

Syllabus

This syllabus is a written contract between you and myself, your instructor. Please read it carefully and contact me if you need further clarification. If you decide to continue in this course, it means that you have thoroughly read the syllabus and accept all requirements as stated.

Course Information:

- **Course Number:** MTH 254
- **Course Title:** Vector Calculus I
- **CRN:** 33237
- **Credits:** 5
- **Term:** Summer 2020

Instructor Information

- **Instructor:** Jeff Pettit
- **Preferred Email:** Email me here in D2L by going to the Classlist tab and then selecting my name. To respond to a message or view sent messages, use Gmail; which can be accessed through MyPCC or through D2L's My Home. You can also email me at jeffrey.pettit@pcc.edu.
- **Phone:** (971) 722 - 7681 (office) Email me to set up a phone appointment. My cell phone number is 503-867-2455 -- feel free to text me specific math questions including details about the problem. You can also text me time-sensitive information and questions but be aware that I cannot reveal private information (including scores or even enrollment as a student in the course). I can only discuss general policy.

- **Office Location:** BLDG 2, Room 210 when campus is open, or contact me from an appointment or Zoom meeting.
- **Address:** Portland Community College (Rock Creek), 17705 NW Springville Rd., Portland, OR 97229
- **Instructor Availability:** by appointment

Course Description

Includes multivariate and vector-valued functions from a graphical, numerical, and symbolic perspective. Applies integration and differentiation of both types of functions to solve real world problems. Graphing calculator required. TI-89 Titanium or Casio Classpad 330 recommended. (For detailed information, see the [Course Content and Outcome Guide *\[opens in new window\]*](#)).

Instructional Approach

This course has a modular design where each module becomes available on Wednesday and ends on Wednesday of the following week. Each module can be found in the Content tab on the course navigation bar.

Due dates for each week's assignments will be listed in the Course Calendar; which is available in the Navbar. Assignments within the modules may direct you to use many of the tools contained in D2L, including Assignments and Discussions. Everything you will do in this course can be found in the Content tab. Simply click on the next module and work through the content in the order listed.

Communication Guidelines

Contacting Your Instructor

The best way to communicate with me is through email. You can send me an email through either MyPCC or here in D2L.

Composing an Email Message

To compose a new message to me, click on the Classlist tab here in D2L, and then select my name. This will automatically populate the "To" line with my name and the "Subject" line with our course information; which is very convenient for both of us. Your message will be saved in your Sent Mail folder in Gmail; which you can get to through MyPCC (see below).

Viewing and/or Replying to an Email Message

If you'd like to view messages and/or reply to a message, do so through Gmail by navigating through MyPCC. In MyPCC, click on the envelope icon (Gmail) in the top right corner, and this will load your inbox. Your Sent Mail folder has all of your sent messages, and your Inbox will have any messages that I (or anyone else) have sent to you.

The important thing is that if you have questions or concerns, I want to hear from you. Online courses can feel very isolating at times, but just remember that I am one click away.

If your question or comment can potentially be answered by other students, please post it to the Discussion area. This way other participants can help answer questions, and all participants will benefit from the answers. However, this will not be the fastest way for me to know about and respond to any technical issues that arise in the course. Please refer to the information on "netiquette" in the introductory module for guidelines governing the content of written communications. Your first communication assignment is to introduce yourself in the discussion topic "Introduce Yourself."

Even though this is an online course, I want you to contact me as often as you need to. This can be via email, by phone, or by in-person appointment. I want you all to succeed in this class and one of my favorite aspects of teaching is helping students one-on-one, so please don't hesitate to get in touch with me frequently.

Response from Instructor

I will be checking email in both MyPCC and D2L daily on weekdays. Email sent on weekdays will be answered within 24 hours. Email sent over the

weekend will be answered by at least the following Monday, but likely sooner. If you're struggling with something over the weekend, please email me because it's likely that I will be able to get back to you before Monday.

I will do my best to give you quality and timely feedback on your work. I sometimes wait until after late assignments are submitted so I can score assignments at once and increase consistency and reduce errors.

