

Course Info



Calculus Analytic Geometry I

MAT221 16803 Fall 2024
Start Date: Sep 16, 2024
End Date: Dec 20, 2024
Credits: 4
Modality: In Person

Instructor Information

Name: Steven Felling B.S.E.E., M.A.Ed.

Contact Information:

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Location: C-105

Office Hours: 3:40pm-4:40pm Monday, Tuesday, Thursday, Friday and 8:00-8:30am Monday through Friday

Website: www.mrfelling.com

Course Competencies

Official Course Description

Limits, continuity, differential and integral calculus of functions of one variable.

Official Course Prerequisites

Prerequisites: A grade of C or better in MAT187, or MAT188, or an appropriate District placement.

Official Course Competencies

1. Analyze the behavior and continuity of functions using limits. (I)
2. State the definition and explain the significance of the derivative. (II)
3. Compute the derivative using the definition and associated formulas for differentiation. (II)
4. Solve application problems using differentiation. (II)
5. State and explain the significance of the Fundamental Theorem of Calculus. (III)
6. Compute anti-derivatives, indefinite and definite integrals of elementary functions. (III)
7. Read and interpret quantitative information when presented numerically, analytically or graphically. (I, II, III)
8. Compare alternate solution strategies, including technology. (I, II, III)
9. Justify and interpret solutions to application problems. (I, II, III)
10. Communicate process and results in written and verbal formats. (I, II, III)

Course Materials

Required Course Materials

Title	Edition	Author	ISBN
Calculus for AP	1st	Larson, Ron and Battaglia, Paul	9781305674912
Graphing Calculator TI-83 or TI-84			

Standards and Expectations

This dual enrollment course follows a college-level curriculum. High school policies may differ from the policies that apply to dual credit.

Time Requirement

You will need to dedicate significant time to this college course. For each credit hour, plan to spend at least two hours a week on homework in addition to class presentation time.

Course Calendar

Weeks**Lessons**

1	Course introduction
2	Unit 1: Limits and Continuity (Evaluating limits graphically, numerically, analytically, verifying continuity, Intermediate Value Theorem, infinite limits, limits at infinity and asymptotes)
	Unit 1 review
3	** Unit 1 Test (Limits and Continuity)
	Unit 2: Evaluating Derivatives (Evaluating derivatives by limit definition, using theorems, product/quotient/sum/difference rules, implicit and logarithmic differentiation, inverse function derivatives)
	Unit 2: Evaluating Derivatives more lessons and review
4	** Unit 2 Test (Evaluating Derivatives)
5	Unit 3: Applications of Derivatives (L'Hopital's Rule, First/Second Derivative Tests, Curve Sketching)
	Unit 3: Applications of Derivatives (Relative vs. Absolute Extrema on an interval, Optimization)
6	** Unit 3 Part 1 Test (Derivative applications involving first/second derivative tests, L'Hopital's Rule and curve sketching)
7	Unit 3: Applications of Derivatives (Physics applications, Linearization of a function)
	Unit 3: Applications of Derivatives (Related rates)
8	** Unit 3 Part 2 Test (Derivative applications - optimization, physics, linearization, related rates)
9	Unit 4: Evaluating Integrals (Antiderivatives, Riemann Sums)
	Unit 4: Evaluating Integrals (Fundamental Theorem of Calculus, Accumulation of Quantity)
10	** Unit 4 Part 1 Test (Antiderivatives, Riemann Sums, using the Fundamental Theorem of Calculus for definite integral evaluation and determining quantity accumulation)
11	Unit 4: Evaluating Integrals (u-substitution, integration by parts, using algebra in integral evaluation) ** AT THIS POINT, WE ARE INCLUDING SOME MAT231 TOPICS **
12	Unit 4: Evaluating Integrals (trigonometric integrals, integration by trig substitution, partial fraction expansion)
	Unit 4: Evaluating Integrals (improper integrals)
13	Unit 4 review
	**Unit 4 Test Part 2 (Integration techniques)
14	Unit 5: Application of Integrals (Area between curves, Disk/Shell method volumes of revolution)
	Unit 5: Application of Integrals (Area between curves, Disk/Shell method volumes of revolution)
15	** Unit 5 Part 1 Test (Area between curves, Disk/Shell volumes of revolution)
	Unit 5: Volumes using cross sections
	Unit 5: Application of Integrals (Average Value of a function, Arc length, surface area of revolution)
16	Unit 5 review
	**Unit 5 Part 2 Test (Volumes using cross sections, average value of a function, arc length, surface area of revolution)
17	Unit 6: Differential Equations (Intro to DEs, Slope Fields, Euler's Method)
18	Unit 6: Differential Equations (Solving by separation of variables, growth/decay models, logistic growth models)
	Unit 6 Review
19	**Unit 6 Test (Differential Equations)
	Course Review
20	Course Review and **Final Exam

Grade	Percentage
A	90-100%
B	80-89%
C	70-79%
D	60-69%
F	Below 60%

Grades will be comprised approximately from:

Tests: 100 points each

Quizzes and projects: 25 to 100 points each

Homework assignments (WebAssign & textbook): from -5 to +5 points each

Attendance Standards

Regular Attendance is important. Students are allowed 10 absences (excused or unexcused) per semester for in-person instruction. The 11th total absence may result in loss of credit unless there are extenuating circumstances. School related absences do not count toward your student's total absences. For more information refer to the [Desert Vista Attendance Policy](#).

