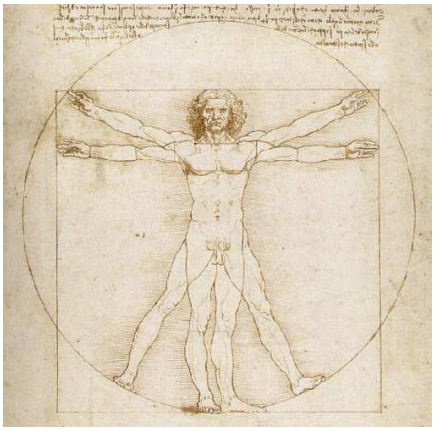
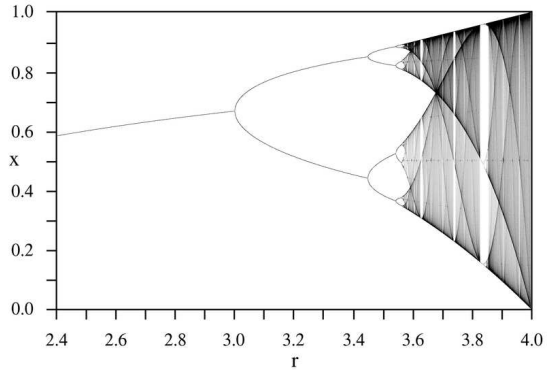
MATHEMATICS for EVERYONE!

Interested in medicine, science, finance, politics, music, computers, literature . . .
. . . you need math!





You don't have to become a math major to enjoy mathematics and benefit from fascinating offerings at Dartmouth. Mathematics is an amazing and beautiful intellectual creation, one of the human race's deepest endeavors. The world around us, and the future world we are creating, are woven through with mathematics . . . from the symmetry groups of Navajo weavings, to the airflow around a flapping bird's wing, to the security of global computer networks. These skills are also highly desirable for **your future employers**, and **grad school** applications, in a wide range of careers. You might like it so much you decide to become a major after all!

If I take ONE math course at Dartmouth. . . what should it be?

We have cross-disciplinary courses that intersect with the humanities: Math 5 *The World According to Mathematics* and Math 7 *The Philosophy and Mathematics of Infinity* show mathematics and logic as an integral part of our intellectual and cultural history. There are several other Math 5 course topics such as *Time*, *The Mathematics of Music and Sound*, and this fall, *Combinatorial Games* which includes designing your own games. If you want to see how math can be applied in the real world, try Math 6 *Introduction to Finite Mathematics*, and Math 10 *Introductory Statistics*. None of the above courses requires more than a high-school background.

For students with some calculus, Math 17 *An Introduction to Mathematics Beyond Calculus* is aimed at potential majors, but will give a flavor of what mathematicians really do, to anyone who thinks it might be fun to be serious about math. Math 20 *Discrete Probability* and Math 28 *Introduction to Combinatorics* introduce areas with real-world applications.

Economics / Finance

The mathematical understanding of markets is both exciting and *very* useful. Having math courses under your belt will expand your mind (and when it comes to the job market, your starting salary[1]!). It will also help you get to top grad schools. Quantifying uncertainty is key: Math 20 *Discrete Probability* and Math 50 *Probability and Statistical Inference* provide the tools for this. Matrix models are common in economics: Math 22 *Linear Algebra* covers this and more. A brand new

[1] as `http://www.payscale.com/index/US/Degree` will illustrate!

course covers the theory and computer modeling of derivatives: Math 86 *Mathematical Finance I* (with very reasonable prerequisites, Math 20 and 23). Next year we'll offer Math 96 *MF II*.

Science / Engineering / Computer Science

The ability to model and problem-solve mathematically now permeates the sciences even more than ever. You'll need calculus! How much depends on your field of interest. Beyond the minimum prerequisites, there are many relevant courses to choose from: Math 22 *Linear Algebra* and Math 23 *Differential Equations* form the basis for chemistry, physics, biology, and engineering.

We recently added a variety of new applied courses. Math 53 *Chaos!* explores this new area of dynamics which is universal throughout natural and human systems. Math 46 *Introduction to Applied Math* covers analytic tools for solving the math models which arise in science. If you like things quantum, try Math 66 *Mathematical Topics in Modern Physics*. If you want to learn how algorithms, coding, and data encryption work, try Math 75 *Applied Topics in Number Theory and Algebra*. Math 76 covers special topics including signal processing and waves.

Medical and Life Sciences

Genomics and bioinformatics have recently revolutionized the life sciences, enabled by mathematics and computer algorithms. A great place to start seeing the importance of math is Math 4 *Applications of Calculus to Medicine and Biology*. To learn about uncertainty and clinical trials you'll need Math 10 *Introductory Statistics*. If you're considering biology or other research and grad school, consider the courses listed above under "Science / Engineering", and Math 27 *Advanced Calculus and Dynamics in Biology and Medicine*. Finite mathematics (Math 6, see above) also covers ways in which math is applied to the life sciences.

Social Sciences

Mathematical and statistical modeling of human behavior is increasingly popular in all fields from anthropology to psychology. Elementary courses that show this connection include Math 6 and 10 (see above). The more advanced key courses are Math 36 *Mathematical Models in the Social Sciences*, and the statistics courses (Math 20, 50, see above). If you want to take this further, consider majoring in Mathematics & Social Sciences (MSS).

What can I do beyond taking courses?

Build mathematics into your major: you can **modify your major with mathematics**, do a math minor, become a major, or do a double-major! But you don't have to be a math major to take the Thayer Prize Exam (for first-years), or do **research** with a mathematics professor, be it pure or applied. Many first-year students enjoy WISP (Women in Science Program) internships. There is a thriving mathematical social life at Dartmouth, including group training sessions for the national Putnam Exam, and our Math Society, with frequent meetings, pizzas, and talks. . . . come on by!

Courses, research opportunities and activities all listed at. . .

`http://math.dartmouth.edu`