Calculus III *– MATH 2574 · TR 8:00 – 9:50 · 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. working with vectors, curves, and surfaces in space
   b. understanding and using differentiation and integration for function of several variables, including directional derivatives
   c. moving between the different coordinate systems
   d. optimize functions of several variables using the Second Partials Test and Lagrange Multipliers
   e. integrate and apply techniques of multiple integration
   f. working with vector calculus, including the application of Green's Theorems, the Divergence Theorem and Stokes' Theorems
2. To develop problem solving skills

Textbook: Calculus, Early Transcendental Functions, Third Edition by Briggs, Cochran, Gillett and Schulz, Person.

Prerequisites: MATH 2554 and MATH 2564 with a grade of C or better, or appropriate placement scores or consent of instructor.

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 (except the Review sections) will count towards your Homework grade and be scaled out of 50 points.
- *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 *my*MathLab. Since this class is a four-credit class, this may require you to work up to eight 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 *my*MathLab. 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. Details will be coming later. In any case, notes will *not* be allowed on exams. Only approved non-graphing calculators are permitted on the Exams. Also, calculators on cell phone or a computer 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 before the exam is turned in for grading. Show all work on sketch paper for each problem then turn in. If exam is given remotely, you will need to scan and turn in sketch paper within 20 minutes of exam completion. Shown work is required to receive full credit for any correctly worked problem and will allow me to give partial credit on other problems.

I will let you know if our exams are given remotely or in class, once it is determined what me.

Makeup Policy: There will be no make ups on exams, quizzes or homework assignments. I will replace your lowest exam score (or missed exam) with your final exam percent score. Also, some quizzes might be dropped before the semester grade is calculated.

Methods of Instruction: Instruction will take place through live streaming lectures, readings and working the assigned problems.

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

Week	Dates	Coverage
1	Jan 12 & 14	*Course Intro* 13.1 – Vectors in the Plane 13.2 – Vectors in Three Dimensions 13.3 – Dot Products
2	Jan 19 & 21	13.4 – Cross Products 13.5 – Lines and Planes in Space 13.6 – Cylinders and Quadric Surfaces
3	Jan 26 & 28	14.1 – Vector-Valued Functions 14.2 – Calculus of Vector-Valued Functions 14.3 – Motion in Space 14.4 – Length of Curves
4	Feb 2 & 4	14.5 – Curvature and Normal Vectors *Exam #1*
5	Feb 9 & 11	15.1 – Graphs and Level Curves 15.2 – Limits and Continuity 15.3 – Partial Derivatives
6	Feb 16 & 18	15.4 – The Chain Rule 15.5 – Directional Derivatives and the Gradient 15.6 – Tangent Planes and Linear Approximation
7	Feb 23 & 25	15.7 – Maximum/Minimum Problems 15.8 – Lagrange Multipliers
8	Mar 2 & 4	*Exam #2* 16.1 – Double Integrals over Rectangular Regions 16.2 – Double Integrals over General Regions
9	Mar 9 & 11	16.3 – Double Integrals in Polar Coordinates 16.4 – Triple Integrals 16.5 – Triple Integrals in Cylindrical and Spherical Coordinates
10	Mar 16 & 18	16.6 – Integrals for Mass Calculations 16.7 – Change of Variables in Multiple Integrals *Exam #3*
11	Mar 22 – 26	***Spring Break***
12	Mar 30 & Apr 1	17.1 – Vector Fields 17.2 – Line Integrals 17.3 – Conservative Vector Fields
13	Apr 6 & 8	17.4 – Green's Theorem 17.5 – Divergence and Curl
14	Apr 13 & 15	17.6 – Surface Integrals 17.7 – Stokes' Theorem
15	Apr 20 & 22	17.8 – Divergence Theorem *Exam #4*
16	Apr 27 & 29	*Catch up* *Review for Final Exam*

Final Exam will be given on Tuesday, May 4, 8:00 – 10:00.