

BIOMATHEMATICS
At
The University of Scranton

<http://math.scranton.edu/dept/>

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A **bachelor of science in biomathematics** leads students to work or to graduate study in areas of biology where mathematical methods prove useful. It also serves very well as a pre-medical and pre-dental program. You may be familiar with the use of statistics in experimental science but biomathematics goes beyond this. The study of epidemics (the spread of diseases) and growth of populations uses very sophisticated mathematical techniques. Scientists routinely use advanced mathematics to describe how the heart works, how blood flows, how nerve impulses are transmitted, how tumors grow, and how entire organisms grow. The mathematics describing knots (tied with string) has applications in the study of DNA in molecular biology.

At the University of Scranton biomathematics requires seven **mathematics**, six **biology**, four **chemistry**, and two **physics** courses plus a computer literacy course. Most students will also have four elective courses which can be used for more mathematics, science, or computer work. Clearly, you can describe biomathematics as a broad-based science even though your biology courses must fit in one of four tracks: **epidemiology**, **molecular biology**, **physiology**, or **population biology**. You may do biomathematics with a foreign language minor, a particularly useful option if you go to work in public health.

In addition to a strong interest in both biology and mathematics, you should have taken one year of **high school biology**, one year of **high school chemistry**, and one year of **high school physics**. You should have studied **high school algebra**, **geometry**, and **trigonometry** with some emphasis on the concept of a function. A high school calculus course is not required. Students with advanced placement in chemistry, physics, or mathematics gain the opportunity to take additional advanced science courses in college.

You may be surprised to learn of biomathematics job opportunities in such areas as **public health** where epidemiology and population biology play important roles and where jobs exist at the bachelor's, master's, and doctoral levels. However, majority of Biomathematics graduates continue their education in **medical and dental schools**. Other attend Ph.D. programs in biology, pharmacology and related fields. Doing **research** may require only a bachelor's degree but advanced positions require graduate study. Research jobs using **mathematics** or **biostatistics** can be found in **governmental**, **industrial**, or **academic** settings.