

Syllabus for Calculus and Analytic Geometry II - MAT 226 5CR

Spring 2022 8:00 - 8:50 M-F in Room (218 Wausau, 135 MSF) or by Zoom

Instructor

Paul Martin, Office 087-B(WAU Main Bldg), Phone 261-6272 best to contact by email pmartin@uwsp.edu .

Office Hours: 10:00 –10:50 on M, T, Th, F **These will be either in person at my office or before or after class or remotely through my personal zoom meeting room with pass-code 3.14** at <https://wisconsin.edu.zoom.us/j/6721469784?pwd=TzNONExrZnNOUEJwS2RIMG9kbTVmQT09> . I am also happy to meet at other times; Just send me an email or leave a phone message requesting a meeting. For students at a distance, please contact me so we can find a common time to meet for an ~15 min weekly Q&A session via zoom.

DUO and TLC Labs are also available for extra help. DUO in rooms 224WAU and 107MSF, TLC tutoring lab in the library at Wausau.

Text

Calculus (Single Variable), Early Transcendentals, eighth ed., (7th is ok too) by James Stewart, ISBN 9781305270336
Lectures are available ~ 1 hour after class by going to the zoom link in Canvas and then to cloud recordings.

I will hand out course materials in class and but will also post them on the course Canvas site. It is expected that you attend all lectures either in-class or live via Zoom or watch the recorded videos. For students that are not on the Wausau campus, I will arrange for quizzes and exams to be delivered locally.

Course Content

- We first develop integration techniques beyond simple substitution: integration by parts, trigonometric substitution, partial fractions, dealing with improper integrals, the use of Computer Algebra Systems and Numerical Methods. Next, we use integration to solve problems of arc-length, areas of surfaces of revolution, centers of mass of thin plate objects, probability, and some problems from economics, e.g. consumer surplus.
- In Ch. 10 we discuss parametric and polar representation of curves in the plane and how to obtain tangent lines, compute areas bounded by curves, arc lengths and volumes and surface areas of solids of revolution. We also study conic sections in rectangular and polar form.
- Chapter 11 is the study of infinite sequences and series and convergence tests. We define functions by power series and compute their intervals of convergence, their derivatives and antiderivatives and also learn how to obtain power-series representations ($\sim \infty$ degree polynomials) for most common types of functions.
- In Ch. 9 we will study the use of differential equations for modeling and solving separable and linear first-order differential equations. We conclude the course with an introduction to vector algebra and lines and planes in 3-space. A detailed list of topics follows on the next page.

Homework

Appropriate problems from the text will be assigned as concepts are covered. You should attempt all of these in an organized homework/notes notebook and bring any questions or comments for discussion at the start of the next class. You can email me any problems you'd like me to explain ahead of class too. If you have been doing at least 75% or so of the homework problems in your course notebook, you will have the option for earning back some fraction of any points lost on the in-class part of each hour exam. This percentage buyback will depend on the class average for that exam, but will typically be ~50%. To earn these points back, you will need to show me your homework notebook for that exam period and then explain to me either after class or via office hours how to correctly do all the problems on which you lost points.

Quizzes

There will be a quiz or two in the time period prior to each hour exam. These will be closely related to concepts covered in the previous few days' homework and topics covered during class. Paying attention and doing assigned homework problems should prepare you well for these quizzes.

Exams

There will be four in-class hour-exams given on or near the dates listed in the course schedule on the opposite page. The hour-exams will be 40% take-home and 60% in-class. There will also be a two-hour comprehensive final exam. All exams will be closed-book.

Policy on Missed Exams:

If a conflict prevents you from taking an exam, you should contact me prior to the exam if possible, and arrange for an early exam. In the event that you miss one exam for less than adequate reason or do poorly, I will substitute the percentage score on your final for any single 100 point component of your course total.

Grades:

The quizzes will count for a total of 50 points. The hour-exams are each worth 100 points and the final is worth 150 points. The final letter grades cut-offs will be close to 60, 70, 80, and 90% for grades of F, D, C, B, and A.

Quizzes	50 pts
Four Hour Exams	400 pts
Final Exam	150 pts
Total	600 pts

Tentative Schedule for the Semester

Week	Sections	Content
Jan 24	7.1, 7.2	Preview of the course, Review of Integration of common functions and using substitution, Integration by parts, Trigonometric Integrals.
Jan 31	7.3, 7.4	Trig-Substitution, Partial Fractions
Feb 7	7.5-7.8	CAS, Approximation Techniques, Improper Integrals.
Feb 14	8.1, 8.2 Exam I	Arc-length of function graphs and Areas of surfaces of revolution,
Feb 21	8.3-8.5	Applications of integration in Physics and Economics
Feb 28	10.1-10.3	Parametric and Polar Equations for Curves in the plane, Calculus of Parametric Curves and regions.
Mar 7	10.4-10.6	Calculus in Polar Coordinates and Conic Sections in (x, y) and (r, θ) .
Mar 14	11.1, 11.2 Exam II	Infinite Sequences and Infinite Series.
Mar 21 Spring Break		
Mar 28	11.3-11.5	Integral and Comparison tests for convergence and Alternating Series..
Apr 4	11.6-11.8	Ratio and Root Tests and Power Series
Apr 11	Exam III , 11.9	Representing functions as power series via $\frac{1}{1-x} = \sum_{i=0}^{\infty} x^n = 1 + x + x^2 \dots$
Apr 18	11.10- 11.11	Representing functions as power series, Taylor and Maclaurin Series Application of Taylor Polynomials.
Apr 25	9.1-9.4	Modeling with Diff. Eq., Direction Fields, Euler's Method, Separable ODE's, population growth models.
May 2	9.5 Exam IV 12.1	Linear first order ODE's Exam IV , 3-space coordinate geometry.
May 9	12.2-12.4	Vectors in two and three-space, dot product and cross product.
		May 13 is last day of classes.
		Final is on May 17 from 10:15AM-12:15PM

UWSP Statement on COVID19 Safety Precautions:

Face Coverings:

- At all UW-Stevens Point campus locations, the wearing of face coverings is mandatory in all buildings, including classrooms, laboratories, studios, and other instructional spaces. Any student with a condition that impacts their use of a face covering should contact the [Disability and Assistive Technology Center](#) to discuss accommodations in classes. Please note that unless everyone is wearing a face covering, in-person classes cannot take place. This is university policy and not up to the discretion of individual instructors. Failure to adhere to this requirement could result in formal withdrawal from the course.

Other Guidance:

- Please monitor your own health each day using [this screening tool](#). If you are not feeling well or believe you have been exposed to COVID-19, do not come to class; email your instructor and contact Student Health Service (715-346-4646).
 - As with any type of absence, students are expected to communicate their need to be absent and complete the course requirements as outlined in the syllabus.
- Maintain a minimum of 6 feet of physical distance from others whenever possible.
- Do not congregate in groups before or after class; stagger your arrival and departure from the classroom, lab, or meeting room.
- Wash your hands or use appropriate hand sanitizer regularly and avoid touching your face.
- Please maintain these same healthy practices outside the classroom.