Student Interaction Expectations

You have several requirements to offer feedback to your classmates. Outside of those assignments, you are not formally required to post discussions and communicate with your fellow classmates, but I highly encourage you to do so throughout the term. You can communicate via the main forums in the discussion tab, where you can have term-long threads as well as set up study sessions with your classmates. Remember, whenever communicating with anyone online you need to follow the [Communication Guidelines](#), as set forth by PCC.

Learning Outcomes

- Analyze real world scenarios to recognize when partial derivatives or multiple integrals of multivariate and vector valued functions are appropriate, formulate problems about the scenarios, creatively model these scenarios (using technology, if appropriate) in order to solve the problems using multiple approaches, judge if the results are reasonable, and then interpret and clearly communicate the results.
- Recognize partial derivative and multiple integral concepts that are encountered in the real world, understand and be able to communicate the underlying mathematics involved to help another person gain insight into the situation.
- Work with partial derivatives and multiple integrals in various situations and use correct mathematical terminology, notation, and symbolic processes in order to engage in work, study, and

conversation on topics involving partial derivatives and multiple integrals with colleagues in the field of mathematics, science or engineering.

Course Prerequisites

Prerequisite: MTH 253 and (WR 115 and RD 115) or IRW 115 or equivalent placement. Audit available.

Instructional Materials

Textbook

Calculus: Concepts and Contexts, 4th Edition by James Stewart.

A physical textbook is not required for this course but you are welcome to buy it at the [PCC Bookstore](#). Most students use an online version of the textbook or purchase access to WebAssign. You can purchase a lifetime access to WebAssign at a discounted price specifically for PCC students using the following

link: https://www.cengage.com/coursepages/PCC_Calculus. If you already accessed **WebAssign** for a previous PCC Calculus course, then you will be able to access it for this course without any additional cost. **WebAssign** is primarily an online homework platform but also provides access to the eBook (the electronic version of the textbook).

Software / Hardware / Technical Expectations

Graphing Calculator (physical or online): A physical graphing calculator *is* required for this section. An online graphing calculator, such as [Desmos](#) or [GeoGebra](#), can often be used in its place and will also be demonstrated throughout the course. In fact, for most three-dimensional graphing we will only use GeoGebra. However, most students find it useful to be able to use your a physical calculator to take derivatives and solve equations. Other tools can do this too (such as GeoGebra and Wolfram Alpha) it is quite handy to have the physical calculator as another option

and to be comfortable with it. Some quizzes and some parts of exams may not allow the use of technology, but the parts that do will allow the use of a physical graphing calculator and GeoGebra (but not walkthrough technology like Wolfram Alpha). In-person proctored exams will take place in a computer classroom.

WeBWork Access: This course will use an online homework system called WeBWork for homework. More information about WeBWork will be communicated in this module.

Word Processor: Microsoft Word is the preferred word processor for this course, but you can use a different word processor as long as it has an equation editor and can create pdfs. If you are familiar with LaTeX, you are encouraged to use it for this course, but please submit work as pdfs.

You can get Microsoft Office for free directly from Office with a valid school email. Go to <https://products.office.com/en-us/student/office-in-education> for more information.

LaTeX Editor: If you prefer, you may look into using LaTeX, which is a typesetting code for mathematics and is the industry standard in our field. There are different software interfaces you can use to program in LaTeX and if you're interested in doing this I recommend you research the editor that works best with your operating system.

Scanner or scanner software: A scanner is not required, but there may be times when you'll want to upload your hand-written work. This can be easily done using either a scanner (hardware) or using a smartphone or tablet with a free scanner application (software):

Recommended: [Adobe Scan](#) (sign in to Adobe Scan with your PCC Google account and you can upload your PDFs directly to [Google Drive](#); which is now integrated with D2L)

Other Options: [ScanBot](#) (for iPhone or Android)

[GeniusScan](#) (preinstalled on the iPhone)

You can also insert photos into Microsoft Word and save it as a pdf.

PDF Creator: All electronic documents submitted in this class are required to be in pdf format. If you have Microsoft Word, you can create a pdf using "Save As". Otherwise, you'll need a free PDF Creator, such as [CutePDF](#) or [CombinePDF](#). These are free and easy to use.

Participation Expectations

Students in this course are expected to enter the course at least 3 times a week to work on the modules, check email, and complete assignments. Each time you log into the course, be sure to check for any new announcements, email and discussion messages, and calendar postings.

