

**Multivariable Vector Calculus IV: *tentative and subject to change***

**MTH 254 Spring 2020 (Online) CRNs : 41831, 44027**

Zoom Virtual Meeting Times: MTW,F: 9-11 (and by appointment)

Class Location: Zoom Meeting ID: 266-855-221

Instructor: Shannon Harbert Email: harbers@linnbenton.edu

**Course Materials:**

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| * Regular access to a computer and the internet. * MyLab Math Access – [Class Code Information](http://cf.linnbenton.edu/mathsci/math/harbers/upload/MML_RegistrationInstructions_254_S20_harbert52457.pdf) * *Course ID: harbert52457*   *(can be purchased from the bookstore or online with a credit card).*   * *A scientific calculator or graphing calculator that does not have a symbolic manipulator. The TI-36X-Pro or TI-84 are recommended.* |

**Course Description:**

The fourth course in the calculus sequence for students majoring in mathematics, science and engineering. Topics include vectors in 2 and 3- space, graphs, contour maps and equations of multivariable functions and partial derivatives, directional derivatives, optimization of surfaces, cylindrical and spherical coordinates, multiple integrals and their applications.

**Prerequisite**: MTH 252 or equivalent with a grade of C or better.

*This class will be difficult if you are not competent at differentiation and integration.*

**Outcomes:** *Upon successful completion of this course, students will be able to:*

* Demonstrate an understanding of vectors, vector operations, and apply vectors to solve application problems in 2D and 3D.
* Graph and write equations for functions in 3D.
* Apply limits and derivatives to multivariate functions.
* Apply integration techniques to multivariate functions.

**Course Grades:** Your grade in this class is based on the following:

1 Midterm 20 %

Final Exam 20 %

Online Homework (MML) 20 %

Written Homework (WU) 20 %

Weekly Class Work (ICA) 10 %

Quizzes (Q) 10 %

Final Grade: 90%-100%=A, 80%-89%=B, 70%-79%=C, 60%-69%=D, <60%=F

*All grades will be posted in the gradebook on the My Math Lab Website for student viewing.*

A grade of Incomplete may be assigned at the discretion of the instructor under special circumstances. The student must have completed the majority of the course, been in regular attendance and passing the course prior to the “special circumstance.”

We will be using **my instructor website** in conjunction with [**MyLab Math**](https://www.pearsonmylabandmastering.com/northamerica/mymathlab/) for this course.

**Online Homework (MML):** *Course ID: harbert524*57

Online homework will be completed and submitted electronically using *MyMathLab*. You must register for this at *www.pearsonmylabandmastering.com* using the Course ID#. Although you will enter your *MyMathLab* answers online, you should still work the problems by hand in a notebook you create for your 254 homework. This will give you practice for writing out solutions for the exam, give you a place to start when asking for help, and give you a clear record of work to use to study for exams. When you come to office hours or other tutors for help, you should bring a copy of the problem and your notes for your attempt of the problem. The homework will have a hard deadline to receive full credit. Any homework completed after the deadline will be worth 70% (only penalized from those problems not yet attempted). If you attempt to re-do a problem (that you previously had full credit on) after the first due date, it will give you a reduced score of 70%, MML is not smart enough to remember that you already had full credit. If you EVER have any questions or issues with MML, just “ask my instructor” and I will investigate!

**Written Homework**:

You are expected to carefully write up the solution to each problem and turn it in on the assigned date. The write up will include: the problem statement, all steps--including the calculus and algebra necessary to solve it, appropriate explanation of the process and the answer clearly identified. ***It should be written so that anyone in a MTH 254 class would be able to easily follow and understand your solution.***

Written Homework will be graded on correctness, presentation, readability and the communication of your solution. Up to one half of the grade is based on the *communication and explanation of the solution.* In other words, an incorrect but well-explained solution can still earn up to half of the points. Similarly, a correct solution without explanation can lose up to half of the points. The due dates for Written Homework will be listed on the calendar. Since I give you OVER a week to complete: **No late write-ups accepted.**

*You should start these assignments early as the problems are often challenging. These will be assigned via One Note and will be uploaded there as well.*

**Weekly class work (“In Class” work):**

These are short assignments or activities, given and completed the same week the material is covered. Typically you will work in small groups, putting what you just learned into immediate practice. If you are unable to attend the Zoom Meetings, you will still be able to download and complete these on your own or with your own zoom group. I am playing this by ear, these are typically in-class worksheets. I think that Zoom will allow us to share our work at the end.

