MATH 227-W01, W101 – Calculus III
Spring 2023 Syllabus

Instructor: Grant Kopitzke
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Phone: None
Email: gkopitzk@uwsp.edu

Classroom: Wausau 191, or by Zoom for W101 students
Class Meeting Time: 8:00 – 8:50 Monday, Tuesday, Wednesday, and Thursday

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Communication: The best way to get ahold of me is by messaging me on Canvas or emailing me. If you message or email me during working hours (8:00-5:00 Monday through Friday) then I am usually very quick to respond. Outside of those times, it may take me while to respond (especially on weekends). If I need to get ahold of you, I will email you or message you on Canvas. I expect that you'll be checking your campus email and checking Canvas at least once every day.

Office Hours: 10:00 – 11:00 Monday, Tuesday, Thursday, Friday

Office hours are a time I set aside each week for any of my students to come to my office to meet with me and get their course-related questions answered. If you are on the Wausau campus, feel free to drop by unannounced in my office at these times.

If you are not attending classes physically at the Wausau campus, then you can attend office hours virtually via ZOOM. The link will be provided on the course Canvas page. I probably won't be sitting in the Zoom room every day during office hours, so if you'd like to meet via Zoom, please email me first or message me on Canvas so I know to log in.

Textbook:
Calculus, Early Transcendentals, 8th ed., by James Stewart. ISBN#: 978-1-285-74155-0.

Class Meetings & Attendance:
There are two sections of this course:

1. W01 – students who are enrolled in the course at the Wausau campus.
2. W101 – remote students who are enrolled in the course but participating asynchronously online.

To accommodate each of these different sections, the course will be taught out of a Point-to-Point (P2P) classroom at the Wausau campus and streamed lived via Zoom. Students enrolled in the W01 section will be expected to attend class every day at the Wausau campus, and students enrolled in the W101 section will have the option to attend class live via Zoom or watch recordings of the lessons on Canvas.

Students enrolled in the W101 section will be expected to meet with me weekly via Zoom for group Q&A.

Please note: This class is unique as it contains a synchronous face-to-face section, and an asynchronous online section. I would like to have a lot of activities in class, and "now you try"-type problems. However, the course needs to be designed in a way that is equally beneficial to the in-person students and the online asynchronous students. Having an excess of in-person-centric activities is not beneficial or fair to the online students. What is useful to everyone is bringing questions to class for discussion, so I encourage you to do this.

Calculators:
A graphing calculator is recommended for this course. You may use whichever calculator you prefer, including CAS calculators.

Course Content:

1. (Chapter 12) We'll start by reviewing vectors in the plane and in 3-space. From this we'll develop equations in the variables x, y, and z of lines and planes in 3-space, and quadratic surfaces in 3-space.
2. (Chapter 13) We'll study parametric curves in the plane or in 3-space, where the position on a path is thought of as being at the tip of a *position vector* with its tail at the origin. Here the domain is only one-dimensional, but the output of the function can be a two or three-dimensional vector. The first and second derivatives of this *position vector* function yield *vector* functions representing the velocity and acceleration of an object as it moves along the path.
3. (Chapter 14) This chapter deals with functions which have output that is a real number, but input that is an ordered pair (x,y) or an ordered triple (x,y,z). We will discuss the applications of these types of functions, and will see that differentiation determines the change in output as one directional variable changes. We will also develop aspects of analytic geometry to find tangent planes and normal lines to three-dimensional surfaces.
4. (Chapter 15) Integration with respect to more than one variable is defined and used to find volumes, surface areas, center of mass of 3-D regions, and average values of functions. These problems will be dealt with using rectangular, cylindrical, or spherical coordinate systems as appropriate.
5. (Chapter 16) In this chapter we will study the classical versions of Green's, Stoke's and the Divergence theorems that allow one to interchange multiple integrals over regions to integrals over the boundary of the region.

Homework (0% of your grade, but extra credit available):

Appropriate problems from the text will be assigned as concepts are covered. These problems will come from the textbook and will be posted to Canvas. You will usually get a new problem set each class period. Completing and understanding these problems is essential for you to succeed in this course. Every afternoon/evening you should attempt all that day's homework problems in an organized homework/notes notebook and bring any questions or comments for discussion at the start of the next class.

Your homework from each unit will be spot checked throughout the semester (checked for completion – not correctness). Periodically throughout each unit, I will post a "Homework Check" dropbox on Canvas, where you will need to upload your solutions to the specified homework problems. Uploads must be PDF files, so please make sure that you download a free PDF scanner app or use one of the school scanners to upload your homework.

If you have attempted at least 80% of the homework problems in the unit immediately prior to a given midterm exam, and I have confirmed that proportion in a homework spot check (**prior to the exam**), then you will receive 5 points of extra credit toward the corresponding unit exam. Homework problems completed or submitted after an exam has already been taken will not count towards extra credit on that exam.

Hopefully this policy motivates you to actively work on the assigned homework problems each day and stay on top of them as they are being assigned.

Quizzes (appx. 4x at 15% total):

There will be at least four online quizzes on Canvas this semester. These quizzes will be open book, and open note, but you may not use the internet or any other external resources. Collaboration is also not allowed on quizzes. These will usually be assigned on Thursdays and will be due 3 days later on Sunday night. These quizzes will test you on concepts like those we've recently encountered in class and in the homework. You will have 90 minutes to complete the quiz problems on scratch paper and upload them to the quiz dropbox as a PDF or image(PNG or JPEG) file. Late quizzes will only be accepted under extenuating circumstances.

