Differential Equations Calculus VI: Shannon Harbert
(harbers@linnbenton.edu)

MTH 256   Spring 2021 (Online and Merged)   CRNs : 40111& 40800

Course Information

Shannon's Office   Zoom Meeting ID: 266-855-221
Zoom Meeting Times:

> If your CRN is 40111: Mondays and Wednesdays from 9-9:50am.

> If your CRN is 40800: Mondays and Wednesdays from 10-10:50am.

Our Class Discord

Online Homework Code:

myOpenMath ("MOM")   Course ID: **107154**   Enrollment key: mathrocks

NOTICE: You DO have a book. It is an e-book.

Office hours by appointment. In our same classroom space.

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!
- **Science Support** - Get help with chemistry, astronomy, geology, and physics at the Remote Science Help Desk. Various science tutors are available by drop-in Zoom room.

Do your students want to keep support resources nearby while working through a difficult concept? Do they want a place to connect with other students? Then our

LEARNING CENTER DISCORD SERVER

is for you!

Course Materials:

● Regular access to a computer and the internet.
● OER: My Open Math
● Our e-book

● *A WEBCAM!!* (as stated in the bookstore)

Course Description

Beginning course in differential equations for students majoring in mathematics, sciences or engineering. Covers ordinary differential equations, series solutions, systems of first order differential equations, and Laplace transforms.

I will be making videos of our lecture material as well as supplementing with videos done by other professors. When we meet twice a week this will be a time to work with classmates over the ICAs of the week, to talk about concepts, as well as ask questions.

Course Prerequisite

The required prerequisite for Math 256 is a course in multi-variable calculus (Math 254). The calculus and algebra techniques that students should review thoroughly at the beginning of the course are as follows:
• Completing the Square, e.g. $x^2 - 6x + 7 = (x - 3)^2 - 2$
• Partial Fractions Decomposition (both repeating and non-repeating factors)
• Basic derivatives, including the chain rule
• Basic antiderivatives, including u-substitution

Course Topics

• What is a differential equation?
• Modeling with differential equations, including identifying dependent and independent variables
• Theory of first-order and second-order linear differential equations
• Customary solution techniques to common differential equations
• Modeling free and forced oscillations (mechanical and electrical)
• Introduction to the Laplace transforms
• Solving a variety of equations using the Laplace transform
• Using the Laplace transform to model forced oscillations with continuous or discontinuous forcing terms

Course Learning Outcomes

1. Write the appropriate differential equation to model a variety of problems and interpret the solution to the differential equation in the context of the given problem.
2. Identify the necessary method and construct the analytical solution of typical ordinary differential equations.
3. Develop at least one numerical method of solving first-order and second-order differential equations.
4. Compute the Laplace transform of continuous and discontinuous functions.
5. Apply the Laplace transform to solve a variety of differential equations, including those with discontinuous forcing terms.

Grading Policy

Online Homework (MOM)	20 %
In Class Work (ICA)	15 %
Quizzes (MOM)	15 %
2 Midterm	30 %
Final Exam	20 %

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

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."

Online Homework (MOM): Due on Sundays.

Your assignments on MyOpenMath come with six (6) late passes you can use at your convenience. After that, late assignments will earn the score achieved by the due date. Late passes on MyOpenMath extend the assignment by 48 hours from the due date. For assignments due on Sunday evening, using a late pass will extend your due date to Tuesday evening. Please note that using the late pass in that scenario on Monday will still extend the due date to Tuesday evening.

In Class Work (ICAs): Done in zoom. Due that day. See calendar.

These are short assignments or activities, given and completed the same day/week the material is covered (I will put these on our calendar in Moodle). Typically you will work in small groups, putting what you just learned into immediate practice. My idea is that you can work with classmates during one of our two mandatory weekly zoom meetings. The ICAs are due the day that they appear in our calendar (unless otherwise noted) by midnight. Although, No late ICAs accepted.