Learning Components and Evaluation of Assignments

The following methods will be used to facilitate the learning process. It's extremely important that when learning the material, you follow steps 1-2 in that order. Do not just try to begin the homework without watching the lecture or trying the activities first; you may be able to "get through" the homework without doing so, but it will be difficult to **understand** the homework and retain the information in your long-term memory. When there are multiple sections being covered, you should follow 1-2 for the first section and begin the homework, and then 1-2 for the next section, etc., rather than watching all of the video lectures at once and completing all of the activities at once. This is because the content that we'll learn in this course will build upon previous content.

Learning Components

1. "Watch This!" Video Lectures (in D2L)

Purpose: These video lectures are intended to present the material and go over some examples. They are the online equivalent of attending a class lecture with an instructor. With that in mind, it's important that you pay full attention to these videos; pausing and rewinding as needed so you can

take quality notes to refer back to later. The video lectures were designed in a way so they are to-the-point and get important information across in a somewhat short amount of time (about an hour or so). As you watch the videos, pause them when prompted and work out the exercises on your own printed lecture packet and then compare your work with the worked out solutions shown in the video. Taking the opportunity to put to practice what is being explained immediately after being shown something will help solidify the lesson.

2. Online Homework Sets

Purpose: Homework is your opportunity to practice a variety of problems that will help you to better understand the material and prepare for quizzes and exams. Use resources as needed, but make sure you're not relying too heavily on them. On exams, it's down to you and pencil/paper to show that you understand the material. Each homework set will include multiple sections, and you'll want to get started on the homework exercises from the first section before beginning the exercises from the second section; however, you do not need to fully complete one section before moving onto the next. Homework is due on **Tuesdays by 11 pm**. If you need an extension, please let me know as soon as you can and I will email confirmation once the set is extended.

Suggestions: When completing your homework, be sure to document everything like you would if you were turning the homework in for credit. This will ensure that you take the time to practice proper notation and provide well-documented solutions. If you're presented with a multiple choice question, treat it as an open-response question and then pick the answer that matches yours; rather than making an "educated guess" as to the right answer. Even though your online homework "work" is not collected, I suggest that you make sure to follow the [Documentation Guidelines](#) and use proper notation when completing the homework.

Heads Up: This subject matter often offers multiple ways to work a problem or state an answer. Also, students occasionally find alternate methods using their own creativity, previous coursework or outside resources. I will never expect you to use one single approach or expect you to present your answer in a specific format unless specifically stated. So, feel free to use whichever approach you're most comfortable with.

Questions: Feel free to use the "Email Instructor" feature in WeBWork. This is a nice feature because it automatically shows me exactly which question you're referring to, what your attempts have been so far, etc., and then I can reply directly to you about that problem. Another important aspect of asking homework questions is to show me exactly what you're doing on paper and what you're attempting to enter on the screen. You can do this by taking pictures with your phone or sending me screen shots. If you take a screen shot of what you've entered on the screen before hitting enter, I can potentially notice a syntax error that is causing a problem that I wouldn't otherwise be able to catch.

Achieving Mastery: One last thing, and this is important: your goal on the homework is to work through exercises to achieve a full **understanding** of the material. Your goal is **not** to just get the correct answer and move on. You should work through a homework problem until you're able to successfully complete that problem without using any resources (like in a testing situation). So even after you earn credit, make sure you understand why the answer is correct. And, if you need to, use the "Show me another" button to work through additional exercises until you feel that you've mastered that topic. "Show me another" will alter the question so that you can try it again with different numbers.

3. Module Technology Labs

Purpose: These technology labs will utilize GeoGebra which is a powerful dynamic mathematics software. It will help us to visualize the concepts that we're learning. Many of us are very visual learners and vector calculus relies on visualizing 3D objects. These labs are designed to help students conceptually understand complex concepts and put understanding into words and mathematical expressions.

Format: In certain modules, we will have a Technology Lab about the content we're learning in that module. In each lab, you will complete a formal lab writeup using GeoGebra. These lab write-ups will be submitted to the D2L Assignments folder from its link under content and are due on **Sunday at 11 pm**. These must be written according to the stated [Documentation Guidelines](#).

