COLLEGE OF SCIENCES
SCHOOL OF MATHEMATICAL AND STATISTICAL SCIENCES
BACHELOR OF SCIENCE (STATISTICS)

Statistics is the discipline that educates a human being about Data. Data arise in all academic disciplines as well as in all real life situations. Experts in education, health profession, business and industry need the help of statistics for better understanding of their own subjects. Using a statistical software package, any layman can generate tables and graphs. But statistical software does not provide the intellectual capability to decide how a sample has to be collected, or how a sample can be made representative. This can be achieved through expertise in statistics. A BS Degree in statistics can provide a person with all these knowledge and understanding and also more importantly a lucrative career due to the growing needs of dealing with Big Data in astronomical, medical and various biological fields.

PROGRAM OVERVIEW

For a BS in Statistics degree, students complete the 42 hours of general core requirement that include 3 hours of statistics (MATH 1342/MATH 1343) and 3 hours of computer science (CSCI 1380), 39 hours of statistics core (18 advanced), 12 advanced hours of statistics electives, 9 advanced hours of math electives from a recommended list and 18 hours (9 advanced hours) of free electives from a recommended list. The students should maintain an overall GPA of at least 2.25 throughout the major and should complete with a GPA of at least 2.5 at the end.

A. GENERAL EDUCATION CORE (42 HOURS)

Students must fulfill the general education core requirements. The courses listed here are required for both degree requirements and general education core requirements

REQUIRED
020 – Mathematics/Statistics – 3 hours
Elementary Statistical Methods (MATH 1342) Or
Introduction to Biostatistics (MATH 1343)
090 - Integrative/Experiential Learning Option – 3 hours
Computer Science I (CSCI 1380)

RECOMMENDED
030 - Life and Physical Sciences – 6 hours (lecture part only)
Intro to Environmental Sciences I (ENVR 1401) or General Biology I (BIOL 1406) or General Biology I Honors (BIOL 1487)
Intro to Environmental Sciences II (ENVR 1402) or General Biology II (BIOL 1407) or General Biology II Honors (BIOL 1488)
080 - Social and Behavioral Sciences – 3 hours

CHOOSE FROM
        Introduction to Economics (ECON 1301)
        Principles of Macroeconomics (ECON 2301)

090 - INTEGRATIVE/EXPERIENTIAL LEARNING OPTION – 2 HOURS
   2 Lab Hours from
Intro to Environmental Sciences I (ENVR 1401) or General Biology I (BIOL 1406) or General Biology I Honors (BIOL 1487)
Intro to Environmental Sciences II (ENVR 1402) or General Biology II (BIOL 1407) or General Biology II Honors (BIOL 1488)

B. MAJOR REQUIREMENTS – 60 HOURS MINIMUM (39 ADVANCED MINIMUM)

1. STATISTICS CORE – 39 HOURS (18 HOURS ADVANCED)
Calculus I (MATH 2413) or Calculus I Honors (MATH 2487)
Calculus II (MATH 2414) or Calculus II Honors (MATH 2488)
Calculus III (MATH 2415)
Linear Algebra (MATH 2318)
Essentials of Statistics (STAT 2331)
Statistical Computing and Data Management (STAT 2336)
Probability and Statistics (STAT 3337)
Mathematical Statistics (STAT 3338)
Applied Regression Analysis (STAT 3335)
Sampling (STAT 3336)
Experimental Design and Analysis (STAT 4332)
Stat Project (STAT 4390)

2. ADVANCED STATISTICS ELECTIVES – 12 HOURS (12 HOURS ADVANCED) FROM BELOW:
Multivariate Analysis (STAT 3351)
Introduction to Linear Models (STAT 3352)
Introduction to Stochastic Processes (STAT 4341)
Time Series Analysis (STAT 4342)
Introduction to Simulation (STAT 4345)
Introduction to Bayesian Inference (STAT 4346)
Nonparametric Statistics (STAT 4347)
Categorical Data Analysis (STAT 4351)
Survival Analysis (STAT 4352)
Statistical Consulting (STAT 4392)
Special Topics in Statistics (STAT 4399)

Courses like Introduction to Bioinformatics, Environmental and Spatial Statistics, Statistical Data Mining and Machine Learning, Big Data Analytics, Structural Bioinformatics could be some recommended courses for Special Topics in Statistics.

3. ADVANCED MATH ELECTIVES – 9 HOURS (9 HOURS ADVANCED) FROM BELOW:
Differential Equations (MATH 3341)
Linear Optimization (MATH 3345)
Introduction to Math Proof (MATH 3350)
Applied Discrete Mathematics (MATH 3361)
Real Analysis I (MATH 3372)
Actuarial Statistical Estimates (MATH 3383)
Theory of Interest (MATH 3385)
Actuarial Financial Math (MATH 3386)
Special Topics in Mathematics (MATH 3399)
Complex Variables (MATH 4342)

C. FREE ELECTIVES (18 HOURS - 9 HOURS ADVANCED)

RECOMMENDED
Genetics (BIOL 3413)
Introduction to Molecular Biology (BIOL 3415)
Computer Science II (CSCI 2380)
Discrete Data Structures (CSCI 3310)
Algorithms and Data Structures (CSCI 3333)
Database Design and Implement (CSCI 4333)

TOTAL CREDIT HOURS FOR GRADUATION (MINIMUM) – 120 Hours
TOTAL ADVANCED HOURS (MINIMUM) – 48 Hours

ADMISSION, PROGRESSION, AND GRADUATION REQUIREMENTS, if applicable:

PROGRESSION REQUIREMENTS:
• The student must maintain an overall GPA of at least 2.25 at the end of 90 credit hours that count towards the degree.

GRADUATION REQUIREMENTS:
• The student must complete all Statistics core course requirements with grades of 'C' or better.
• The student must have an overall GPA of 2.5 or better in the courses listed under B above.
• In addition to the graduation requirements listed in the UTRGV 2015-2017 Undergraduate Catalog, demonstration of proficiency in a language other than English is required at the undergraduate level equivalent to a minimum of six credit hours. Proficiency can be demonstrated by a college credit exam, a placement test approved through the UTRGV Department of Writing and Language Studies, and/or up to six credit hours of college-level language coursework.

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