Multivariable Vector Calculus IV: Shannon Harbert (harbers@linnbenton.edu)
MTH 254   Spring 2022   CRN : 44027

<u>**Instructor Name:**</u> Shannon Harbert
<u>**Email:**</u> harbers@linnbenton.edu
<u>**Class Times:**</u> M, T, W, F from 1-1:50
<u>**Class Location**</u>: WOH 126
<u>**Office Hours:**</u> Mondays 2-3, T/R 11-12, and by appointment.

[Our Class Discord](#)   [Shannon's "Virtual" Office](#)

<u>**What do you need for this class?**</u>

- Regular and reliable access to the internet ([LBCC Library Technology Resources](#) can help).
- Ability to scan documents and create pdfs (free apps like CamScanner work fine).
- At least 12-15 hours a week to practice and learn the material.
- Achieve access code for the online homework and eBook access.
- Optional: Webcam for collaborating and office hours (I can zoom some times!)

<u>**Course Description:**</u>
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.

<u>**Prerequisite**</u>: MTH 252 or equivalent with a grade of C or better.
*This class will be **very** difficult if you are not competent at differentiation and integration.*

<u>**Outcomes:**</u> *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.

<u>**Course Grades:**</u>   Your grade in this class is based on the following:

Online Homework (Achieve)	15 %
Written Homework (WU)	15 %
In Class Work (ICA)	5 %
Exams (2)	40 %
Final Exam	25 %

Final Grade: 90%-100%=A, 80%-89%=B, 70%-79%=C, 60%-69%=D, <60%=F
All grades will be posted in the gradebook in the Moodle Website for student viewing.
   A grade of Incomplete may be assigned at the discretion of the instructor under special circumstances.

Online Homework:

Achieve Practice Problems (Online Homework)
Online homework is your opportunity to practice and quiz yourself on the material with immediate feedback and multiple chances. Online homework will be completed and submitted electronically (link in Moodle). Deadlines are to be found on our course calendar, or in Achieve. There will be soft deadlines (where you can earn 100% of the homework points) and hard deadlines (where you can earn 75% on those problems not already completed). The hard deadlines will be one week after the soft deadline.

Written Homework (WUs: 9 of them):

You are expected to carefully write up the solution to each problem and turn it in on the assigned date (see course calendar). 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.
Since I give you OVER a week to complete: <mark>No late write-ups accepted.</mark>
I will be keeping a special eye out for any breaches of academic integrity.
You should start these assignments early as the problems are often challenging.

In Class Work (ICA):

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. The ICAs are due the day that they appear in our calendar (unless otherwise noted) by midnight, in Moodle. Although, <mark>No late ICAs accepted,</mark> I will drop your lowest!

WHEN SUBMITTING WU's and ICA's:
Please be prepared to upload your completed work as a pdf file. Please be sure items are numbered and pages are in order. One single combined document for each assignment. Find an easy to use PDF converter if needed (Cam Scanner works nicely).

Here is what the **Learning Center** has to offer:
- Tutoring - Students are eligible for up to 3 free tutoring appointments a week! Meet one-on-one over Zoom with a trained academic tutor.
- Academic Coaching - Learn time management, test prep, note-taking, study strategies, and assignment planning to realize your academic goals. Available by appointment. Look for study skills workshops for success!
- Writing Support - The Writing Center offers one-on-one support for any student, for any writing project, in any class, and at any stage in the writing process. Available by drop-in Zoom room, appointment, and through the Online Writing Lab.
- Math Support - Students can learn math in the safety of their own homes with the help of our Virtual Math Desk. Drop-in math help is available seven days a week!

Academic Honesty and Testing

The LBCC Mathematics department and LBCC College Administration expect that students will not engage in cheating or plagiarism. The college has a policy for academic integrity that all students must abide by to remain enrolled at LBCC.

You can read the policy here:

ADMINISTRATIVE RULE NO: 7030-02 Generally speaking cheating means violating the policies of a course or of the college in order to gain an unfair advantage over fellow students. Cheating and plagiarism hurts your fellow students. Cheating also hurts you, by misrepresenting your knowledge and making you less prepared for courses that rely on the application of your knowledge from this course.

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

Attend Class: (attendance will be taken)

There is a strong link between good attendance and success in math courses. *Attendance, effort and attitude will be noted by the instructor and <u>may be used to help determine "borderline" grades.</u>*

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.

Get HELP!

If you have questions, PLEASE ask me! I will have office hours by apt. 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. Try meeting in discord!

Class Policies

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 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 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 . 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.