Guidelines: You are allowed to use outside resources on these assignments to assist with the content. However, directly copying from any

source is not acceptable, and may result in a 0 on that assignment. Additional occurrences may be reported to the College and can lead to a failing grade in the course. See the [Academic Integrity policy](#) for more information.

Grading: You will be graded on how well your GeoGebra Constructions match and perform as described in the instructions for each. You will be assigned a grade that is a percentage of the points possible which reflects the percent of the construction you have completed.

4. Module Discussions

For all of your Module Discussions you will need to complete an initial post and then respond to two of your peers.

First choose any problem from the Lecture Examples, Lecture Exercises, online Homework, Formal Written Homework or, if it is an exam-review week, from the Exam Review. Choose a problem based on your interest in the problem - you might find it interesting because you think it connects to an aspect of math or your life that you want to talk about, or because you found another way of doing the problem, or because it frustrates you, or because you are confused about the steps or the concept in some manner that you'd like your peers to take a look at.

Next, write the problem out in its entirety, including nicely drawing any graphs or diagrams in the problem. Then do the problem to the best of your ability and scan your work and upload it to the Module Discussion for that week.

Before you post, you then need to type 3-10 sentences about why you chose the problem. Include links to other pages that you found in relation to the problem - whether that is an interesting extension or use of the math or a page helping to explain it. Discuss what you found interesting, or the extension you found, or the other method you tried, or the difficulty you were having. Give enough detail so that your peers and I have sufficient details to reply meaningfully to!

All of this is going to be due by the last Wednesday of the Module. Your upload and discussion of the problem you chose is worth 10 points

Next, by the following Sunday, you will reply with 3-10 sentences to two of your peers who have less than 2 responses already to their posts. Give them positive feedback, encouragement, further connections you see, constructive notes on mistakes, friendly assistance in moving forward, notes on what you find cool or interesting about their post, etc.

Each of your responses will be worth 5 points.

4. Module Formal Written Homework (in D2L with work submitted to the D2L Assignments folder found under content)

Purpose: The Formal Written Homework submissions are an opportunity for you to demonstrate your knowledge of the material and receive feedback regarding your process and notation. Treat each with care, spending time to turn in something excellent as each is worth a relatively heavy weight of your overall grade. As you work, note any place you needed to look anything up, ask for help, or use a calculator. This will help me as I give you feedback and help you make a list of things you need to study more to retain the information. These assignments will be your best understanding of your preparedness for exams.

Format and Guidelines: You should be following the [Documentation Guidelines](#) when presenting your work. I will be giving you feedback and giving you a grade based on your process, your notation, your presentation, and the correctness of your work.

Submitting Handwritten Work: Using the [Adobe Scan](#) app on your smartphone or tablet is the easiest way to turn your handwritten work into a single electronic PDF file.

I give partial credit based on your work shown, so you won't be able to see your score until after I've gone in and graded the formal written homework. Remember that math isn't just about getting the right answer, but the process and presentation of arriving at that answer. It will also prevent you from later getting points deducted on exams because of incorrect process and/or notation if you are taking note of the feedback I give you on this work. Formal Written Homework must be done on the provided worksheet and preferably uploaded as a single pdf for grading convenience. Your feedback will be uploaded as a pdf.

Formal Written Homework are generally due on **Wednesdays by 11 pm**, but refer to the course calendar.

Academic Integrity: Following the guidelines laid out in this document to avoid "cheating" (either intentionally or unintentionally) or appearing to have cheated. Occasionally, students cheat by using using an online calculator that shows steps. This form of cheating is sometimes an absent-minded act, and sometimes the result of desperation but is usually not very transparent. Keep in mind that the in-person proctored exams are worth 50% of your grade, (under closed-campus circumstances, exams may not be on campus) so it's extremely important that you understand the content. The Instructor reserves the right to respond to cheating and apparent cheating by recording a 0 on the associated assignment and additional occurrences may be reported to the Division Dean and can lead to a failing grade in the course. See the [Academic Integrity policy](#) for more information.

Grading: You will be awarded partial credit for assignments that reflects how much of a concept or technique you understand for each given question. Notation mistakes are a reflection of a misunderstanding and likely will result in a loss of points which corresponds with how much of a misunderstanding it entails.

