

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

Fall 2021 1:00 - 1:50 M-F in Room 233 or by Zoom

Instructor

Paul Martin, Office 087-B (Wausau Branch Main Bldg), Phone 715-261-6272 best to contact by email pmartin@uwsp.edu.

Office Hours: At School 10:00 –10:50 on M, T, Th, F at my office I am also happy to meet virtually via ZOOM. This link will take you to my zoom meeting room <https://wisconsin-edu.zoom.us/j/6721469784>. The meeting ID is 6721469784.

Text

Calculus, Early Transcendentals, eighth ed., (7th is ok too) by James Stewart, ISBN: 978-1-305-27033-6, or the enhanced book that includes the chapters for Calc III with ISBN 978-1-285-74155-0.

Lectures are available ~ 1 hour after class by going to cloud recordings under the ZOOM tab in Canvas.

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. For any students at a distance not synchronously connected, I will schedule a weekly live Zoom discussion that fits these students' schedules.

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.
- Next, 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.
- Thirdly we will study 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 for most common types of functions.
- Finally we will study the use of differential equations for modeling and solving separable and linear first-order differential equations. We will also begin the study of vector algebra and lines and planes in 3-space as time allows.
- In the text, we'll cover chapters 7-12. 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. If you have been doing at least 60% 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 each hour exam. This percentage buyback will be up to ~50%. To earn these points back, you will need to briefly show me your homework notebook for that exam period and then explain to me (either after class if in person, or via virtual zoom office) 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, you can 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
Sept 3	7.1, 7.2	Preview of the course, Review of Integration of common functions and using substitution, Integration by parts, Trigonometric Integrals.
Sept 9	7.3, 7.4	Trig-Substitution, Partial Fractions
Sept 16	7.5-7.8	CAS, Approximation Techniques, Improper Integrals.
Sept 23	8.1,8.2 Exam I	Arc-length of function graphs and Areas of surfaces of revolution,
Sept 30	8.3-8.5	Applications of integration in Physics and Economics
Oct 7	10.1-10.3	Parametric and Polar Equations for Curves in the plane, Calculus of Parametric Curves and regions.
Oct 14	10.4-10.6	Calculus in Polar Coordinates and Conic Sections in (x, y) and (r, θ) .
Oct 21	Exam II 11.1, 11.2	Infinite Sequences and Infinite Series.
Oct 28	11.3-11.5	Integral and Comparison tests for convergence and Alternating Series..
Nov 4	11.6-11.8	Ratio and Root Tests and Power Series
Nov 11	Exam III , 11.9	Representing functions as power series via $\frac{1}{1-r} = \sum_{i=0}^{\infty} r^n$.
Nov 18	11.10- 11.11	Representing functions as power series, Taylor and Maclaurin Series Application of Taylor Polynomials.
Nov 25	9.1-9.2	Modeling with Diff. Eq., Direction Fields, Euler's Method,. Thanksgiving on Nov. 28!
Dec 2	9.3- 9.4, Exam IV	Separable ODE's, Linear ODE's, Population growth problems. Exam IV
Dec 9	12.1-12.3, 12.6	Vectors in two and three-space and dot product and quadric surfaces.
Dec 14	Final Exam	12:30 – 2:30 PM

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

Also to facilitate contact tracing in the event that someone contracts Covid-19, it is necessary that we sit in the same seats throughout the semester. I will record our seating arrangement as of day 2. If someone does test positive, they should complete the covid reporting form at www.uwsp.edu/coronavirus .

