

Opportunities in Mathematical Studies AT SIUE:

STATISTICS

Career Outlook

Excellent jobs are available to persons with a bachelor's degree with a major or minor in statistics. Major corporations and most government agencies continually seek talented people at this level. According to the *Occupational Outlook Handbook* of the Bureau of Labor Statistics, employment opportunities for well-qualified statisticians are expected to be favorable through the coming decade. Starting salary offers for mathematics/statistics graduates with bachelor's degree averaged \$46,466 a year as of 2001.

Statistics has been called the "science of decision-making in the face of uncertainty." By performing expert analyses and interpretations of data when uncertainties are involved, statisticians often provide information of great value in reaching wise decisions. The importance of statistics in reaching decisions is more widely recognized now than ever before. As for the future, the areas of challenge to the statistician seem limitless.

Working in a changing field with new methods being constantly generated and using the modern computer as a tool, statisticians apply statistical methodology in diverse fields such as the following:

Actuarial Science – designing pension plans, determining premium rates.

Agriculture – Developing superior varieties of grain and livestock, increasing egg and milk production, assessing the effectiveness and potential danger of pesticides.

Biology – studying genetics, creating theoretical models of the nervous system, exploring the interaction of species within their environment.

Business – estimating the volume of retail sales, designing inventory control systems, producing auditing and account procedures.

Economics – Measuring cost of living, volume of trade, labor force size, standard of living, consumer behavior.

Engineering – determining reliability and maintainability, improving product design and testing performance.

Health and Medicine – developing and testing new drugs and vaccines, diagnosing and treating disease.

Operations Research – developing and using mathematical models to simulate the industrial or government process.

Psychology – Measuring learning ability, intelligence, and personality characteristics; studying behavior.

Quality Control – Determining sampling procedures for quality control or in-process control.

Sociology – Developing consumer surveys to study social attitudes, testing theories and social systems, studying population growth.

Educational Preparations

To be admitted to the mathematics and statistics program, a student must satisfy the requirements for admission to a program in the College of Arts and Sciences and must satisfy one of the following:

- Complete seven high school semesters of college preparatory mathematics including a course in trigonometry, and have no semester grade lower than a C in those courses.
- Complete MATH 120 and 125 or mathematics courses having these courses as prerequisites (or equivalent courses at another accredited institutions of higher education), have a GPA of 2.0 or higher in all college mathematics and have a GPA of 2.0 or higher in all college courses taken.

High school deficiencies and AD (academic development) courses must be completed before admission.

Typical Program of Study Statistics

Freshman Year	Semester Hours
MATH 150 – Calculus I	5
General Education	9
	14
MATH 152 – Calculus II	5
CS 140 – Introduction to Computing I.....	3
General Education	9
	17
Sophomore Year	
MATH 250 – Calculus III	4
PHYS 211a – University Physics	4
PHYS 212a – University Physics Lab I	1
MATH 223 – Logic & Math. Reasoning.....	3
General Education	4
	16
MATH 321 – Linear Algebra I	3
MATH 350 – Introduction to Analysis	3
Supporting courses or Minor.....	3
General Education	7
	16
Junior Year	
STAT 480a – Introduction to Math. Statistics.....	3
MATH, STAT or OR elective	3
Supporting courses or Minor.....	6
General Education	4
	16
STAT 480b – Introduction to Math. Statistics.....	3
MATH, STAT or OR elective	3
Supporting courses or Minor.....	6
	15
Senior Year	
MATH 498 – Senior Seminar.....	2
MATH, STAT or OR elective	3
Supporting courses or Minor.....	3
General Education.....	3
Electives.....	4
	15
STAT 482 – Regression Analysis.....	3
MATH, STAT or OR elective	3
MATH 499 – Senior Project.....	2
General Education.....	3
Electives	4
	15
Total hours for graduation	124

Faculty

All 20 full-time faculty members in the Department of Mathematics and Statistics hold doctorates. Some have practical experience in industry and government. Our faculty members are active publishing their work in professional journals and presenting results at numerous international and national conferences. For their activities they received both external and internal research grants and scholarship awards. Several of the faculty members hold leadership positions in professional organizations and editorial boards. Four faculty members have received Teaching Excellence Awards or Teaching Recognition Awards.

Scholarships and Awards

The Office of Student Work and Financial Assistance administers several federal, state and institutional financial aid programs, including scholarships, grants and loans. Early application is advised.

Facilities

Modern computer facilities are extremely important to most mathematical scientists and probably will be more important in the future. In recognition of this fact, all mathematics majors must learn a computer programming language and are encouraged to use computers. Math students have access to more than 500 state-of-the-art PCs in over a dozen computer labs on campus. SIUE has site licenses for several popular mathematical software packages, including Mathematica, MATLAB, SAS, and Minitab. The University's Lovejoy Library includes extensive collections of periodicals and books about mathematics and statistics.

Graduate Study

Employment prospects remain strong for personnel with advanced training in statistics. As a result, majors in the statistics option are encouraged to take courses that will prepare them for graduate study as well as for employment immediately after graduation. Students may earn master's degrees at SIUE with emphases in statistics and operations research.

To Learn More ...

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