



## Major/ Career Connections

### Major Profile: **Mathematics (IRE)**

School of Science

Investigative Interest Cluster

### Is Mathematics for me?

Find out by answering the following questions. If you answer yes to most of them, read on to learn more. If not, try one of the other **Major Profiles** (<http://uc.iupui.edu/students/academics/mccs.asp>).

	No	Yes
Are you investigative, realistic, or enterprising (see <b>Interest Cluster</b> sheets)?	<input type="checkbox"/>	<input type="checkbox"/>
Do you like to solve problems in mathematical terms?	<input type="checkbox"/>	<input type="checkbox"/>
Was algebra, geometry, math, or computers your favorite high school subject?	<input type="checkbox"/>	<input type="checkbox"/>
Do you like to play strategy games like battleship or chess?	<input type="checkbox"/>	<input type="checkbox"/>
Do you like to read math and science publications?	<input type="checkbox"/>	<input type="checkbox"/>
Have you participated in quiz bowls or other competitive events?	<input type="checkbox"/>	<input type="checkbox"/>
Have you enjoyed serving as a treasurer for an organization?	<input type="checkbox"/>	<input type="checkbox"/>

### What is Mathematics?

Mathematics is the study of quantitative relationships expressed in numbers and symbols. It focuses on mathematical concepts and theories and involves their formulation, testing, interpretations, and practical application. Mathematics is usually referred to as either pure (more theoretical and abstract) or applied (more practical and visibly problem solving). Everyone uses mathematics in some form. A minimal understanding and use of mathematics is considered basic to competent daily life. Major branches include arithmetic, algebra, geometry, trigonometry, calculus, probability, and statistics.

### What Courses Will I Take?

- Analytical Geometry
- Calculus
- Geometry
- Elementary Linear Algebra
- Numerical Methods
- Discrete Modeling & Game Theory
- Mathematical Theory of Interest
- History of Mathematics
- Foundations of Analysis
- Probability and Statistics

### What are Some Related Majors?

- Anatomy (IRE)
- Chemical Engineering (IRE)
- Anthropology (IRE)
- Physics (IRE)
- Physiology (IRE)
- Professional Aircraft Pilot (RIE)
- Mechanical Engineering (RIE)
- Marketing Research (IER)
- Economics (ISE)
- Actuarial Science (ISE)

### What Skills Will I Develop?

This major provides the option to specialize in pure mathematics, applied mathematics, actuarial science, or secondary school teaching. In each case a slightly different skill set will be developed. In all cases you will develop analytical skills, critical and logical thinking skills, problem-solving skills, proficiency in writing, speaking, memorization, and assembly language.

## Where Could I Work?

Over half of all mathematics majors work in private for-profit businesses. A significant portion of others work in education or for the government/military. More applied mathematics majors work in business than general mathematics majors (The College Majors Handbook, 2004). Graduates can become actuaries, economists, and business people or professors, working with abstractions and theories (Guide to College Majors, 2008).

## What Job Opportunities Exist?

### Related Careers

According to a national survey of college graduates most graduates from bachelor's level mathematics programs work in fields that are closely or somewhat related to their undergraduate studies. More general math majors work in education than applied math majors (The College Majors Handbook, 2004). Following are examples of careers a math major might pursue (Guide to College Majors, 2008).

- Actuary
- Astronomer
- Auditor
- Avionics Technician
- Bank Officer
- Bookkeeper
- Computer Programmer
- Mathematician
- Physicist
- Statistician

### Employment Outlook

Employment for mathematicians is projected to grow about as fast as the average through 2016. The most common fields in which mathematicians study and find work are computer science and software development, physics, engineering, and operations research. Employment for statisticians projected to grow about as fast as the average through 2016. Technological advances are expected to spur demand for statisticians (Occupational Outlook Handbook, 2008-09).

### Salary Expectations

Salary varies depending on the type of work environment and kinds of duties required by different employers. The average starting salary for mathematics majors, as reported by the National Association of Colleges and Employers in 2008, is \$49,759 per year. Median annual earnings of mathematicians were \$86,930 and statisticians were \$65,720 (OOH, 2008-09).

## What Graduate/Professional School Opportunities Exist?

Many positions in this field require an advanced degree. 45% of general mathematics majors and 31% of applied mathematics majors proceed to earn an advanced degree (The College Majors Handbook, 2004). Some continue studies in one of the following areas.

- Actuarial Science
- Computer Science
- Engineering
- Medicine
- Economics
- Law
- Operations Research
- Business Administration
- Education

## Where Can I Get More Information?



IUPUI School of Science	<a href="http://www.math.iupui.edu/">http://www.math.iupui.edu/</a>
Mathematical Science Department	<b>Office:</b> LD 270 <b>Phone:</b> (317) 274-4127
Academic Advising at IUPUI	<a href="http://uc.iupui.edu/students/academics/index.asp">http://uc.iupui.edu/students/academics/index.asp</a>
Career Counseling at IUPUI	<a href="http://uc.iupui.edu/students/career/index.asp">http://uc.iupui.edu/students/career/index.asp</a>
Jobs/ Associations/ Other Resources	<a href="http://www.uncwil.edu/stuaff/career/Majors/math.htm">http://www.uncwil.edu/stuaff/career/Majors/math.htm</a>
Mathematical Association of America	<a href="http://www.maa.org/">http://www.maa.org/</a>
Institute for Mathematical Statistics	<a href="http://www.imstat.org/">http://www.imstat.org/</a>