

ARAPAHOE COMMUNITY COLLEGE SYLLABUS

Course Number: MAT 201

Title: Calculus I

Credits: 5

Instructor:

Phone:

E-mail:

Office Location (if applicable):

Office Hours (if applicable):

Important Dates:

Last day to drop with refund (include date):

Last day to withdraw without refund (include date):

Catalog Description:

Introduces single variable calculus and analytic geometry. Includes limits, continuity, derivatives and applications of derivatives, as well as indefinite and definite integrals and some applications.

This course is one of the **Statewide Guaranteed Transfer** courses. GT-MA1

Prerequisites: MAT 121 and 122 (College Algebra and College Trigonometry)

Text: *Calculus Early Transcendentals*, 1st ed., Jon Rogawski, W.H.Freeman and Company © 2008.

Required Course Material: Text, graph paper, and TI-86 or TI-89 graphing calculator.

Optional Course Material: Student Solutions Manual.

Grading Criteria:

Makeup Policy:

Attendance Policy:

Course Content:

Chapter 1 Precalculus Review

- 1.1 The Real Numbers, Functions, and Graphs
- 1.2 Linear and Quadratic Functions
- 1.3 The Basic Classes of Functions
- 1.4 Trigonometric Functions
- 1.5 Inverse Functions
- 1.6 Exponential and Logarithmic Functions
- 1.7 Technology: Calculators and Computers

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
- 2.8 The Formal Definition of a Limit

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 Derivatives of Inverse Functions
- 3.10 Derivatives of Exponential and Logarithmic Functions
- 3.11 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 L'Hôpital's Rule
- 4.8 Newton's Method
- 4.9 Antiderivatives

Chapter 5: The Integral

- 5.1 Approximating and Computing Area
- 5.2 The Definite Integral
- 5.3 The Fundamental Theorem of Calculus, Part I
- 5.4 The Fundamental Theorem of Calculus, Part II
- 5.5 Net or Total Change as the Integral of a Rate
- 5.6 Substitution Method
- 5.7 Further Transcendental Functions
- 5.8 Exponential Growth and Decay

Chapter 6: Applications of the Integral

- 6.1 Area Between Two Curves
- 6.2 Setting Up Integrals: Volumes, Density, Average Value
- 6.3 Volumes of Revolution
- 6.4 The Method of Cylindrical Shells
- 6.5 Work and Energy

Other Information:

Course information for Colorado Community College System may be found at <http://www.cccs.edu/ccns/ccnsindex.html>

Student Success Center for all ACC students:

Peer and professional tutoring in Room M2720 now includes student tutors, math support, and the Writing Center in one location to provide academic assistance for all your classes.

ACC math instructors provide help with concepts, homework, online resources and graphing calculator workshops. Students may watch course related videos and DVDs in the library. For information, contact the Student Success Center at 303-797-5669 or email Mathhelp@arapahoe.edu.

Online Course Evaluations:

As this course nears completion, you will have the opportunity to complete a confidential evaluation of the class online. Login instructions will be sent to your 'student.cccs.edu' e-mail address. Your feedback is important, and ensures that ACC continues to offer quality instruction that meets your needs. Please take time to complete the survey.

E-mail Communication:

Effective 1/20/09 electronic correspondence from ACC employees will go to your student email account *only*. When you activate your account you can forward emails to an e-mail account that you already have. To activate your student e-mail account, go to <http://www.arapahoe.edu> and click on the "Activate Student E-mail" link. Questions? Please call 303-797-5621

Disability Services:

Arapahoe Community College provides accommodations for qualified students with disabilities. To request accommodation, contact Disability Services in M2710 or call 303-797-5937, v/tty.

Academic Honesty Statement:

Arapahoe Community College is committed to academic honesty and scholarly integrity. The College can best function and accomplish its mission in an atmosphere of the highest ethical standards. All members of the College community are expected and encouraged to contribute to such an environment by observing all accepted principles of academic honesty. Academic dishonesty includes but is not limited to: **plagiarism, cheating, fabrications, grade tampering, misuse of computers and other electronic technology, and facilitating academic dishonesty.** Those found in violation may also be subject to potential disciplinary sanctions under the Arapahoe Community College Code of Conduct.

Safety and Security:

The safety and security of all our students, faculty, staff and visitors is of the utmost importance to the Campus Police Department. We rely on each of you to be an additional set of ears and eyes to help maintain campus safety. Please be diligent in your efforts to report suspicious or unusual behavior or circumstances to the Campus Police Department. Trust your instincts when something doesn't look, seem or feel right and tell someone. The Campus Police can be reached at 303.797.5800 or in M2600 on the second floor behind Information Central. Additional safety information can be found on the website at

<http://www.arapahoe.edu/studentsvcs/campuspolice/index.html>

Contact Information for Learning Support Services:

Library	M2500	303.797.5090
Student Success Center	M2720	303.797.5669
Technical Support		303.797.5700 x3199
Advising/Counseling	M2010	303.797.5651
Instructional Testing Center	M2280	303.797.5993
Bookstore	M1200	303.797.5676
Computer Lab	M1650	303.797.5907
Career Center	M2025	303.797.5805
eLearning	M1650	303.797.5700 x6700