***Please be prepared to upload your completed work as a pdf file. If uploading to OneNote doesn’t work. I will be in communication. Please be sure items are numbered and pages are in order. One single combined document for each assignment is preferred.***

**Tests:** TBD!!!

* Written Tests (2) will have a 15-hour time limit and must be submitted on the scheduled day. No retakes for these tests.
* The MyLab Math Test (1) must be completed in one sitting. There will be a window of several days for you to log in and complete the test. Your supporting, written work for each problem will be submitted to me as a pdf as soon as you complete the test. Two retakes are allowed for this test.
* The *tentative* test dates are listed on the course calendar. If you have been missing class prior to a test, it is your responsibility to confirm the date of the test as it may change.

#### Expectations:

* I expect that my students will be involved in and working on this class several times a week. This includes asking questions and participating in group discussions, watching videos, etc.
* Spend **at least 9-12 hours per week working on this class.**
* You should log into Zoom meetings prepared (this means you should have your notebook, table/laptop, work, etc. ready).
* I expect you will be respectful of everyone in the class, in word as well as behavior. Discussion board posts should be respectful and supportive of the success of everyone in the class. We will all need extra patience and kindness this term.

# **------What can you do to be successful in this class?-----**

**Attend Class:**

There is a strong link between good attendance and success in math courses. Attending an online class means logging in and making some progress on the course most days, it also means that you participate in the class discussions and activities. Your peers rely on your feedback and input.  *Attendance, effort and attitude will be noted by the instructor and may be used to help determine “borderline” grades.*

**Complete your work on time:**

The work in this course has been planned to help you learn. When work is completed late or last minute you miss out on fully engaging in the learning opportunity. Completing the work on time also helps prepare you for the next topic.

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**Get HELP!**

If you have questions, PLEASE ask me! I (will) have scheduled office hours but you’re welcome to drop in at other times too. You can also reach me by email.

**Form a study group:**

Your classmates are important resources for understanding and completing the homework. Often a fellow student can explain things in a different way than your instructor. You gain a deeper understanding of mathematical concepts when you express them in your own words and explain them to someone else. It is strongly recommended that you study together with other students in small groups.

**Use the Learning Center:**

The Math Desk WILL be operating Spring Term to support students working remotely via Zoom, with drop-in help available during their standard hours:

* + 8am - 9pm Mon - Thu; 8am - 5pm Fri; 11am - 4pm Sat
  + The link to connect to the remote Math Desk is <https://linnbenton.zoom.us/j/579890953>

The URL for the Learning Center Remote Resources site is <https://www.linnbenton.edu/current-students/study/learning-center/hours-and-locations/index.php>. This will have all relevant Zoom meeting links, hours, and updated information.

# Class Policies

## Attendance

Your regular attendance and thoughtful participation in class are essential for your success in learning. Your regular online attendance is mandatory. If you do not some how contact me during the first week (TBD), you will be dropped for nonattendance. If there is a week that you will be unable to log in and participate, please let your instructor know. Students are responsible for any material, updates, or other information available in Course Notes and the class calendar.

## Special Circumstances or Accommodations

You should meet with your instructor during the first week of class if:

* You have a documented disability and need accommodations.
* Your instructor needs to know medical information about you.
* You need special arrangements in the event of an emergency.

If you have documented your disability, remember that you must make your request for accommodations through the Center for Accessibility Resources (CFAR) [Online Services webpage](https://cascade.accessiblelearning.com/LBCC/) every term in order to receive accommodations. If you believe you may need accommodations but are not yet registered with CFAR, please visit the [CFAR Website](https://www.linnbenton.edu/cfar) for steps on how to apply for services or call (541) 917-4789.

## Basic Needs

Any student who has difficulty affording groceries or accessing sufficient food to eat every day, or who lacks a safe and stable place to live, and believes this may affect their performance in the course, is urged to contact the Roadrunner Resource Center for support at 541-917- 4877, or schedule an appointment on the web at [www.linnbenton.edu/rrc](http://www.linnbenton.edu/rrc) . Our office can help students get connected to resources to help. Furthermore, please notify the instructor if you are comfortable in doing so. This will enable them to provide any resources that they may possess.

## LBCC Comprehensive Statement of Nondiscrimination

LBCC prohibits unlawful discrimination based on race, color, religion, ethnicity, use of native language, national origin, sex, sexual orientation, marital status, disability, veteran status, age, or any other status protected under applicable federal, state, or local laws.

## Statement of Inclusion

The LBCC community is enriched by diversity. Each individual has worth and makes contributions to create that diversity at the college. Everyone has the right to think, learn, and work together in an environment of respect, tolerance, and goodwill.  (related to Board Policy #1015)

## Academic Honesty

I assume that you are ethical and honest. However, if there is an incident of academic dishonesty (cheating), you will receive a score of zero for that test/assignment and the incident will be reported to the college administration for possible further disciplinary action. If there is a second offense, you will receive a grade of F for the course and the incident will be reported to the college administration with a recommendation for disciplinary action.