

– about me and this course –

Instructor: Keith Foster · Professor of Mathematics · MS Mathematics, U of A

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Office Hours and Email: My office is in the Student Center, room SC 327. Office Hours are:

Monday 2:00 – 3:00; 4:30 – 5:00	Tuesday 9:00 – 10:00; 12:00 – 1:00
Wednesday 10:00 – 11:00; 1:00 – 3:00; 4:30 – 5:00	Thursday 9:00 – 10:00; 12:00 – 1:00
No Friday office hours	

E-mail is the best way to reach me outside office hour times since I may not be in the office. I will reply to your email within 24 hours. When you email me, be sure to include the course name in the subject (i.e, subject: "CA8") so I can best answer your email. Also, email from your NWACC email account.

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 Partial 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

Required 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 *myLab Math* (MLM). 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 MLM), as you prepare for the exams and the Final. Quizzes will be assigned and will be given using MLM. 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 *myLab Math* (MLM), you will be responsible for any missed assignments, material and announcements. Do NOT wait until the last minute to complete assignments or quizzes.

Exam Policy: All exams will be during class time. 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. Shown work is required to receive full credit for any correctly worked problem and will allow me to give partial credit on other problems.

Calculator Use: Students can only use the TI-30XIIS calculator for this course. All others, including graphing calculators, are *not* permitted. Please be aware that supporting work for any of the processes may be required to earn any credit on any exam. Answers without correct supporting work may earn reduced credit or no credit at all. Remember, the use of a calculator should enhance the mathematics, not replace it. The process of obtaining a solution is many times more important for our purposes than the solution itself. I will grade your work as well as your solutions.

– other policies and statements –

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.

Non-Participation/Census Date Policy: Students who do not meaningfully participate in the course by the state-mandated census date may be withdrawn from the course. Students withdrawn for non-participation are *not eligible for reinstatement* and will receive an 80% refund in accordance with institutional policy.

To be considered *participating* and avoid withdrawal, students must *attempt at least one graded activity* before the Census date. An attempt is defined as submitting work that earns a *score greater than zero*. Graded activities include any assignment (HW, quiz, or exam) with a posted deadline (official or unofficial).

Red-Letter Days: All special dates related to this course can be found on the course outline, exam policy document and/or on ALEKS (exams dates, due dates, etc.), if used. Dates related to NWACC policies (drop dates including Administrative, final week dates, etc.) can be found on the NWACC Calendar page. It is the responsibility of each student to know where to find these dates. NWACC Calendar link:
<https://www.nwacc.edu/enrollment/records/importantacademicdates.aspx>.

Academic Dishonesty Policy: For equality purposes, your instructor reserves the right to clear your calculator of unapproved formulas and programs before each exam. No calculator with a CAS (Computer Algebra System) such as TI-89, TI-92, TI-Voyage or comparable utility is allowed in any class. The attempted use of a prohibited calculator or program is academic dishonesty and will result in a score of 0 with no possibility of the score being dropped or replaced. This also applies to all other forms of academic dishonesty including, but not limited to, using formula sheets not provided by instructor or any notes, leaving the room and returning during an exam, copying from someone else's paper, or allowing someone to copy your paper. Further action will be taken according to the policy on Academic Honesty in the current College Catalog.

– more general policies –

Inclement Weather Policy: Decisions on college status during inclement weather are made by the President or the President's designee. Such decisions will be posted on the college web site, at <http://www.nwacc.edu>. The decision might be to move Face-to-Face classes to Remote Streaming (details will be emailed at that time).

Artificial Intelligence Policy: Artificial intelligence (AI) is a rapidly developing field that has many applications and implications for mathematics and education. AI tools can generate text, images, code, and other forms of content based on user input. Some examples of AI tools are OpenAI, Google Workspace, and Microsoft Bing (Copilot).

- The use of AI tools in this course is not prohibited in assisting you on HW Problems, to gain a better understanding of how the problem should be approached. You should use AI tools only as a study aid, not as a substitute for your own work, not allowing you to gain understanding. AI tools should never be used on quizzes, since you are testing your understanding in preparation for exams.

