Item #6476	**Math 264**	**Multivariable Calculus**
Spring 2020	**Remote Teaching**	**M – F: 10 – 10:50am**

Instructor: Dusty Wilson
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Phone: 206-592-3338 (message only)
Zoom Hours   Monday: 9-9:50. Monday, Tuesday, Thursday, Friday: 11-11:50
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Course Description: (5 credits) Multivariable calculus. Topics include the calculus of polar functions, sequences, infinite series, double and triple integrals in multiple coordinate systems, line and surface integrals, Green's Theorem, Stokes' Theorem, and the Divergence Theorem.

Course Objectives: *The student will be able to …*

- Construct graphs and calculate areas and arclengths for polar curves.
- Apply convergence tests to determine if infinite series converge.
- Construct and evaluate double integrals in the polar coordinate systems.
- Construct and evaluate triple integrals in rectangular, cylindrical, and spherical coordinate systems.

- Construct and evaluate line and surface integrals.
- Apply the Fundamental Theorem of Line Integrals, Green's, Stokes', and the Divergence theorems to evaluate line and surface integrals.
- Determine if vector fields are conservative and independent of path and interpret what this says about vector fields.
- Set up and solve applications, including average value of a function, volumes, areas, centroids, work, and flux.

Text: *Calculus, Early Transcendentals* (3rd ed.), by Briggs, Cochran, Gillett, and Schulz

Prerequisite: Math 163 with a minimum grade of 2.0.

Schedule: We will cover three chapters in this course with weekly assessments. Most sections will be covered in 2 class days. To maintain this pace, you will need to read the beginning of each section carefully and skim it in its entirety.

Calculators: A graphing calculator is required for this course.
i.   The TI-84 is recommended.
ii.   Very limited class time will be spent explaining the use of calculators.
iii.   Calculators may be rented from the math department on a first come first serve basis.

Online Homework: The format and grading criteria for the online homework is as follows.
i.   **MyLabs:** Graded homework will be administered online thru MyLabs. The website is: https://www.pearson.com/mylab
ii.   **Course ID:** wilson41568 **DO NOT PAY.** Request temporary access.
iii.   **Many submissions:** Most homework questions allow for multiple attempts.
iv.   **Late work:** There is a 25% penalty on exercises completed after the original due date.

Online Quizzes: There are a few online quizzes that will be administered through MyLabs.

i.　　On quizzes, you may attempt each question just once.

ii.　　You may retake quizzes as many times as you like.

Assessments: There will be weekly assessments.

i.　　Please see below for the details about assessments.

ii.　　If you miss an assessment, your grade will be replaced with the percent of points scored on the following assessment. Should you miss a second assessment a score of 0 will be assigned. All assessments must be taken during the scheduled class time. *No make-ups*.

Participation:　2% of the grade is designated to in class participation. This will include reading/reflections and other miscellaneous submissions.

i.　　The first such assignment is the Intro Survey due 4/6 that you are to submit through Gradescope.

Final Exam: A comprehensive final exam will be held in the regular class meeting room. The date and time of the final are listed in the quarterly. The final exam is mandatory and a grade of 0.0 may be assigned at the instructor's discretion to those who fail to take the final exam.

Grading: Homework: 15%, Quizzes: 5%, Participation: 2%, Assessments: 50%, and Final Exam: 28%. GPA's will be given according to:

%%%	GPA	%%%	GPA	%%%	GPA	%%%	GPA	%%%	GPA
95-100%	4.0	%%%	GPA	%%%	GPA	%%%	GPA	%%%	GPA
93-4%	3.9	81%	3.1	73%	2.3	65%	1.5	57%	0.7
91-2%	3.8	80%	3.0	72%	2.2	64%	1.4	0-56%	0.0
89-90%	3.7	79%	2.9	71%	2.1	63%	1.3		
87-8%	3.6	78%	2.8	70%	2.0	62%	1.2		
85-6%	3.5	77%	2.7	69%	1.9	61%	1.1		
84%	3.4	76%	2.6	68%	1.8	60%	1.0		
83%	3.3	75%	2.5	67%	1.7	59%	0.9		
82%	3.2	74%	2.4	66%	1.6	58%	0.8		

All about Assessments: These are strange times requiring creativity and flexibility. I want to assess whether students are learning/understanding calculus. I want students to be able to collaborate online with each other (for the sake of community and greater understanding). At the same time, I want to ensure that students are being assessed on the basis of their understanding of calculus (and not that of their friend, Chegg, or WolframAlpha).

i.　　There will be weekly assessments administered as follows:

- Friday by 5 pm:
    - o　I will send you around 10 questions. These are to be worked by hand.
    - o　You will sign up for a five minute Zoom presentation slot.
- The weekend:
    - o　You will have the weekend to work through the assessment questions, collaborate with peers, and utilize online resources.
- Monday:
    - o　8 am: You will upload your handwritten solutions to the questions from Friday (instructions coming).
    - o　During the five minute time slot you signed up for, you will meet with your instructor online in Zoom and you will respond to questions about the work you submitted.

ii.　　Grading the assessments:

- To receive credit, you must submit your handwritten solutions *and* present online.