Midterm Exams (3x at 55% total):

For students enrolled in the W01 section, you will be expected to take all exams in-class at the Wausau campus at the scheduled times. Students enrolled in the W101 section will need to send me the contact information of a proctor at your local high school who has agreed to proctor each of your exams. One the designated exam days, I will email your proctor a copy of the exam, and they will print it off, proctor the exam while you take it, then scan the completed exam back to me for grading.

There will be three in-class one-hour exams given on or near the dates listed in the course schedule on the last page. All exams will be closed-book and closed-note. You may use a calculator on your exams, but no other technology will be allowed. I may occasionally allow handwritten note cards or cheat sheets.

Final Exam (30%):

There will be a two-hour comprehensive final exam at the end of the semester (the date is in the schedule). This exam will be closed-book and closed-note. You may use a calculator, but no other technology or cheat sheets will be allowed. There are no makeups, extra credit, or do-overs for the final exam since the semester will be over after finals week has passed.

Midterm Exam Grade Replacement:

If you do poorly on an exam, you will be able to substitute the percentage score on your final exam in place of any one single midterm exam grade. For example, if you get a 55% on exam 2, but get an 85% on the final exam, then your exam 2 grade will automatically get bumped up to an 85%, and your final exam will also stay an 85%. No other exam grades would be affected. The midterm exam you are replacing must have a grade higher than a 25% for its grade to be replaced – in other words, if you miss an exam or don't study at all for it, then it does not qualify for grade replacement.

Policy on Missed Exams:

If a conflict prevents you from taking an exam, you should contact me well before the exam, if possible, and arrange for an early exam. Not all absences will be excused. The following list is the most common excused absences that may be accommodated:

1. An illness with a doctor's note submitted to the instructor prior to the date of the exam.
2. A documented school athletics event.
3. Jury duty or a court date, with documentation.
4. Military obligations, with documentation.

Please note: family vacations are not an excused absence. If you miss an exam due to a vacation or trip during the semester, you will receive a 0% on that exam and that grade will not be eligible for replacement at the end of the semester.

Academic Misconduct:

All students are expected to know the UWSP Community Rights & Responsibilities, and the Student Academic Standards and Disciplinary Procedures found on the Dean of Students webpage at

https://www.uwsp.edu/dos/Pages/Student-Conduct.aspx

Any instances of perceived academic misconduct will be investigated following the Student Academic Disciplinary Procedures:

https://www3.uwsp.edu/dos/Documents/UWS%2014-1.pdf

Grading:

Homework:	**0%**
Quizzes:	**15%**
Midterm Exams (3x about 18% each):	**55%**
Final Exam:	**30%**

Grading Scheme:

Course Grade (%) at or above a:	93%	90%	87%	83%	80%	77%	73%	70%	67%	60%
Will receive at least a grade of:	A	A-	B+	B	B-	C+	C	C-	D+	D

Tentative Schedule for the Semester (subject to change)

Week	Sections	Content
1	12.1 – 12.4	Vectors in 2 and 3-space. Dot and Cross products.
2	12.5 – 12.6	Lines, Planes, Cylinders, and Quadric Surfaces.
3	13.1 – 13.3	Vector functions, Derivatives, Integrals, and arc-length of vector paths.
4	13.4, **Exam 1**	Velocity, Acceleration.
5	14.1 – 14.3	Introduction to functions of several variables, Limits, continuity, partial derivatives of functions of several variables.
6	14.4 – 14.6	Tangent planes to surfaces z=f(x,y). Chain rule, gradient vectors, directional derivatives.
7	14.7 – 14.8	Max/Min of functions of several variables. Lagrange multipliers.
8	15.1 – 15.2, **Exam 2**	Double integrals over rectangles and of a function over general regions in the plane.
9	15.3 – 15.4	Double Integrals over polar regions, and applications.
10	15.5 – 15.7	Surface area with double integrals, triple integrals in Catesian and cylindrical coordinates.
11	15.8 – 16.2	Triple integrals in spherical coordinates and change of variables for multiple integrals. Vector Fields & Line integrals.
12	16.3 – 16.4, **Exam 3**	Fundamental Theorem of Line Integrals, Green's Theorem
13	16.4 – 16.7	Green's Theorem, Curl and Divergence, Surface Integrals
14	16.8 – 16.10	Stokes' Theorem, Divergence Theorem, Summary of Calc III
15	Review	Final Exam Review
16	**Final Exams**	Final exam is on Thursday, 05/18 from 10:15 am – 12:15 pm

NOTE: IF WE NEED MORE TIME FOR SOME TOPICS, OR LESS TIME FOR OTHERS, THEN THIS SCHEDULE WILL BE CHANGED TO ACCOMMODATE. EXAMS MAY END UP TAKING PLACE ON DAYS OTHER THAN THE ONES LISTED HERE. IT IS IMPERATIVE THAT YOU PAY ATTENTION TO SCHEDULE DISCUSSIONS IN CLASS, AND CLOSELY WATCH ANY ANNOUNCEMENTS REGARDING SCHEDULE CHANGES ON CANVAS. YOU WILL BE RESPONSIBLE SHOULD YOU MISS AN EXAM OR ASSIGNMENT DUE DATE BECAUSE OF SCHEDULE CHANGES.