Survey of Calculus *– MATH 2043 · MW 1:30 – 2:45 & TR 10:30 – 11:45 · F2F Live Streaming*

NorthWest Arkansas Community College – Spring 2021

Instructor: *Keith Foster* Office: *SC 327* Voice Mail: *479.619.4380* E-mail: *gkfoster@nwacc.edu*

Course Objectives:

1. To develop proficiency in calculus by . . .
   a. algebraically, analytically, and graphically evaluate limits
   b. find basic derivatives using the definition, product, quotient and chain rules, and by implicit differentiation
   c. understand and apply derivatives appropriately to real-world problems to optimize
   d. apply integrals appropriately to find the areas under and between curves, average & accumulated values
   e. find partial derivatives and use them to optimize functions of several variables
2. To develop problem solving skills

Textbook: *Calculus and Its Applications, Brief Version, 12th Edition, Bittinger, Ellenbogen & Surgent, Pearson*

Prerequisites: A grade of "C" or better in College Algebra (MATH 1203/1204); a score of 24 – 28 on the math portion of the ACT; a score of 86 or higher on the College Math section of the Accuplacer test; or a score of 46 or higher on the COMPASS test

Grading for Course: The numerical grade comes from the following sources:

- *Unit Exams*: There will be four unit exams each worth 100 points (total: 400 points)
- Homework: All homework scores will count towards your Homework grade and be scaled out of 50 points. Review homework assignments are optional and not calculated into this score.
- *Quizzes*: Periodical quizzes will be graded and scaled to 100 points.
- *Final Exam:* The *final exam* is worth 200 points and *will* be comprehensive.

Percentage score will be this numerical grade out of 750 points.

Homework/Quizzes Policy: You are expected to work all homework problems assigned on *myMathLab*. Since this class is a three credit class, this may require you to work up to six hours each week on homework and general overview of topics covered (spread this time out throughout the week). This is considered the norm for a college level course. It is recommended that you write up your homework in a notebook for reference later (even though the HW is on *myMathLab*), as you prepare for the exams and the Final. Quizzes will be assigned and will be given using *myMathLab*. There might be quizzes given during class time.

Participation Policy: Participation is expected, and lack of participation will invariably prove detrimental to your grade and your learning experience. Regardless of the reason for not being able to access *myMathLab*, you will be responsible for any missed assignments, material and announcements. Do NOT wait until the last minute to complete assignments or quizzes.

Even though this is a Live Streaming class, attendance during class time is required.

Exam Policy: All exams will be during class time but taken on myMathLab with ProctorU being used for remote testing. Notes will not be allowed on exams. Only approved calculators are permitted on the Exams. Also, calculators on cell phone or other devices are not permitted. The use of cell phones during testing time is prohibited. Once the exam has started, no student may leave for any reason, unless the student turns in the exam for grading. Show all work on sketch paper for each problem and turn in after the exam is turned in. This will allow me to give partial credit on each exam. Read the "Information on classes with regards to COVID-19" link located on my website for details for taking exams using ProctorU.

Makeup Policy: There will be *no make ups* on exams, quizzes or homework. I will replace your lowest exam score (or missed exam) with your final exam percent score. Some quizzes will be dropped at the end of the semester. Given the amount of time allowed to complete homework assignments, there is no reason to not complete any homework assignments.

Methods of Instruction: Instruction will take place through lectures, readings and assigned problems.

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Remote Live Streaming: This class will be given remotely, through Microsoft Teams. It will be Live Streaming, at the scheduled time for your class. Again, attendance during class time is required.

Course Schedule: Below is a week-by-week breakdown of course coverage. Schedule is subject to change and email notice will be given.