5. Exams

Midterm Exam: Except under circumstances of campus closure, this exam will be taken on campus during Module 6 and will include the content from Module 1 to Module 5 (10.1 - 11.6). All questions will be open response. You will be graded on your ability to arrive at the correct solution and to properly show your work using proper notation. Please see the [Course Calendar](#) for date, time and location.

In-Person Proctored Final Exam: Except under circumstances of campus closure, the final exam will be given on-campus during finals week and will be a cumulative exam consisting of chapter 10, chapter 11, and chapter 12 content. All questions will be open response. Part of the exam will be no-technology and part of the exam will allow the use of a graphing calculator (physical or online). The exam will take place in a computer classroom where you'll have access to GeoGebra and Desmos. You will be graded on your ability to arrive at the correct solution and to properly show your work

using proper notation. Please see the [Course Calendar](#) for date, time and location.

Makeup Exams: If you have a conflict with an exam date and/or time, please let me know during the first week of the term. Scheduling makeup exams will be at the discretion of the Instructor and will be addressed on a case-by-case basis.

Distance Proctoring: It is preferable to take the Exam with the Instructor so you can ask clarifying questions and get clarification from classmates' questions. However, if attending a proctored exam presents an obstacle, you can arrange to have your exam proctored at another approved institution. These arrangements must be made and communicated to me during the first week of the term. An educational institution other than PCC may charge a nominal fee for the proctoring; any such fee is the responsibility of the student. When making arrangements, be sure to ask about computer access to see if you can use an online graphing calculator.

Evaluation of Assignments

Assignment Feedback from the Instructor

I plan to provide feedback on assignments and post grades within one week after the due date, but likely much sooner than that, as I understand that timely and constructive feedback is very helpful. All feedback can be viewed from the gradebook via the feedback link where I will provide you a link to a file that has been marked up. Online homework offers immediate feedback on Homework questions.

Grading Criteria:

Activities	Percentage of Final Grade
Online Homework (20)	10%
Formal Written Homework (9)	15%
Technology Labs (3)	10%

Discussion Posts (3)	10%
Proctored Midterm	25%
Proctored Final	30%

Grading Scale:

Letter Grade	Grading Scale by Percentage
A	90 - 100%
B	80 - 89.9%
C (or P)	70 - 79.9%
D (or NP)	60 - 69.9%
F (or NP)	0 - 59.9%

Exam Policy for Passing Grade:

To receive a passing grade in this class (C or above) you must have a total score of 70% or above ***AND you must pass the final exam with a 65% or higher.***

Late Work & Make-up Policy:

In general, I am flexible offering extensions without deductions for being late. This is likely a more flexible policy than most Instructors enforce and I do so acknowledging that some students may perform better with stricter parameters. However, online students generally have outside obligations stronger than students that can take face-to-face or remote courses. So, I offer flexibility in order to support what might be a complicated schedule. With that in mind, I offer the following as a set of parameters to help students complete assignments and to offer preferred options for making up late or missed work. If you need extensions beyond these parameters, I am generally happy to comply if I can.

This online course is not self-paced and there are windows during which assignments must be done. Each window is several days long to accommodate your schedule. You are strongly encouraged to set your own earlier due dates according to your own schedule. D2L offers ways to check that submissions have been accepted and you are responsible for making sure that your assignment has been submitted properly. If extenuating circumstances arise for you at some point in the term, contact me as soon as possible to discuss options.

LATE-WORK POLICY: (AGAIN, IF YOU NEED ADDITIONAL FLEXIBILITY BEYOND THE REQUESTS LISTED BELOW, I AM HAPPY TO OFFER EXTENSIONS WITH NO DEDUCTIONS IF I CAN)

- **Online Homework:** I will allow a one-time, two-day extension on a single homework assignment without approval from me. To receive your one-time extension, use D2L to send me an email and the HW will be due by Thursday at 11 pm. Additional extensions accepted upon request if time allows.
- **Formal Written Homework:** I will allow one-time, two-day extensions on a single Module Formal Written Homework without approval from me. To receive your one-time due date extensions send me an email and the HW will be due by Friday at 11 pm. Additional extensions accepted upon request if time allows.
- **Technology Labs:** I will allow a one-time, two-day extension on a single Module Tech Lab without approval from me. To receive your one-time extension simply submit it by Tuesday at 11pm. Additional extensions accepted upon request if time allows.
- **Exams:** There will be no automatic extensions on exams. Extensions accepted upon request if time and circumstance allows.

