

MATHEMATICS

The Department of Mathematics does not have a placement exam. Rather, we believe that students should self-place themselves into the class that best fits their background and interests with help from their advisor and faculty in our department. Students considering a mathematics course should refer to the Mathematics Placement Guidelines on the [Department webpage](#) to determine the appropriate placement or consult with a member of the department at 717-337-6630 or email Prof. Benjamin Kennedy (bkennedy@gettysburg.edu). Please note that Calculus I (Math 111) is intended for students who have not previously taken Calculus. In general, students who have taken calculus should place themselves into Calculus II or into a 200-level math course (see placement chart below). Students who place themselves into Calculus II and are considering a major in Mathematics, Physics, or Computer Science should enroll in the Honors section if possible.

In majors that require first-semester calculus, completion of a higher-level calculus course also satisfies that requirement. Accordingly, students should **not place themselves in an inappropriately low-level course merely to satisfy the stated requirements of another major**. Incoming students may confirm with departmental chairs in other majors that their math plans satisfy those majors' requirements.

The best math course in which to start depends on your goals, motivation, and background. If you have any questions or concerns, please feel free to discuss your individual situation with a math faculty member.

Step 1 (Goals): What are your goals in taking a math course at Gettysburg College?

If your goal is further study in math, computer science, economics, or the sciences, you should take:

- Calculus (Math 105, 111, 111H, 112, 112H, or 211; see placement chart); or
- Linear Algebra (Math 212, see placement chart); or
- Differential Equations (Math 225, see placement chart); or
- Abstract Mathematics I (Math 215, see placement chart); or
- Introduction to Research in Mathematics (Math 201, see placement chart).

If your goal is to satisfy in the College's Qualitative, Inductive, and Deductive Reasoning (QIDR) requirement, you should take:

- Any of the courses listed above; or
- Mathematical Ideas (Math 103); or
- Applied Statistics (Math 107); or
- FYS 146-2: Cryptography, or
- FYS 162-2: Math as Muse, or
- FYS 162-4: The Mathematics of Voting; or

- Courses in other departments (such as certain courses in CS, Economics, HES, Philosophy, Political Science, etc.) See Registrar's website for eligible courses.

(Note: Gettysburg College DOES NOT HAVE a math requirement.)

Step 2 (Aptitude and Motivation):

These are *only guidelines* to help you decide where it is best for you to start; you may want to keep the following points in mind.

1. **Your motivation (drive and determination) is a very important factor in your success no matter which course you select.** Many students are more motivated to work (and will attain higher grades) in a course where the material is new to them as opposed to a course where they have already seen much of the material.
2. **Good study habits and the ability to handle challenges go a long way toward filling occasional gaps in background.** If you are unsure about the strength of your background, you should consider your study habits and whether you are diligent in seeking out help.

Step 3 (Calculus Placement): This step only applies to students who wish to take calculus or higher-level math courses. If you do not plan on further study in math or in a field that relies on calculus (such as economics or the sciences), courses such as Math 103, Math 107, or First-Year Seminars that satisfy the Quantitative, Inductive, and Deductive Reasoning requirement (QIDR) might be more useful and fulfilling.

When choosing a calculus course, keep in mind that it is easier to move down than it is to move up. When choosing between two calculus courses, the department's general recommendation is to take the higher course, because you will have the opportunity to move down to a lower-level course through the sixth week of classes. If you start in a lower course, you will not be able to move up to a higher course after the second week of classes.

Calculus Placement Chart

<u>Highest Level Background with B or Better</u>	<u>Starting Course</u>
Algebra II Note: If you have completed Algebra II, but you do not have a B or better in any of the courses listed in this column, you should register for Math 105 and speak with a math faculty member over the summer.	Calculus with Precalculus (Math 105, and in the spring Math 106) Note: Completing Math 105 and Math 106 is equivalent to completing Calculus I (Math 111)
Precalculus (also taught under titles such as <i>Math Analysis</i> , or <i>Functions</i> , or <i>College Algebra/Trig</i>), including the topics: Functions, graphs, and shifting/stretching Polynomial and rational functions Exponential and logarithmic functions Trigonometric functions and identities	Calculus I (Math 111) Note: A score of 4 or 5 on AP Calculus AB exam gives credit for Math 111. If you take Math 111, you will lose this credit.
Calculus: full year course in high school (not necessarily AP), including the following topics: Limits and continuity Derivatives Increase/decrease, max/min, and concavity Antiderivatives Definite integrals Fundamental Theorem of Calculus	Calculus II (Math 112) Note: A score of 4 or 5 on AP Calculus BC exam gives credit for Math 112. If you take Math 112, you will lose this credit.
Calculus + Highly Motivated: If you earned a 4 or 5 on the AB Calculus test or If you took a year of calculus, are highly motivated, and have a Math SAT score of 650 or higher.	Honors Calculus II (Math 112H)
AP Calculus BC course , including all Calculus topics listed above <u>plus:</u> Integration techniques Applications of integration Infinite sequences and series	Linear Algebra (Math 212), or Differential Equations (Math 225), or Multivariable Calculus (Math 211), or Abstract Mathematics I (Math 215), or Int. Research in Math. (Math 201).