Week	Dates	Mon/Wed Coverage	Tue/Thur Coverage
1	Jan 11 – 14	*Course Intro* 1.1 – Limits: A Numerical & Graphical Approach 1.2 – Algebraic Limits and Continuity	*Course Intro* 1.1 – Limits: A Numerical & Graphical Approach 1.2 – Algebraic Limits and Continuity
2	Jan 18 – 21	*Martin Luther King Day* 1.3 – Average Rates of Change 1.4 – Differentiation Using Limits of Difference Quotients	1.3 – Average Rates of Change 1.4 – Differentiation Using Limits of Difference Quotients 1.5 – Leibniz Notation & the Power & Sum-Difference Rules
3	Jan 25 – 28	1.5 – Leibniz Notation & the Power & Sum-Difference Rules 1.6 – The Product and Quotient Rules 1.7 – The Chain Rule	1.5 – Leibniz Notation & the Power & Sum-Difference Rules 1.6 – The Product and Quotient Rules 1.7 – The Chain Rule
4	Feb 1 – 4	1.8 – Higher Order Derivatives 2.2 – Derivatives of Exponential (Base-e) Functions 2.3 – Derivatives of Natural Logarithmic Functions	1.8 – Higher Order Derivatives 2.2 – Derivatives of Exponential (Base-e) Functions 2.3 – Derivatives of Natural Logarithmic Functions
5	Feb 8 – 11	*Exam #1 (Chapters 1 & 2)* 3.1 – Using First Derivatives to Classify Maximum and Minimum Values and Sketch Graphs	*Exam #1 (Chapters 1 & 2)* 3.1 – Using First Derivatives to Classify Maximum and Minimum Values and Sketch Graphs
6	Feb 15 – 18	3.2 – Using Second Derivatives to Classify Maximum & Minimum Values & Sketch Graphs 3.3 – Graph Sketching: Asymptotes and Rational Functions	3.2 – Using Second Derivatives to Classify Maximum & Minimum Values & Sketch Graphs 3.3 – Graph Sketching: Asymptotes and Rational Functions
7	Feb 22 – 25	3.4 – Optimization: Finding Absolute Maximum & Minimum Values 3.5 – Optimization: Business, Economics, and General Applications	3.4 – Optimization: Finding Absolute Maximum & Minimum Values 3.5 – Optimization: Business, Economics, and General Applications
8	Mar 1 – 4	3.6 – Marginals, Differentials, and Linearization 3.7 – Elasticity of Demand 3.8 – Implicit Differentiation & Logarithmic Differentiation	3.6 – Marginals, Differentials, and Linearization 3.7 – Elasticity of Demand 3.8 – Implicit Differentiation & Logarithmic Differentiation
9	Mar 8 – 11	3.9 – Related Rates *Exam #2 (Chapter 3)*	3.9 – Related Rates *Exam #2 (Chapter 3)*
10	Mar 15 – 18	4.1 – Antidifferentiation 4.2 – Antiderivatives as Areas	4.1 – Antidifferentiation 4.2 – Antiderivatives as Areas
	Mar 22 – 26	***Spring Break***	***Spring Break***
11	Mar 29 – Apr 1	4.3 – Area & Definite Integrals 4.4 – Properties of Definite Integrals: Additive Property, Average Value & Moving Average 4.5 – Integration Techniques: Substitution	4.3 – Area & Definite Integrals 4.4 – Properties of Definite Integrals: Additive Property, Average Value & Moving Average 4.5 – Integration Techniques: Substitution
12	Apr 5 – 8	*Exam #3 (Chapter 4)* 5.1 – Consumer and Producer Surplus; Price Floors, Price Ceilings & Deadweight Loss	*Exam #3 (Chapter 4)* 5.1 – Consumer and Producer Surplus; Price Floors, Price Ceilings & Deadweight Loss
13	Apr 12 – 15	6.1 – Functions of Several Variables 6.2 – Partial Derivatives 6.3 – Maximum-Minimum Problems	6.1 – Functions of Several Variables 6.2 – Partial Derivatives 6.3 – Maximum-Minimum Problems
14	Apr 19 – 22	6.5 – Constrained Optimization: Lagrange Multipliers & the Extreme-Value Theorem *Exam #4 (Chapters 5 & 6)*	6.5 – Constrained Optimization: Lagrange Multipliers & the Extreme-Value Theorem *Exam #4 (Chapters 5 & 6)*
15	Apr 26 – 29	*Catch up* *Review for Final Exam*	*Catch up* *Review for Final Exam*

Final Exam are schedule by class day/time
Mon/Wed Final Exam will be given on Wednesday, May 5, 1:30 – 3:30
Tue/Thur Final Exam will be given on Tuesday, May 4, 10:15 – 12:15

Updated: 2/15/2021