Data Science
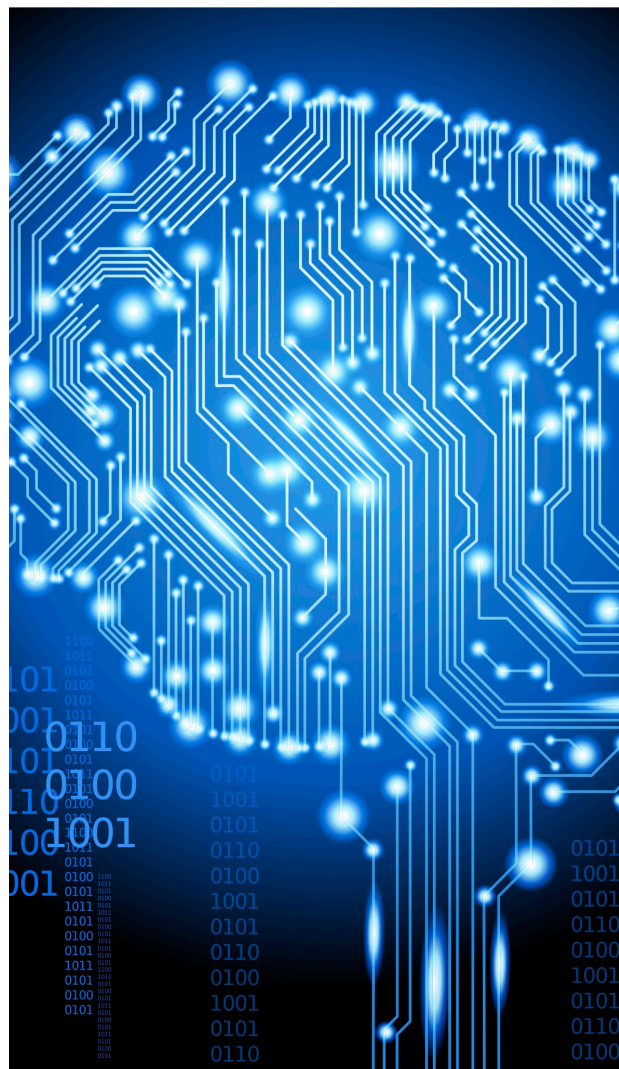
The Department of Mathematics is developing an interdisciplinary Bachelor of Science and Master of Science in Data Science, one of the hottest new areas for employment. The Department is collaborating with computer science, business, and other areas of science & engineering to develop an interdisciplinary degree in Data Science that prepares graduates to work in this exciting and explosive growth area.

UMass | Dartmouth

Department of Mathematics

http://www.umassd.edu/cas/math/

Center for Scientific Computing & Visualization Research

The Department of Mathematics is a major partner in the new Center for Scientific Computing & Visualization Research, which includes mathematicians, physicists, engineers and oceanographic scientists. The Center has research and education activities that engage graduate and undergraduate students in mathematics.

Students learn from their contemporaries who are carrying out original research projects, and from outstanding faculty who are experts in their fields.

This research includes numerical methods for partial differential equations, black holes and quantum cosmology, giant molecular clouds, star formation and Type Ia supernovae, computational and theoretical studies of the upper ocean submesoscale and mesoscale processes, computational modeling of solids and structures including biomaterials, and efficient numerical methods to study multiphase flows.

Department focus

At the University of Massachusetts Dartmouth the Department of Mathematics is preparing undergraduates for jobs of the future with leading industries in science, technology, data science, statistics and beyond.

The Department has a strong computational focus. In many aspects of applied mathematics in biology, chemistry, economics, engineering, finance, physics and social sciences the equations that are used to model natural phenomena are too complicated to find exact solutions. As a result, computational mathematicians and scientists develop and analyze new algorithms to run on high-performance computer clusters to obtain accurate numerical solutions to these equations.

Other areas of expertise include computer graphics and scientific visualization, mathematical education, and mathematical physics, The Department has an active seminar series in which experts outside the Department come to present their research.

The Department has a teaching computer laboratory with 17 networked Apple machines. Mathematics majors are encouraged to present their work in LaTeX and are exposed to computing languages such as Python, Mathematica, MATLAB and R, and the Department runs a sophomore level course in Scientific Computing.

Mathematics careers

Examples of diverse mathematics careers include:
- Data analyst
- Actuary
- Statistician, including biostatistician
- Teacher
- Commissioning editor
- Defense analyst
- Mathematical modeling consultant
- Games developer
- Financial engineer
See http://careersinmath.wordpress.com for more examples.

What do mathematicians earn?

The Bureau of Labor Statistics keeps data on the employment outlook for mathematicians, actuaries, statisticians and operations research analysts. The median annual wage of U.S. mathematicians with at least a Masters degree was $99,380 in May 2010 and for a statistician was $72,830.

The median annual salary for an actuary with a Bachelor degree and on-the-job training was $87,650 in 2010.

Data scientists, dependent on qualifications and experience, report earning from $60,000 to $115,000.

Education Portal reports that:

"*College graduates can find jobs in the federal government with a bachelor's degree being the minimum educational requirement. One such job is as a math statistician for the Bureau of Economic Analysis. These professionals work with team mates to provide economists with tools for their calculations. They manage large economy-related data sets and perform data analysis. The salary range for these individuals is from $46,551 to $74,018 per year*"

Ph.D. program

The Department participates in the Computational Science and Engineering (CSE) option of the Ph. D. program in Engineering and Applied Science. Graduate students interested in research in computational science and mathematics receive mentoring from mathematics experts, in a supportive collegial atmosphere.

Undergraduate research

Students have many opportunities during semester and Summer to engage in undergraduate research projects with expert faculty, who guide and mentor them. Students have presented their research at local, national, and international conferences. Undergraduate students have formed a local chapter of the Society for Industrial and Applied Mathematics (SIAM) which meets weekly. A student led group MPOWR (Mathematics and Physics Opportunities for Women in Research) also actively promotes mathematics and physics opportunities for women students.