Please be prepared to upload your completed work as a pdf file (in Moodle). Please be sure items are numbered and pages are in order. One single combined document for each assignment. You can upload through Moodle (see my tutorial in Moodle) or find an easy to use PDF converter if needed (Cam Scanner works nicely).

Quizzes (on MOM):Due on Fridays.

There will be approximately weekly quizzes.   These will open in MOM at 8am and close at midnight. They will be timed. You may use your notes as well as classmates. Just do not use tutors or online "tutors". No late Quizzes accepted.

Tests (2 Midterms and 1 Final):
- 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.
- I believe we have been given proctoring access through Moodle. I will put more information here when I have it!!

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.
For our math exams looking at anyone else's work/solutions (fellow student, website, or anything else) is considered cheating. Using resources that are not explicitly allowed on the exam (anything not stated in the instructions should not be used including other people) is also cheating. If you have any questions at all about what is allowed on the exam or the exam itself contact your instructor. This exam is intended to be an evaluation of your own knowledge of the course material. It is expected that the work you submit represents your own knowledge in your own words. Note that your instructor may also ask for you to verbally explain your solutions that you have submitted. It is also your responsibility to take reasonable precautions to prevent cheating. You should not share your work with others or do anything that would give them an unfair advantage. Aiding cheating is also academically dishonest and against the colleges academic integrity policy. Your instructor believes that nearly all students have integrity and are honest in the work that they submit. However, cheating can not be allowed since it hurts everyone in the course. Because of this, any incident of academic dishonesty (cheating) will be reported to the dean of students with a recommendation for disciplinary action.

Attendance:
Your regular attendance (you are considered present if you come to zoom on time and with your camera on) and thoughtful participation in class are essential for your success in learning, and therefore required. If you miss any of the classes during the first week, you will be dropped for nonattendance. If there is a week that you will be unable to log in and participate, please let me know. Students are responsible for any material, updates, or other information available in Course Notes and the class calendar.
Attendance is mandatory twice a week in our zoom room, with your video on (you wouldn't come to class with a paper bag on your head!). Feel free to use a background, I do. If there is a reason for not turning on your video, you must email me for permission. Reasoning? It makes it very difficult to connect and build a community when all I see are silent black squares. I have had many, many students tell me how hard it is when they are

in a breakout room basically alone!   You will be sent to the waiting room if you do not have your video on and have not received permission to stay dark. I will record any mini-lectures (which, again, are covered in all of my already recorded lectures) I give and post in Moodle.
It's ok if you are eating! It's ok if you are holding a cat! In your pajamas? That's ok! Drinking tea with a blanket around your shoulders? Hey, I do that too! I can't wait to see your lovely faces.

Expectations:

- I expect that my students will be involved in and working on this class many times a week. This includes asking questions and participating in group discussions, watching videos, etc.
- Since this is a 4-credit class you will spend **at least 12-16 hours per week working on this class** (including watching videos and attending zoom).
- When we meet for zoom I expect you are caught up with the previous days material. I am organizing our course similar to how it would be if we were in person. This calendar is just to help you stay organized. You may absolutely work ahead!! This ALSO does not mean that I expect you to work on 256 EVERY day, although that is a good idea.
- I expect you will be respectful of everyone in the class, in word as well as behavior. and Discord 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. If you are disrespectful on discord, you will be removed.

How to be successful in this class:

· Even though this term classes are delivered remotely, make a school schedule and stick to it!

· Be prepared for class by reading the assigned materials promptly when asked. Class lectures will be richer for you when you have background information about the subject.

· Review the syllabus and learn policies and procedures for this class. Understand your rights and responsibilities as a student and as a class member.

· When confused, challenged, frustrated or having an "aha" moment, contact the instructor during their 'virtual' office hours or via email or on Discord!

· Don't hesitate to ask questions, whether during 'virtual' office hours or through email.

· Be engaged! You will get out of this class what you put into it. This will be a challenge with the online format adopted this term. Your instructors are here to help you succeed, stay connected with them!

------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.

Get HELP!
If you have questions, PLEASE ask me! I will have office hours by apt. You can also reach me by email. Give me a few days for turn around time.

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.