

STATISTICS

THE GEORGE R. BROWN SCHOOL OF ENGINEERING

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DEGREES OFFERED: BA, MSTAT, MA, PHD

Course work in statistics acquaints students with the role played in the modern world by probabilistic and statistical ideas and methods. Students grow familiar with both the theory and the application of techniques in common use as they are trained in statistical research. The flexibility of the undergraduate program allows students to concentrate on theoretical or applied training, or they may link their studies in statistics to work in other related departments (see majors in economics, education, electrical and computer engineering, computational and applied mathematics, managerial studies, mathematics, political science, and psychology). Graduate study has concentrations in applied probability, Bayesian methodology, bioinformatics, biomathematics, biostatistics,

computational finance, data analysis, density estimation, epidemiology, image processing, model building, quality control, statistical computing, spatical processes, stochastic processes, and time series analysis. A joint MBA/master of statistics degree also is available in conjunction with the Jesse H. Jones Graduate School of Business.

DEGREE REQUIREMENTS FOR BA IN STATISTICS

For general university requirements, see Graduation Requirements (Undergraduate Students section, pages 2–5). The degree requirements in statistics are:

- MATH 101/102 *Single Variable Calculus I and II*
- MATH 211 *Ordinary Differential Equations and Linear Algebra*
- CAAM 210 or 211 *Introduction to Engineering Computation*
- STAT 310 *Probability and Statistics*
- STAT 405 *Statistical Computing and Graphics*
- STAT 410 *Introduction to Statistical Computing and Regression*
- STAT 450 *Statistical Design in Practice*
- Six elective courses at the 300 level or higher. At least four courses must be from the statistics department. Courses not from the department require approval from a statistics major advisor.
- STAT 305, STAT 312 and STAT 331 may not count as electives; however, if a student takes STAT 305 or STAT 340 plus either STAT 312 or STAT 331 he/she may substitute both courses for STAT 310.

Mathematically oriented students should also take MATH 212 *Multivariable Calculus* and MATH 355 *Linear Algebra* (or CAAM 335 *Matrix Analysis*).

The department offers a minor in statistics and a collaborative minor in computational finance jointly with the economics department (see Financial Computation and Modeling minor).

COURSE REQUIREMENTS FOR MINOR IN STATISTICS

There are two options available to those wishing to minor in statistics. Track A is designed for mathematically sophisticated students who wish to understand not only how statistical methods are used, but also how they are developed. Track B is designed to help students develop a working knowledge of statistics and the wide range of possibilities for the use and misuse of statistical methods.

Students must complete at least six courses (a minimum of 18 credit hours).

Required classes:

- *Track A:* STAT 310 *Probability and Statistics*
STAT 405 *Statistical Computing and Graphics*
STAT 410 *Introduction to Regression*
- *Track B:* STAT 100 *Data, Models and Reality*
STAT 280 *Elementary Applied Statistics* **or** STAT 305 *Intro to Statistics for the Biosciences*
STAT 385 *Methods for Data Analysis and System Optimization*
- Three electives in statistics at the 300 level or higher.

Suggested electives are:

- *Track A*: STAT 313, STAT 411, STAT 421, STAT 422, STAT 431, STAT 449
- *Track B*: STAT 405, STAT 440, STAT 453, STAT 482, STAT 484, STAT 486

No more than three courses can apply from study abroad or transfer credits.

DEGREE REQUIREMENTS FOR MSTAT, MA, AND PHD IN STATISTICS

For general university requirements, see Graduate Degrees (Graduate Students section, pages 3–4). Admissions applications should include scores on the Graduate Record Examination (GRE) in the quantitative, verbal, and analytical tests. Financial support is available for well-qualified doctoral students. Course work for all degree programs should be at the 400 level or above, although two approved 300-level courses may be accepted.

Master's Programs—Candidates for the nonthesis MStat degree must complete 30 semester hours of approved course work. Candidates for the MA degree in statistics must complete 30 semester hours of approved course work as well as one of the following: (1) complete an original thesis and defend it in a public oral examination; or (2) perform satisfactorily on the second-year PhD comprehensive examinations and complete a major project.

PhD Program—Candidates for the PhD degree in statistics must complete at least 90 semester hours of approved course work beyond the bachelor's degree and a minimum of 60 hours beyond a master's degree, perform satisfactorily on preliminary and qualifying examinations, and complete an original thesis with a public oral defense. All STAT graduate students are assigned a limited amount of teaching and other departmental service as part of their graduate education. The assignment usually entails less than 10 hours per week, averaged over the semester. Students completing the PhD degree in four years will be assigned no more than six semesters of service.

See STAT in the Courses of Instruction section.