

Mrs. Harris

Room: B103 Phone: (503)673-7815 ext 4893

Office Hours: with prior arrangement

E-mail: harrisl@wlwv.k12.or.us

AP Calculus BC

2 Credits

Mth Calculus 253

5 credits

Advanced College Credit Website:

<http://depts.clackamas.edu/acc>

Course Prerequisites

Teacher recommendation and completion of Calculus AB

Course Description

This course is the study of differential and integral calculus for functions represented by series and functions of 2 or more variables (surfaces). Topics covered will include limits, tangent lines/planes, definition of a derivative for a surface, volume under a surface, and derivative and integrals of vector valued functions.

Course Objectives

This course will foster an understanding of topics and applications of differentiation.

Student Learning Outcomes

- determine whether a sequence converges or diverges
- determine whether a series converges or diverges
- recognize infinite geometric series and if convergent, find their sums
- use specific tests (Integral Test, Comparison Tests, Alternating Series Test, Ratio Test) to determine whether a given series converges or diverges.
- represent a given function using a power series
- find the Taylor expansion for a function and use a Taylor polynomial to approximate a function value, an integral, or a limit
- represent functions using polar coordinates
- integrate a function defined in polar coordinates and use the integral in applications
- compute double integrals of a function in both Cartesian and polar coordinates over rectangles and arbitrary domains in \mathcal{R}^2
- compute triple integrals of a function in Cartesian, cylindrical, and spherical coordinates over boxes and arbitrary domains in \mathcal{R}^3

Required Materials

- Pencils, erasable pen.
- Graphing calculator is required for calculus. TI-83/TI-84 is best. TI-86 and TI-89 calculators will not be allowed on any test or quiz. They are however acceptable on the AP exam.
- Textbook, James Stewart, Calculus: Concepts and Contexts, Fourth Edition.

Assessments and Grading Policies Grading Scale

A	90 and above	Tests	40%
B	80.0-89.9	Quiz	20%
C	70.0-79.9	Homework (book work)	10%
D	60.0-69.9	MOM	10%
F	0-59.9	Final Exam	20%

- If you have an excused absence you will be able to make up the test in a timely manner. There will be **NO TEST RETAKES**. Missing a review day does **not** postpone a chapter test.
- If a student misses the day of the test, the student will take the test the next day they are present in class. Other arrangements can be made by the student via email or in person with me, but must do so before the day of the test. (For example, if the test is on Monday and the student misses Monday's class. The student will take the test on Tuesday during class time.)
- If homework is not done when you enter class it is considered late. Late work will be accepted for half credit before you take the chapter test.
- Work must be neat and complete for credit.
- Also homework scores are based on effort, all homework is worth 5 points. Full credit will only be given if all problems are attempted, not completing even one problem will result in only partial credit.
- If you are absent due to illness or family emergency you have one day to make-up the assignment after the one day the assignment is considered late and you will earn only half credit.
- Pre-arranged absences. If you will be out of class (this includes for all field trips, school events, and sporting events) you will be held accountable for the work due. For instance if you leave prior to my class and return after my class for a field trip it is your responsibility to come turn in homework and get your current assignment from me or a classmate. If you do not check that day's assignment on the day it is due it become late work and will be treated accordingly. If you do not have the assignment prepared for the next day upon your return it also becomes late work.
- Because this class is a dual credit class, earning high school and college credit, you are held to student conduct policies for the high school and Clackamas Community College. Please refer to the HS Student Handbook and the College Handbook
<http://www.clackamas.edu/documents/handbook.pdf>

ACC Grading

The same grading scale and policies do apply to the Advanced College Credit. However, the semester grades do not directly transfer to college grades. The Mth 253 grade is calculated based on chapters 8, Appendix H, and Chapter 12.

Day: Sections and topics/themes covered: (subject to change)

1	Introductions, My Open Math
2	Review
3	Review
4	Review/Quiz
5	AB Review
6	AB Review
7	AB Review
8	Polar, Parametric, Vector and Conic Review
9	Polar, Parametric, Vector and Conic Review
10	Parametric Derivatives
11	Polar Derivatives
12	Polar Integrals
13	Quiz
14	7.2 Slope Fields/ Euler
15	7.3 Separable Equations
16	7.4 Exponential Growth and Decay
17	7.5 The Logistic Equation
18	Quiz 7.2-7.5
19	Chapter 7 review
20	Chapter 7 test
21	8.1 Sequences
22	8.1 Sequences
23	8.2 Series
24	8.2 Series
25	Quiz 8.1-8.2
26	8.3 The Integral and Comparison Test
27	8.3 The Integral and Comparison Test
28	8.3 The Integral and Comparison Test
29	Quiz 8.3
30	8.4 Other Convergence Tests
31	8.4 Other Convergence Tests
32	Quiz over 8.4
33	Review 8.1-8.4
34	Test over 8.1-8.4
35	8.5 Infinite Sequences and Series
36	8.6 Representations of Functions as Power Series
37	8.6 Representations of Functions as Power Series
38	8.6 Representation of Functions as Power Series
39	Quiz 8.5/8.6
40	8.7 Taylor and Maclaurin Series
41	8.7 Taylor and Maclaurin Series
42	Review over 8.5-8.7
43	Review over 8.5-8.7
44	Test over 8.5-8.7

45	9.1 Three-Dimensional Coordinate Systems
46	9.2 Vectors/9.3 Dot Product
47	Review
48	Review
49	FINAL EXAM
50	9.4 Cross Product
51	9.5 Equations of Lines and Planes
52	9.5 Equations of Lines and Planes
53	9.6 Functions and Surfaces
54	9.7 Cylindrical and Spherical Coordinates
55	Quiz over 9.1-9.7
56	Chapter 9 review
57	Chapter 9 test
58	10.4 Motion in Space: Velocity and Acceleration
59	(If time allows we will do all of chapter 10 in order)
60	11.1/11.2 Functions of Several Variables/ Limits and Continuity
61	11.3 Partial Derivatives
62	11.4 Tangent Planes and Linear Approximations
63	11.5 The Chain Rule
64	11.6 Directional Derivatives and the Gradient Vector
65	11.7 Maximum and Minimum Values
66	11.7 Maximum and Minimum Values
67	11.8 Lagrange Multipliers
68	11.8 Lagrange Multipliers
69	Chapter 11 Review
70	Chapter 11 Test
71	12.1 Double Integrals over Rectangles
72	12.2 Iterated Integrals
73	12.3 Double Integrals over General Regions
74	Quiz over 12.1-12.3
75	12.4 Double Integrals in Polar Coordinates
76	12.5 Applications of Double Integrals
77	12.6 Surface Area
78	12.7 Triple Integrals
79	Chapter 12 Review
80	Chapter 12 Review
81	Chapter 12 Test
82	REVIEW
83	REVIEW
84	REVIEW
85	REVIEW
86	REVIEW
87	REVIEW
88	REVIEW
89	FINAL EXAM