

# You

# AND MATHEMATICS AT SMITH

No prerequisites	⇒	<p><b>102a: Elementary Functions.</b> A precalculus course for students who plan to take calculus but lack sufficient preparation. Also good for those who want a better understanding of the mathematical ideas in the physical and social sciences.</p> <p><b>105b: Discovering Mathematics.</b> A cultural introduction to mathematics. Students at all levels and from all disciplines are welcome. Topic varies.</p> <p><b>107a: Statistical Thinking.</b> Focuses on understanding statistical concepts, including: defining the research question; designing experiments, collecting, managing, and analyzing data, and interpreting results.</p>
Precalc or equiv. (4 yrs HS math)	⇒	<p><b>111a,b: Calculus I.</b> Calculus is one of the greatest achievements of the human mind. Topics are introduced in context as used by scientists and social scientists. It is then studied geometrically, algebraically, numerically, linguistically, theoretically.</p> <p><b>190a: Statistical Methods for Undergraduate Research.</b> An overview of statistical methods used in empirical research. Satisfies the Basis for Psychology major.</p>
AB Calc or equiv.	⇒	<p><b>114a,b: Calculus: Differential Eqs. and Power Series.</b> Designed for students who have had a year of high school calculus. Introduces you to those aspects of the Smith calculus program (differential equations; computing; scientific contexts) not in traditional high school (or college) courses. <b>This is Calc II for those who have taken Calc I elsewhere.</b></p> <p><b>153a,b: Discrete Mathematics.</b> Covers a range of topics: counting, cryptography, mathematical algorithms. Making a convincing mathematical argument. Some of the math behind computer science. (required for CS and math majors)</p> <p><b>245a,b: Introduction to Probability and Statistics.</b> Methods for data collection, description and analysis. A project based course. (Recommended for Biology majors).</p>
BC calc or equiv. or IB math A levels	⇒	<p><b>211 a,b Linear Algebra</b> Begins with solving systems of linear equations and proceeds to deeper algebraic ideas with the study of abstract vector spaces. Geometric and computational aspects are included.</p> <p><b>212 a, b Calculus III.</b> Vector calculus, the calculus of 2- and 3-dimensional space. A continuation of Calculus I and II. We recommend Linear Algebra be taken first or concurrently.</p> <p>Other courses possible, including 153 and 245. See a member of the department.</p>
AP stats or equiv.	⇒	<p><b>248a: Design of Experiments</b> This intermediate statistics course introduces experimental designs used in scientific research, and teaches students to analyze data produced by studies that use these designs.</p> <p>Other courses possible, including 153, 211, 212. See a member of the department.</p>

## Courses by theme

**Calculus:** Good for all potential science students, economists, a major human accomplishment.

- Math 111: Calc. I for those with no calculus background.
- Math 114: Calc Diff Eq. and Power Series for those who took calc I in high school or elsewhere.
- Math 212: Calc III for those who did well on BC calc or equiv.

**Discrete Structures:** Good for potential computer science students, math majors, chemists.

- Math 153: Discrete Math
- Math 211: Linear Algebra

**Statistics:** Good for all, math, science, social science majors, and for understanding statistics in daily life.

- Math 107: Statistical Thinking, No prereqs.
- Math 190: Statistical Methods. Esp for psych majors
- Math 245: Intro to Prob Stat. requires calc I or equiv.
- Math 248: Design of Experiments. Requires 245 or AP stats.

**Fundamental Skills:** Good for brushing up on algebra and learning about functions.

- Math 102: Elementary Functions, (a Pre-calc course)
- Math 101: Algebra, for those with less than 3 years of high school math. Primarily for Ada Comstocks.

**Cool Stuff:** Interesting math for the well rounded liberal arts student.

- Math 105: Discovering Math. No prerequisites!
- Math XXX we think that all our courses contain cool stuff.

**Other Quantitative Skills or Analytical Reasoning courses (without prerequisites):** You may want to take mathematics for a variety of reasons. Besides courses in the math department there are other courses at Smith through which you will improve your quantitative abilities. For more information about these courses consult the catalogue. Note, not all of these count for “M” for Latin honors.

- AST 100 A Survey of the Universe • AST 102 Sky I: Time • AST 103 Sky II: Telescopes
- BIO 110 Women and Exercise (Section 01) • CHM 111 Chemistry I: General Chemistry
- CHM 118 Advanced General Chemistry • CSC 102 How the Internet Works • CSC 103 How Computers Work
- ECO 123 Cheaper by the Dozen • ECO 125 Economic Game Theory • ECO 150 Introductory Microeconomics • ECO 153 Introductory Macroeconomics • ECO 190 Introduction to Statistics for Economists
- EGR 100 Introduction to Engineering • EGR 101 Structures and the Built Environment
- EGR 102 Ancient Inventions • FYS 130 Lions: Science and Science Fiction • FYS 133 What Can We Know?
- FYS 135 Women of Discovery • FYS 136 People and the American City • FYS 139 Renewable Energy
- GOV 190 Empirical Methods in Political Science • LOG 100 Valid and Invalid Reasoning
- PHI 202 Symbolic Logic • PHY 105 Principles of Physics: Seven Ideas that Shook the Universe • PHY 106 The Cosmic Onion: From Quantum World to the Universe • PHY 107 Musical Sound • PHY 108 Optics is Light Work
- PSY 113 Statistical Methods in Psychology • PSY140 Statistical Methods for Undergraduate Research

Additionally, a new quantitative skills course will be run over J-term. This course will probably be designed for science and engineering students who need practice with fundamental skills.