- Handwritten solutions and showing up for your time slot: 50%
- Quality of presentation (rubric forthcoming): 20%
- Mathematical accuracy and clarity: 30%

iii.   Expected questions:

- What if I am not available to present during the time slots?
  - Let's try it out and see how big an issue this is. We can certainly make individual appointments if need be while we work out the kinks in the system.
- Will there be any drops?
  - I plan to drop one assessment grade (of the 8 expected assessments)
- What if I don't like to present my work?
  - Being able to explain technical work aloud such as mathematics is a vital part of being a successful mathematician, engineer, computer scientist, etc.
- What if there are technical difficulties presenting or uploading my materials?
  - You have all been submitting work electronically for a long time, so I do not expect problems in that area. That said, we can deal with issues as they arise.
  - Presenting will require either a webcam or phone. I anticipate some setbacks in the beginning as we work through the technology, but believe we can figure this out. Let's try it and see how it goes.
- What if I (or one of my family members) gets really sick and I am unable to keep up?
  - Should it be needed, we will address this on a case by case basis. At the end of the quarter, my desire is that everyone who demonstrates that they have met the course outcomes will pass with flying colors. How we get there remains to be seen.

Policies and Notes

i.   **Attendance**: You are responsible for all material covered in class including all announced changes to the schedule and assigned course work. (If you miss class, *you* are still responsible for everything in class).

ii.   **Math Resource Center**: Cost-free mathematics tutoring is available through Zoom and the MRC.

iii.   **Faculty Advising**: Highline College instructors are a wonderful resource for students at any stage of the academic process. Many Highline instructors have career experience, are knowledgeable about campus resources, and can assist students in reaching their educational goals through degree planning. If you have an advising question, feel free to approach your instructor. If your instructor cannot answer your question, s/he will help you find someone who can.

iv.   **Honors**: Highline College offers opportunities for students to participate in an Honors Program tailored to their pathways. Students who fulfill all Honors Program requirements may become eligible for a scholarship during their final quarter and receive recognition at Highline's commencement ceremony.

    If you are interested in the Honors Program, I invite you to pursue an honors project in this class. Please approach me within the first three weeks of the quarter, and we will work together to develop a plan for completing an advanced academic or professional project. After completing the project and earning a 3.5 GPA in this course, an "honors" notation will appear on your official Highline transcript.

v.   **Academic Dishonesty**: Cheating, plagiarism, and other forms of academic dishonesty are unacceptable at Highline College and may result in lower grades and/or disciplinary action. It is both your right and responsibility to be familiar with the document entitled: Student Rights and Responsibilities code WAC 132I-1210 adopted by the Board of Trustees of Community College District 9 on December 13, 2007. This is available in the counseling center.

vi. **Special Concerns**: If you have any special concerns about this class, please talk to me personally in my office. The more I know about you individually, the more I can help you be successful in this course. If you need course adaptations or accommodations because of dis-Ability; if you have emergency medical information to share with me; or if you need special arrangements in case the building must be evacuated, please provide me with the Letter of Accommodation you have received from the Office of Access Services. Access Services is located in Building 99 in the Student Development Center.

vii. **Emergency Procedures**: In the event of an emergency, follow your instructor's directions. If you are told to evacuate the building, take your valuables because you may not be allowed to re-enter. Do not leave campus until your instructor or another campus official tells you to do so. If you may need assistance evacuating, notify your instructor today. To prepare yourself for an emergency, review the evacuation map on the last page of the emergency placard in your classroom and subscribe to HC Alert at https://hctextalerts.highline.edu/).

viii. **Final Exams**: Your completed final exam will not be returned to you. It belongs to the instructor. However, you may (and should) review your final exam by stopping by the instructor's office the next quarter.

ix. **School Policies**:
  - The Student Rights and Responsibilities Code: A legal document that describes college expectations, students' rights, and outlines the process for resolving disciplinary matters and Code violations. http://studentservices.highline.edu/srr.php
  - The College Catalog: Lots of fine print about grades, deadlines, and resources can be found in the catalog at: http://catalog.highline.edu/

x. **Important Dates (dates should be verified online)**:
  - April 10th: Last Day for 100% Tuition Refund
  - April 17th: The last day to drop without incurring a "W"
  - May 29th: The last day to officially withdraw with a "W"