MATH 223 Analytic Geometry–Calculus III, 2022 Fall Syllabus
Section 801: MonWed 18:20–20:00 (6:20–8:00 p.m.), Gladwin 304

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Website: https://www.hafner.us/ua/
Office hours: Mon–Thu 17:00–18:00 (5:00–6:00 p.m.), 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 If you do not meet the prerequisites, you may be withdrawn from the course without refund.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, you should have access to a digital version of the textbook through WebAssign, paid for by your "First-day Course Materials E-Content Fee"; this is provided to you via Brightspace, in the "Content Browser", under "WebAssign and eBook Access". If you would prefer to source your textbook elsewhere, or if you already have access by some other means, you can opt out of this program for a refund using the "Course Materials" link. See my website 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, Class-Pad 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: Assigned homework consists of three primary components:

Reading the textbook will be necessary to gain a full picture of the content of this course. The text is packed with more information than is possible to present in class, so you should read each section before and/or after the corresponding lecture.

A list of recommended exercises from the textbook will be supplied. These exercises will not be collected, but they are important for your learning and mastery of the material. You may find it necessary to do more problems than those suggested. Without adequate practice, you are likely to find the tests and exams to be too long and difficult.

There will also be several homework problems assigned to be submitted and graded. 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.)

See my website for more information.

Tests: We will have six or seven in-class tests, roughly 30 minutes each, approximately biweekly. If you will not be present for a scheduled test, contact me as soon as possible to discuss your options for taking it early. Make-ups after the fact will not usually be permitted. 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 homework 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.

Other policies: All University rules and regulations are in effect, including those on attendance, discipline, academic dishonesty, and harassment. Avoid creating distractions and disruptions to the class: silence your phone, do not converse with your classmates during lecture, sit in the back of the room if you must use a laptop or tablet, etc.

You must be on the class list and properly enrolled in the course to participate in any way, including attending class or having work graded. See the University's website for information on add/drop deadlines. If you have a disability that requires accommodation, contact the Office of Accessibility immediately. Free tutoring is available in the University's tutoring centers: https://www.uakron.edu/tutoring/

COVID statement from the University: "The COVID-19 pandemic is still present and serious. Before entering class, you should have completed your daily health assessment. You should not come to class if you fail your health check or feel ill. At that time, I also ask you notify me that you will be absent. When campus policies require masks to be worn indoors, all students are required to wear a mask during in-person classes. While you are in class on campus, you are required to: always cough or sneeze into your elbow or a tissue and adhere to other public safety protocols and directives for your specific classroom/lab/studio. Students who do not follow these health and safety requirements will be instructed to leave class immediately. Students who violate this protocol will need to leave the classroom and MAY be marked absent. Repeated violations of these health-saving protocols may lead to sanctions under the Student Code of Conduct up to and including suspension or expulsion. Current guidelines can be found at: https://uakron.edu/return-to-campus/."