



## Enriched Mathematics at SUNY Geneseo

*The Department of Mathematics at SUNY Geneseo has developed a sequence of Enriched Mathematics courses that you may be interested in taking.*

### What is the Enriched Mathematics sequence?

The Enriched Mathematics sequence is intended to challenge the mind and promote enthusiastic creativity for students with exceptionally strong mathematical backgrounds. Participants should be intellectually gifted, highly motivated, and ready for a challenge. The aim is to take students who already have a firm understanding of calculus and show them a more challenging side of the subject. Students will also be propelled deeper into more challenging, rigorous mathematics sooner rather than later. It's about problem solving and thinking. It's about challenge and rigor. It's about knowing your stuff.

### Enriched Calculus II

Offered in the Fall, Enriched Single-variable Calculus is an advanced approach to calculus and is intended to serve our most advanced and motivated first-year math students. Because these students will already have a significant calculus knowledge base, this course will provide them with the opportunity to explore more advanced problems that are rarely seen in a typical calculus course, provide more applications of calculus to other scientific fields, and unravel the language of mathematical thought through writing. It will be a challenging exploration of diverse problems that introduce us to more sophisticated mathematical language. It will utilize all of your Calculus I skills, and make sure your Calculus II skills are equally good.

### Enriched Multivariable Calculus (with Mathematical Proof Techniques)

Offered in the Spring, Enriched Multivariable Calculus is a rigorous study of the methods of higher dimensional calculus. This course is a more challenging approach to multivariable calculus, which will continue to develop skills in the language of mathematics. This course is 4 credits, and satisfies all the prerequisites that Math 223 satisfies.

This class has a pre-requisite of either (i) Math 225 (Enriched Calculus II) or (ii) credit for Math 239 with a grade of 'A-' or higher, and Math 222 with a grade of 'A-' or higher, and permission of department.

## Enriched Elementary Linear Algebra (with Proof)

Offered in the Fall, Enriched Elementary Linear Algebra is a course intended to deepen the students' understanding of advanced mathematical proof through a rigorous study of linear algebra. Applications will also be introduced. This course is 4-credits, and satisfies all prerequisites that Math 233 satisfies.

This class has a pre-requisite of either (i) Math 288 (Enriched Multivariable Calculus) or (ii) credit for Math 239 with a grade of 'A-' or higher, and Math 223 with a grade of 'A-' or higher, and permission of department.

## Bonus: Mathematical Proof Techniques

The entire Enriched Mathematics sequence is unified in one greater goal: to introduce the language of advanced mathematics through mathematical proof. This sequence is intended to demonstrate the importance of mathematical precision and rigor. The emphasis is on understanding foundational aspects of mathematics that are crucial to every working mathematician, whether they ultimately choose to pursue these studies or to investigate the rich variety of applications in the sciences and engineering. The completion of all three courses satisfies all prerequisites that Math 239 satisfies.

## Who is this for?

The Enriched Mathematics sequence is for students who want to attack this material at a higher level with other equally motivated students—a cohort of high-achieving, supportive math friends. It's for anyone who loves doing math—math students, scientists, English and other majors, students who are not sure of a major yet. **If you love math and love a challenge, we invite to apply for this course.**

## Effects on Degree Requirements

If you complete any of these courses, then:

- Enriched Calculus II will replace Math 222 (Calculus II),
- Enriched Multivariable Calculus will replace Math 223 (Calculus III),
- Enriched Elementary Linear Algebra will replace Math 233 (Elementary Linear Algebra), and
- Completion of the entire 3-course Enriched Math sequence will replace Math 239 (Introduction to Mathematical Proof).

*Enrollment in any Enriched Mathematics class is limited to about 25 students and requires permission of the Mathematics Department. If you would like to apply for enrollment in Enriched Multivariable Calculus this Spring, please contact Dr. Rault in 326C South Hall or by e-mail at [rault@geneseo.edu](mailto:rault@geneseo.edu)*