STATISTICS

Statistics is the science that makes decisions in the face of uncertainty based on numerical measurements or information. The ubiquitous nature of statistics means that statisticians work with professionals in almost every field of study to analyze trends, detect patterns and build mathematical models from the information known as data.
CAREERS

Statisticians use quantitative tools and communication skills to work on many challenging problems:
- evaluating the environmental impact of air, water and soil pollutants
- designing and analyzing clinical trials to determine the efficiency of new health treatments, medications or devices
- estimating the insurance premiums for life, health, automobile and property as actuaries
- analyzing educational performance-based standardized tests and developing survey instruments to find areas of strength and weakness in the educational process
- designing studies for and analyzing data from engineering experiments to increase performance, safety and productivity.

REQUIREMENTS

The minimum number of semester credit hours required for the Bachelor of Science degree in Statistics is 120.

A. 22–23 semester credit hours of required courses in the computational and mathematical sciences
   or
   STA 3003 Applied Statistics
   or
   STA 1053 Basic Statistics
   or
   STA 3523 Mathematical Statistics
   or
   STA 3313 Experiments and Sampling
   or
   STA 1993 Statistical Methods for the Life and the Social Sciences

   or
   CS 1073 Introductory Computer Programming for Scientific Applications
   or
   CS 1713, 1711 Introduction to Computer Science and Recitation
   or
   CS 2073 Computer Programming with Engineering Applications

   or
   MAT 1214 Calculus I
   MAT 1223 Calculus II
   MAT 2213 Linear Algebra
   MAT 3013 Foundations of Mathematics
   MAT 3213 Foundations of Analysis

B. 36 semester credit hours in the major
   1. 24 semester credit hours of required statistics courses
      STA 1053 Basic Statistics
      STA 1993 Statistical Methods for the Life and the Social Sciences
      STA 3003 Applied Statistics
      STA 3113 Experiments and Sampling
      STA 3133 Probability and Statistics
      STA 3523 Mathematical Statistics
      STA 4133 Statistical Computing Packages
      STA 4713 Applied Regression Analysis
      STA 4723 Design and Analysis of Experiments

   2. 12 semester credit hours selected from the following specialized areas of study in statistics:
      Biostatistics
      STA 3013 Multivariate Analysis for the Life and Social Sciences
      STA 3813 Discrete Data Analysis
      STA 4143 Data Mining
      STA 4903 Survival Analysis

      Process Improvement
      STA 3433 Applied Nonparametric Statistics
      STA 4633 Introduction to Stochastic Processes
      STA 4753 Time-Series Analysis
      STA 4803 Statistical Quality Control

      3. 21 semester credit hours of upper-division electives in disciplines where statistics is actively applied and practiced. These courses should be approved by the designated statistics faculty member. Students may choose courses from two of the specialization tracks listed below or may take a minor in a subject using statistics.

Mathematics
   MAT 3223 Complex Variables
   MAT 3613 Differential Equations
   MAT 3633 Numerical Analysis
   MAT 4213 Real Analysis
   or
   MAT 4313 Applied Combinatorics

Biology
   BIO 3083 Biosocial Genetics
   BIO 3323 Evolution
   BIO 4333 Population Genetics

Business
   ECO 3123 Introduction to Econometrics and Business Forecasting
   MGT 3083 Marketing Research
   MS 3063 Decision Support Systems
   MS 4323 Simulation Applications in Business

Environmental Science/Geography
   ES 3013 Global Positioning System Mapping for GIS
   ES 4093 Principles of Remote Sensing
   GRG 3314 Introduction to Geographic Information Systems
   GRG 3334 Advanced Geographic Information Systems

Engineering and Computer Science
   CS 3313 Numerical Linear Algebra
   CS 4633 Simulation
   EE 3423 Signals and Systems I
   ME 4723 Reliability and Quality Control in Engineering Design

Psychology
   PSY 3013 Psychological Measurement
   PSY 3063 Psychological Testing
   PSY 3403 Experimental Psychology
   PSY 3413 Experimental Psychology Laboratory

Social Sciences
   SOC 3033 Population Dynamics
   SOC 3223 Demographic Techniques
   SOC 3313 Conceptualization and Measurement in Sociology
   SOC 3333 Survey Research Methods

MINOR IN APPLIED STATISTICS

The minor in applied statistics is open to all majors in the university. All students pursuing the minor in applied statistics must complete 21 semester credit hours.

A. 6 semester credit hours of required courses from one of the following four sets of sequences:
   1. STA 1053 Basic Statistics
      or
      STA 1993 Statistical Methods for the Life and the Social Sciences
      or
      STA 3003 Applied Statistics
      or
      STA 3113 Experiments and Sampling
      or
      STA 3133 Probability and Statistics
      or
      STA 3523 Mathematical Statistics
      or
      STA 4133 Statistical Computing Packages
      or
      STA 4713 Applied Regression Analysis
      or
      STA 4723 Design and Analysis of Experiments

   2. PSY 2073 Statistics for Psychology
      or
      STA 3003 Applied Statistics
      or
      STA 3113 Experiments and Sampling
      or
      STA 3133 Probability and Statistics
      or
      STA 3523 Mathematical Statistics
      or
      STA 4133 Statistical Computing Packages
      or
      STA 4713 Applied Regression Analysis
      or
      STA 4723 Design and Analysis of Experiments

   3. MS 3023 Business Statistics with Computer Applications I
      or
      MS 3043 Business Statistics with Computer Applications II
      or
      STA 2303 Applied Probability and Statistics for Engineers
      or
      STA 3513 Probability and Statistics
      or
      STA 3533 Probability and Random Processes
      or
      STA 3543 Statistics and Experimental Design for Computer Science

   4. STA 3003 Applied Statistics
      or
      STA 3013 Multivariate Analysis for the Life and Social Sciences
      or
      STA 3813 Discrete Data Analysis
      or
      STA 4143 Data Mining
      or
      STA 4753 Time-Series Analysis
      or
      STA 4803 Statistical Quality Control
      or
      MAT 4803 Statistical Quality Control

B. 15 semester credit hours selected from the following list of courses:
   ECO 3123 Introduction to Econometrics and Business Forecasting
   MGT 4313 Applied Combinatorics
   ME 4723 Reliability and Quality Control in Engineering Design
   STA 3013 Multivariate Analysis for the Life and Social Sciences
   STA 3313 Experiments and Sampling
   STA 3433 Applied Nonparametric Statistics
   STA 3813 Discrete Data Analysis
   STA 4133 Statistical Computing Packages
   STA 4143 Data Mining
   STA 4713 Applied Regression Analysis
   STA 4723 Design and Analysis of Experiments
   STA 4753 Time-Series Analysis
   STA 4803 Statistical Quality Control
   STA 4903 Survival Analysis
   STA 4993 Special Studies in Statistics

   To declare a minor in applied statistics, obtain advice, and seek approval of substitutions for course requirements, students must consult the College of Business Undergraduate Advising Center or the designated statistics faculty member.

Information gathered from the 2006–2008 undergraduate catalog.
http://www.utsa.edu/ucat/chapter2/