MATH 223 Analytic Geometry–Calculus III, 2025 Spring Syllabus
Section 003: MTWF 12:55–1:45, SHS 108

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Office hours: Mon & Fri 11:45–12:45, or by appointment

Prerequisites: MATH 222 Analytic Geometry–Calculus II with a grade of C– or better, or placement. If you do not meet the prerequisites, you may be withdrawn from the course without refund.

Course Objectives/Learning Outcomes: Students will be expected to be able to
- communicate mathematical results through the proper use of mathematical notation and words;
- use vector analysis to characterize motion along curves in $\mathbb{R}^3$;
- find partial derivatives, directional derivatives, and gradient vectors;
- solve optimization problems on a closed, bounded domain and on a constraint curve (Lagrange multipliers);
- set up and evaluate line integrals and double and triple integrals (in rectangular, polar, cylindrical, and spherical coördinates);
- set up and evaluate integrals involving the main theorems of vector calculus.

Text: *Calculus: Early Transcendentals*, 9th Edition, James Stewart et al., Cengage Learning. If you are registered for the class and the "ALL-IN Book Bundle", you should have access to a digital version of the textbook through WebAssign. See https://www.uakron.edu/bookbundle/ for more information.

Calculator: The following is the Department policy on calculators:

> Following the ACT Calculator Policy, graphing calculators without computer algebra capabilities are allowed on all homework, quizzes and exams. Examples of approved calculators include the TI-83, TI-84+, TI-Nspire non-CAS, Casio fx-9750GIII, and Casio Prizm fx-CG50, but any downloadable computer algebra module must be deleted.
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> Graphing calculators with built-in computer algebra functionality are not allowed; examples include the Texas Instruments models TI-89, TI-92, TI-Nspire CAS; HP models Prime, 48GII, 40G, 49G, 50; and Casio models fx-CP400, ClassPad 300 or 330, Algebra fx 2.0, CFX-9970G.
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> If you are uncertain as to whether or not your calculator is acceptable, check with your instructor at the beginning of the course.

That said, my own in-class tests will not require the use of a calculator, unless announced otherwise in advance. Some out-of-class assignments and exercises will require the use of a calculator or computer, but there are plenty of free online tools that are sufficient for this purpose. Contact me if you have questions about where to find the necessary resources. (I

do not yet know whether the final exam will require a calculator, so if you do not own one that is acceptable, you may need to borrow one.)

Homework and Quizzes: Regular homework assignments and quizzes will be due in WebAssign; for more information, see my webpage for this course. No extensions will be given without documentation of a valid excuse. Instead, a modest number of points will be omitted from the total "possible", so you can miss an assignment or two without it hurting your grade. (If you do not miss any assignments, that adjustment will essentially convert a portion of your total into bonus points.)

Tests: We will have about five to seven in-class tests, approximately biweekly. If you must miss a test for an excused reason, contact me as soon as possible to discuss your options. Make-ups will not be permitted without a documented valid excuse. Instead, up to two of your lowest test scores will be replaced with your final exam score if the latter is higher. This essentially allows you to miss up to two tests without penalty; if you miss fewer than two tests, this replacement can make up for one or two of your lowest scores.

Final exam: A comprehensive final exam will be administered sometime during finals week, as dictated by the University's schedule. The format and contents of this exam will be determined by the Department; I will pass any pertinent information along to you as soon as it is provided to me.

Grades: Your final grade will be based on the weighted average of your scores on assignments and assessments, with your WebAssign total worth 15% of your grade, your test average worth 60%, and your final exam score worth 25%. From that, your *minimum* grade in the course is shown in the table below. (I reserve the right to make small upward adjustments at my discretion. Also, I may weight the final exam more heavily if it will help your grade.)

Percent:	<60	60+	63+	67+	70+	73+	77+	80+	83+	87+	90+	93+
Grade:	F	D–	D	D+	C–	C	C+	B–	B	B+	A–	A

Communication: Aside from face-to-face discussion, the best way to contact me is by email. While lengthy or detailed discussion is best handled in person, I encourage you to ask me brief questions about course material—including homework—by email if it is feasible to do so. Aside from the convenience for you, it also makes it easier for me to send hints or clarifications to the entire class if I feel they are of general interest. Email is also the best way to schedule a meeting outside of class time or handle other administrative matters.

I will sometimes send important information or announcements to the class as a whole, or attempt to contact you directly if the need arises, using your UA email address. Make sure you check this account regularly.

My use of Brightspace is very limited; instead, information relevant to the course will be posted to my website, which you should check frequently. **Do not** attempt to contact

me via the internal messaging systems of Brightspace or WebAssign, as I do not check those sites frequently—use regular email instead.

"What students need to know": See https://www.uakron.edu/oaa/faculty-affairs/What-Students-Need-To-Know for important information on various topics, including
- The Student Code of Conduct and academic misconduct
- Statement about the ethical use of ChatGPT and other AI tools
- Add, drop, withdrawal and refund policies
- Inclusive excellence
- Title IX
- Sexual harassment and sexual violence
- Students with disabilities
- Religious Accommodations for Students
- ZipAssist

All students are responsible for this information.

Additionally, note that free tutoring is available in the University's tutoring centers: https://www.uakron.edu/tutoring/