Be prepared to take missed tests/quizzes immediately upon your return to class unless you have made prior arrangements with the instructor.

Late Policy

All assigned work must be completed by designated due dates as stated in chapter assignment calendar.

*All tests must be taken as scheduled unless **PRIOR** arrangements have been made (contact can be made in person or via email).*

Equipment Use Policy

You may be assigned a computer for classroom use. You are to only use the computer in the designated websites. You are not to add or make any changes to the computer. Failure to abide by these policies will cause you to lose your computer privileges.

College Policies

Extra Credit Policy:

There are no extra-credit assignments for this class. The scheduled assignments and exams are sufficient to test understanding of the materials presented in the course.

Academic Misconduct:

Academic Misconduct includes cheating, conspiring to cheat, soliciting to cheat, attempting to cheat, plagiarism, fabrication on an assignment, or other forms of dishonest presentation.

Posting assessments on an unauthorized web site, soliciting assessment answers and the unauthorized acquisition of assessments, assessment answers, or other academic material is cheating. Unless approved by the instructor, turning in content created by essay generators or other types of artificial intelligence platforms is also academic misconduct.

Plagiarism includes, but is not limited to, the use of paraphrase or direct quotation of the published or unpublished work of another person without full and clear acknowledgment. It also includes the unacknowledged use of materials prepared by another person or agency engaged in the selling or sharing of term papers or other academic materials. Information gathered from the Internet and not properly identified is also considered plagiarism.

We expect every student to produce his/her original, independent work. Any student whose work indicates a violation of the [MCCCD Academic Misconduct Policy](#) (including cheating and plagiarism) can expect sanctions as specified in the college catalog.

Rio Salado College uses software that uncovers plagiarism from student to student and other data sources on the Internet. If a student is found to have plagiarized content, grade consequences will be applied in accordance with departmental policies.

Civility Policy:

The faculty of Rio Salado place a high value on the importance of general ethical standards of academic behavior and expect that communication between students and instructors or among students shall maintain the level of formality and mutual respect appropriate to any college teaching/learning situation. Language or behavior that is rude, abusive, profane, disruptive, or threatening will not be tolerated. Activity of this type is Academic Misconduct as defined in MCCCD Policy AR 2.3.11. Student engaging in such behavior will be removed from the course with a failing grade. Additional sanctions may be applied pursuant to AR 2.3.11.

Refund Policy:

Refunds are not automatic. Students who drop courses within the refund period are eligible for a reimbursement of appropriate tuition. Deadlines and details are available online at <http://www.riosalado.edu/cashier/Pages/refund.aspx>.

Classroom Accommodations for Students with Disabilities

In accordance with the Americans with Disabilities Act, the Maricopa County Community College District (MCCCD) and its associated colleges are committed to providing equitable access to learning opportunities to students with documented disabilities (e.g. mental health, attentional, learning, chronic health, sensory, or physical). Please work with your high school accommodations team to provide approved and appropriate accommodations in dual enrollment courses. For more information please feel free to reach out to the college's disability services at 480-517-8562 or Disability.Services@riosalado.edu

Addressing Incidents of Sexual Harassment/Assault, Dating/Domestic Violence, and Stalking

In accordance with Title IX of the Education Amendments of 1972, MCCCD prohibits unlawful sex discrimination against any participant in its education programs or activities. The District also prohibits sexual harassment—including sexual violence—committed by or against students, District employees, and visitors to campus. As outlined in District policy, sexual harassment, dating violence, domestic violence, sexual assault, and stalking are considered forms of "Sexual Misconduct" prohibited by District policy. Visit <https://district.maricopa.edu/mandatory-drs-title-ix-syllabus-statements> for more information.

Tuition Assistance

Tuition Assistance is available to students enrolled in a Rio Salado College dual enrollment courses who demonstrate financial need. Details are available online at <http://www.riosalado.edu/dual/>

Student Responsibility

In addition to being responsible for the information outlined in this syllabus, students are responsible for familiarizing themselves with the Rio Salado College policies in the college catalog and student handbook, which are available online at <https://www.riosalado.edu/student-resources/student-solution-center/student-policies>

Disclaimer

Course content and syllabus may vary from the course calendar listed above in order to meet the needs of the particular group in this course section.

Change of Address

Please notify Admissions, Records and Registration at (480) 517-8540 of any changes in contact information or log into your Student Center to update your address.

Acknowledgement Form

Signature: _____

Date: _____