If you have any questions or concerns about the use of AI tools in this course, please contact me. I reserve the right to modify this policy at any time, and to take appropriate actions in case of any violations. By enrolling in this course, you agree to abide by this policy and the academic integrity policy and the student code of conduct.

Available Tutoring: Tutoring at the Math Center is offered in room BH 1217. Check their website at <https://www.nwacc.edu/studentsuccess/mathcenter/> for open hours. There are also many online sources (youTube, etc). And don't forget, you can stop by during any of my office hours to get help or email me *anytime*.

Canvas Limitations: Just a reminder, we have limited use for Canvas. However, some assignments will be listed on Canvas but need to be accessed directly through *myLab Math (MLM)*. All course information will be emailed to your NWACC email account. The most up-to-date grades will be in *MLM*. Grades will be moved to Canvas, but *MLM* has the official grades.

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

Class Continuation Plan: NWACC reserves the right to enact a class continuation plan in the event of class cancellations due to weather or other emergency events. The instructor will maintain continuity using *MLM*, Canvas or other alternate means as determined by the instructor. You will be contacted via your established communications channels with instructions. Students will be expected to continue with assignments. Online classes will continue to operate according to schedule. Consideration may be given for exceptional circumstances.

Other Resources: Free tutoring is available at the Math Center (BH 1217). Other online resources, such as YouTube videos and many websites (use Google to find) can be useful. Also, don't forget to stop by during office hours for any help.

Course Issues: Please contact me first with any questions or concerns with the class. After discussing any concerns with me, if you wish to discuss it further, please contact the following person from the math department: Michael Duffy, Jr at m3duffyjr@nwacc.edu.

NWACC General Policies Link: For additional college wide policies, go to the following website: <https://nwacc.instructure.com/courses/854631/pages/syllabus-policies>. You're also responsible for these policies.

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

Week	Dates	Coverage
1	August 18 & 20	<i>Course Intro</i> 13.1 – Vectors in the Plane 13.2 – Vectors in Three Dimensions 13.3 – Dot Products
2	August 25 & 27	13.4 – Cross Products 13.5 – Lines and Planes in Space 13.6 – Cylinders and Quadric Surfaces
3	September 1 & 3	14.1 – Vector-Valued Functions 14.2 – Calculus of Vector-Valued Functions 14.3 – Motion in Space 14.4 – Length of Curves
4	September 8 & 10	14.5 – Curvature and Normal Vectors <i>Exam #1</i>
5	September 15 & 17	15.1 – Graphs and Level Curves 15.2 – Limits and Continuity 15.3 – Partial Derivatives
6	September 22 & 24	15.4 – The Chain Rule 15.5 – Directional Derivatives and the Gradient 15.6 – Tangent Planes and Linear Approximation
7	Sept 29 & Oct 1	15.7 – Maximum/Minimum Problems 15.8 – Lagrange Multipliers
8	October 6 & 8	<i>Exam #2</i> 16.1 – Double Integrals over Rectangular Regions 16.2 – Double Integrals over General Regions
9	October 13 & 15	16.3 – Double Integrals in Polar Coordinates 16.4 – Triple Integrals 16.5 – Triple Integrals in Cylindrical and Spherical Coordinates
10	October 20 & 22	16.6 – Integrals for Mass Calculations 16.7 – Change of Variables in Multiple Integrals <i>Exam #3</i>
11	October 27 & 29	17.1 – Vector Fields 17.2 – Line Integrals 17.3 – Conservative Vector Fields
12	November 3 & 5	17.4 – Green's Theorem 17.5 – Divergence and Curl
13	November 10 & 12	17.6 – Surface Integrals 17.7 – Stokes' Theorem
14	November 17 & 19	17.8 – Divergence Theorem <i>Exam #4</i>
	November 23 – 27	Thanksgiving Break
15	December 1 & 3	<i>Catch up</i> <i>Review for Final Exam</i>

Final Exam will be given on Tuesday, December 8, 10:15 – 12:15.