Resources and Extra Help

Tutoring: PCC contracts with an e-tutoring service: <http://www.pcc.edu/resources/tutoring/>. This is free for all PCC

students. Additionally, this website contains information about on-campus tutoring at each of PCC's Student Learning Centers.

Office Hours: See the homepage for my office hours when campus is open, or contact me for an appointment or Zoom meeting.

Study Groups: I highly recommend forming study groups with your classmates. To do so, you can post in the Student Q&A Discussion Board or email fellow students directly using the Classlist tab.

WebAssign: WebAssign offers many extra resources. For more information, see [WebAssign Information](#).

Online Learning Resources: PCC offers a number of resources for online students which can be found on the [Resources for Students](#) D2L page.

PCC Policies and Deadlines

Registration policy and Deadlines for the Term

The student is responsible to add/drop/withdraw a class. Please review [PCC Registration Policy](#) for more information.

Add, Drop, and Grade Change Deadlines

- Students need to register online via MyPCC. Please review [Online Registration Instructions](#) to find out how.
- For 8-12 week classes, students need to drop by the end of the first week of classes to receive a full tuition refund. More information about dropping or withdrawing can be found here: <http://www.pcc.edu/enroll/registration/dropping.html>
- For late add, students must add within two business days of the course drop deadline.
- More information about grading options and important deadlines can be found at the following links:
 - <http://www.pcc.edu/enroll/registration/grading-policy.html>
 - <http://catalog.pcc.edu/handbook/g301-gradingguidelines/>

Payment Deadlines

Payment is due two Mondays before the first day of term. Students who register after the payment deadline must make the same day payment arrangements. You can see your balance or access your bill online in the MyPCC Paying for College tab. Please review [PCC Payment Policy](#) for more information.

Academic Integrity (rules about cheating, plagiarism, or sharing work)

Students are required to complete this course in accordance with the Student Rights and Responsibilities Handbook. Cheating includes any attempt to defraud, deceive, or mislead the instructor in arriving at an honest grade assessment, and may include copying answers from other students or using unauthorized notes during tests. Plagiarism is a particular form of cheating that involves presenting as one's own the ideas or work of another, and may include using other people's ideas without proper attribution and submitting another person's work as one's own. Dishonest activities such as cheating on exams and submitting or copying work done by others will result in disciplinary actions including but not limited to receiving a failing grade. For further information, review the institution's [Academic Integrity Policy](#).

Student Rights and Responsibilities Handbook

Students are required to comply with the [Student Rights and Responsibilities Handbook](#). The Handbook includes the Code of Student Conduct and the Academic Integrity Policy.

Title IX Statement

Portland Community College is committed to creating and fostering a learning and working environment based on open communication and mutual respect. If you believe you have encountered sexual harassment, sexual misconduct, sexual assault, or discrimination based on race, color, religion, age, national origin, veteran status, sex, sexual orientation, gender

identity, or disability, please contact the Office of Equity and Inclusion at [\(971\) 722-5840](tel:971-722-5840) or equity.inclusion@pcc.edu.

PCC is a sanctuary college:

For more information and resources, see <https://www.pcc.edu/resources/undocumented-students/>

Demonstrating the College's support for and commitment to our DACA, DREAMers, and undocumented students is of paramount importance at this time. To reiterate, our Sanctuary status means: protection of student information, according to FERPA; a commitment to not allow our Public Safety personnel to be used for immigration enforcement purposes; not to allow Immigration and Customs Enforcement (ICE) on our campuses or properties—unless they carry a subpoena or arrest warrant.

Internet Etiquette (or Netiquette)

[Click here for more information about Netiquette.](#)

Special Accommodations

PCC is committed to ensuring that classes are accessible. Disability Services [\[www.pcc.edu/disability/\]](http://www.pcc.edu/disability/) works with students and faculty to minimize barriers. If students elect to use approved academic accommodations, they must provide in advance formal notification from Disability Services to the instructor.

Flexibility

The instructor reserves the right to modify course content, adjust assignment/exam guidelines, and/or substitute assignments and learning activities in response to institutional, technological, pedagogical, weather or class situations.