

**MATH 1413-Online: Survey of Calculus
Summer Semester 2018**

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Online Office Hours: Tuesday 10am-11am and Thursday 2pm-3pm.
If you would like to talk to me but cannot make it during one of these times, please make an appointment.

Hours Credit: 3 hours

Class Type: This class is 95% or more online

Prerequisites: MATH 1111 or MATH 1113

Course Description: This course will provide a survey of the differential and integral calculus of polynomial, rational, exponential, and logarithmic functions with an emphasis on applications to problems from business, economics and life sciences.

Text: Bittinger, Ellenbogen and Surgent, *Calculus and Its Applications*, 10th Edition, Addison Wesley.

Learning Outcomes:

1. The student will be able to compute limits (L1).
2. The student will be able to differentiate polynomial, rational, exponential, and logarithmic functions (L1).
3. The student will be able to apply differential calculus to problems from business, economics, and life science (L1).
4. The student will be able to integrate polynomial, rational, exponential, and logarithmic functions and to apply the Fundamental Theorem of Calculus (L1).
5. The student will be able to apply integral calculus to problems from business, economics, and life science (L1).
6. The student will understand the basic techniques of integration (L1).

Topics: The following sections of the textbook will be covered:

Section

- 1.1 Limits: A Numerical and Graphical Approach
- 1.2 Algebraic Limits and Continuity
- 1.3 Average Rates of Change
- 1.4 Differentiation Using Limits of Difference Quotients
- 1.5 Differentiation Techniques: The Power and Sum-Difference Rules
- 1.6 Differentiation Techniques: The Product and Quotient Rules
- 1.7 The Chain Rule
- 1.8 Higher-Order Derivatives
- 2.1 Using First Derivative to Find Maximum and Minimum Values and Sketch Graphs
- 2.2 Using Second Derivative to Find Maximum and Minimum Values and Sketch Graphs
- 2.4 Using Derivatives to Find Absolute Maximum and Minimum Values
- 2.5 Maximum-Minimum Problems: Business and Economic Applications
- 2.6 Marginals and Differentials
- 2.7 Implicit Differentiation and Related Rates
- 3.1 Exponential Functions
- 3.2 Logarithmic Functions
- 3.3 Applications: The Uninhibited Growth Model $dp/dt=kP$
- 3.4 Applications: Decay
- 3.6 An Economics Application: Elasticity of Demand
- 4.1 The Area under a Graph
- 4.2 Area, Anti-derivatives and Integrals
- 4.3 Area and Definite Integrals
- 4.5 Integration Techniques: Substitution
- 5.1 An Economics Application: Consumer Surplus and Producer Surplus

Calculators: You are not allowed to use “**advanced**” calculators such as TI-84 or better in your final exam.

Homework: I will upload homework problems that are not to be turned in and graded but that are meant to reflect the sort of questions you can expect in quizzes, tests and the final exam. I encourage you to use my online office hours or send emails if you have any questions.

The following problems have been chosen from your textbook. You are encouraged to look at these problems as well. Most of these problems are similar to the ones uploaded to CourseDen.

Section	Problems
1.1	1-4,11-44,61-68
1.2	9-31, 37, 38, 43- 62
1.3	1-6, 9-14, 17-34
1.4	1-14, 17-22, 25,26, 29-31
1.5	1-86
1.6	1-12, 21-36, 97-109
1.7	1-60, 71-80
1.8	1-20, 25-34, 37-44
2.1	1-20, 69-84
2.2	1-20, 47-54, 101-104
2.4	3-20, 49-52, 97-104
2.5	1-2, 5-10, 17-18, 23-44
2.6	1-22, 24-26
2.7	1-24, 31-38
3.1	11-40, 55-60, 81-88
3.2	43-62, 69-81
3.3	1-4, 7-16
3.4	16-24
3.6	1-4, 13-16
4.1	21-30
4.2	1-46, 59-66
4.3	1-14, 25-32, 43-56, 59-66
4.5	1-24, 43-50, 62-64
5.1	1-10

Quizzes: There will be weekly quizzes (thirteen quizzes all together; usually two quizzes each week). Each quiz will be worth 2% toward your final grade. All quizzes are online.

Tests: There will be two tests. Each will be worth 17%.

Test 1: Wednesday June 14 – Friday June 16, 2018

Test 2: Thursday June 29 – Wednesday July 5, 2018

(Tests dates are subject to change.)

Proctored Final exam: The final exam will be on **Thursday July 19, 2018 at 1-2:30pm in Boyd 301.**

The final exam is worth 40% toward your final grade.

The dates for tests and final exam are subject to change.

Grading Scale: A: 90-100%, B: 80-89%, C: 70-79%, D: 60-69%, F: 0-59%.

Grading: Your final grade will be determined as follows: Quizzes: 26%, Test One: 17%, Test Two: 17% and Final exam: 40%.

Students, please carefully review the following information at this link

<https://www.westga.edu/administration/vpaa/common-language-course-syllabi.php>

It contains important material pertaining to your rights and responsibilities in this class. Because these statements are updated as federal, state, university, and accreditation standards change, you should review the information each semester.