other students. Do not expect that you will be allowed to make up work, such as unannounced quizzes or tests, after an absence. Instructors are not responsible for re-teaching the material you missed because of absence.
3. **Conversation:** Do not carry on side conversation in class.
4. **Other Activities:** You may not work on other activities while in class. This includes homework for other courses or other personal activities.
5. **Internet:** In classes where the Internet access is provided, you may use the Internet for valid, academic purposes only. You may not use it for open access to other non-academic sites, which are unrelated to the course.

6. **Sleep:** Do not sleep in class.
7. **Attitude:** You are expected to maintain a civil attitude in class. You may not use inappropriate or offensive commentary or body language to show your attitude regarding the course, the instructor, assignments, or fellow students. . Keep in mind that all electronic interactions (email, chats, discussion forums etc) are extensions of the classroom and should be treated as such. Unacceptable language and behavior will be addressed as if you were sitting in the classroom.
8. **Profanity and Offensive Language:** You may not use profanity or offensive language in class.
9. **Cell Phones and Beepers:** You may not receive or send telephone calls or pages during class. You are responsible for turning off cell phones and beepers upon entering class.
10. **Guest:** You may not bring unregistered friends or children to class.
11. **Food, Drink, Tobacco Products:** You may not have food or drink in class. You may not use tobacco products in the buildings of AB Tech.
12. **Personal Business:** You may need to transact personal business with the instructor, asking him/her to sign forms. Plan to do this before instruction begins or after class.

Typically, violations of the Code of Classroom Conduct will be dealt with as minor infractions. However, repetitions of minor infractions or other more serious violations of the Code of Student Conduct may lead to removal from the classroom while the matter is resolved and referral to the Vice President of Student Services for disciplinary action.

NETIQUETTE STATEMENT:

GENERAL:

1. **Understand that typed messages lack cues normally associated with face-to-face conversation. Without these supporting cues for context, satire or sarcasm can come across in unintended ways.**
2. **Use parenthetical explanation to explain meanings that might be misunderstood.**
3. **Do not criticize spelling or grammar but do check your own spelling, punctuation, and grammar.**
4. **Don't use all capital letters. In the online world, this is the equivalent of shouting and it is difficult to read.**
5. **All lowercase letters indicate mumbling.**
6. **Be brief and to the point.**

SUBJECT LINES:

- 1. Keep subject lines short.**
- 2. Make subject lines informative by indicating the content of the message.**
- 3. Make subject lines clear and unambiguous.**

REPLYING:

- 1. If you excessively reply to ongoing discussions and include the original message, your messages will be very long and hard to follow.**
- 2. For simple messages, quoting the original message when replying will clarify your response.**
- 3. Using carets to indicate lines of text that are quoted.**

EMAIL:

- 1. Unless you are explicitly given permission, don't publicly post email sent to you in private.**
- 2. Recognize that instant delivery of email does not guarantee an instant response.**
- 3. If you are sending information from another source, pay attention to whether the material is copyrighted and cite sources.**
- 4. For important messages, compose a draft in a word processor so you can spell check it.**
- 5. Be careful when addressing emails. One character out of place, or a ".com" suffix when the person's email really ends with ".edu", and your message won't be delivered.**
- 6. If it is going to take considerable time to reply fully, try to acknowledge receipt of a message promptly and let the sender know that you will answer.**

ATTACHMENTS:

- 1. Do not send huge attachments.**
- 2. When you're replying to a message that has an attachment, do not include the attachment again.**
- 3. Avoid sending attached files that lack filename extensions (that's because some computers won't be able to open them).**

FLAMING:

- 1. Do not flame!** Flaming refers to derogatory, abusive, threatening, sarcastic, rude, or otherwise mean-spirited messages directed at people.
- 2. If a message provokes a negative emotional response, put it away for a while, then reread it and see if you're misinterpreting it. If you don't understand a particular item, ask the sender for clarification before replying to an incorrect conclusion.**
- 3. Messages are not secure. Remember, it's very easy for someone else to forward messages you thought were confidential.**
- 4. Apologize. If there's been a misunderstanding or miscommunication, you can often nip a flame war in the bud by a brief apology.**
- 5. Don't write anything that you won't want other people to be able to see for a long time (posts can be archived for years).**

DISCUSSION:

- 1. Lurk before you leap. Lurking is visiting without participating. While it's rude to make a habit of lurking, a little lurking can acquaint you with rules and procedures, help you get the "lay of the land," and prevent embarrassment.**
- 2. Avoid posting non-informative messages on bulletin boards. Chat is more like a telephone, so saying "Me, too!" or "I don't know" is accepted. But on bulletin boards, people don't like to read postings that aren't substantive.**

CHAT:

- 1. Remember that chat rooms are "logged" (i.e., a record is kept of conversations).**
- 2. Do not disrupt chat rooms by pasting large blocks of text into the input box (thus causing the screen to scroll faster than other users are able to type) or otherwise act in a manner that negatively affects other users' ability to engage in real time exchanges.**
- 3. If you are having a conversation that is off the main topic, please move to another chat room.**
- 4. If you are a fast typist, please pause occasionally to let slower typists contribute to the discussion.**

*Please note this Netiquette statement was inserted as a requirement by the department.

California State University at Fullerton

Excerpted from Bramucci, Robert. Cal State Fullerton.

Other Information:

Additional help in math and related courses is available in Development Studies, Laurel Building, Room 107. The hours are from 9:00 am - 6:30 pm Monday through Thursday, and 9:00 am - 1:00 pm on Friday.

Calculator:

A graphing calculator is required for this course. The instructor will be using the TI-84 for instructional purposes.

Statement of Right to Make Changes:

I, Tammy Pagan, reserve the right to make changes in the syllabus. Any changes that occur will be announced in class.

MAT 271
Calculus I
Course Outline

I. Chapter One: Functions and Models

- a. Section 1.1: Four ways to Represent a Function
- b. Section 1.2: Mathematical Models: A Catalog of Essential Functions
- c. Section 1.3: New Functions from Old Functions
- d. Section 1.4: Graphing Calculators and Computers
- e. Section 1.5: Exponential Functions
- f. Section 1.6: Inverse Functions
- g. Chapter One Review & Test

II. Chapter Two: Limits and Derivatives

- a. Section 2.1: The Tangent and Velocity Problems
- b. Section 2.2: The Limit Function
- c. Section 2.3: Calculating Limits Using The Limit Laws
- d. Section 2.4: The Precise Definition of a Limit
- e. Section 2.5: Continuity
- f. Section 2.6: Limits at Infinity: Horizontal Asymptotes
- g. Section 2.7: Tangents, Velocities, and Other Rates of Change
- h. Section 2.8: Derivatives
- i. Section 2.9: The Derivative as a Function
- j. Chapter Two Review & Test

III. Chapter Three: Differentiation Rules

- a. Section 3.1: Derivatives of Polynomials & Exponential Functions
- b. Section 3.2: The Product and Quotient Rules
- c. Section 3.3: Rates of Change in the Natural & Social Sciences
- d. Section 3.4: Derivatives of Trigonometric Functions
- e. Section 3.5: The Chain Rule
- f. Section 3.6: Implicit Differentiation
- g. Section 3.7: Higher Derivatives
- h. Section 3.8: Derivatives of Logarithmic Functions
- i. Section 3.9: Hyperbolic Functions
- j. Section 3.10: Related Rates
- k. Section 3.11: Linear approximations and Differentials
- l. Chapter Three Review and Test

IV. Chapter Four: Applications of Differentiation

- a. Section 4.1: Maximum and Minimum Values
- b. Section 4.2: The Mean Value Theorem
- c. Section 4.3: How Derivatives Affect the Shape of a Graph
- d. Section 4.4: Indeterminate Form & L'Hospital's Rule
- e. Section 4.5: Summary of Curve Sketching
- f. Section 4.6: Graphing with Calculus and Calculators
- g. Section 4.7: Optimization Problems
- h. Section 4.8: Applications to Business and Economics
- i. Section 4.9: Newton's Method
- j. Section 4.10: Antiderivatives

V. Chapter Five: Integrals

- a. Section 5.1: Areas and Distances
- b. Section 5.2: The Definite Integral
- c. Section 5.3: The Fundamental Theorem of Calculus
- d. Section 5.4: Indefinite Integrals and the Net Change Theorem
- e. Section 5.5: The Substitution Rule
- f. Section 5.6: The Logarithm Defined as an Integral
- g. Chapter Five Review & Test

VI. Final Exam

- a. Review
- b. Final Exam

Course Syllabus
MAT 271
Calculus I

Your Acknowledgement:

I have been provided access to the course syllabus, understand what is expected of me, and agree with the provision set forth in the syllabus.

Your Name

Your Student ID Number

Your signature

Date