STATISTICS (B.S.)

The courses offered by the Department of Mathematics serve several purposes; they supply the mathematical preparation necessary for students specializing in the physical, life or social sciences, in business administration, in engineering, and in education; they provide a route by which students may achieve a level of competence to do research in any of several special mathematical areas; they allow students to prepare themselves for work as mathematicians and statisticians in industry and government; and they give an opportunity to all inquisitive students to learn something about modern mathematical ideas.

Admission Requirements

Admission requirements for this program are satisfied by the general requirements for undergraduate admission (http://bulletins.wayne.edu/undergraduate/general-information/admission/) to the University. Undergraduates declaring a mathematics major are strongly encouraged to meet with a departmental advisor before doing so. After a student's acceptance as a major, a student should consult a Departmental advisor at least once a semester to verify progress.

Program Requirements

Candidates must complete 120 credits in coursework including satisfaction of the University General Education Requirements (http://bulletins.wayne.edu/undergraduate/general-information/general-education/) and the College of Liberal Arts and Sciences Group Requirements (http://bulletins.wayne.edu/undergraduate/college-liberal-arts-sciences/bachelors-degree-requirements/), as well as the departmental major requirements cited below. All coursework must be completed in accordance with the regulations of the University (http://bulletins.wayne.edu/undergraduate/general-information/academic-regulations/) and the College (http://bulletins.wayne.edu/undergraduate/college-liberal-arts-sciences/academic-regulations/) governing undergraduate scholarship and degrees.

It is each student's responsibility to learn the requirements, policies, and procedures governing the program the student is following and to act accordingly. Students should consult the Department of Mathematics' undergraduate academic advisor on a regular basis. Although the advisor will provide assistance, the responsibility for fulfilling degree requirements remains with the student.

Major Requirements

Residency: A minimum of 15 credits of major requirements at or above MAT or STA 5030 must be taken at Wayne State University. This includes courses that are considered equivalent to the Mathematics Department's MAT or STA courses and that are approved by the Mathematics Department to meet a major requirement.

Minimum Grade Requirements: The following grade requirements must be satisfied in the major.

- C- or better in all required coursework.
- C or better average for all coursework.

Notes:

1. STA courses previously designated by MAT (for example STA 2210 was previously labelled MAT 2210) are the same courses and meet the same requirements.
2. Although this policy is found in the College of Liberal Arts and Sciences (CLAS) requirements, it is worth noting that if a student is majoring in a CLAS major, they must obtain at least one minor that has 3 unique courses from the major. This means that at least 3 courses used to complete requirements in the minor must not be used to complete requirements in the major.
3. The required courses listed are the minimum that students should complete. Students are encouraged to take more courses in order to strengthen their background and enhance their prospects for employment and/or graduate school.

Course Requirements

Code	Title	Credits
Prerequisites		
MAT 2010	Calculus I	4
MAT 2020	Calculus II	4
MAT 2030	Calculus III	4
MAT 2250	Elementary Linear Algebra	3
Choose one of the following options (STA 2210 is preferred):		3-4
STA 2210	Probability and Statistics	
BE 2100	Basic Engineering III: Probability and Statistics in Engineering	
ECO 5100	Introductory Statistics and Econometrics	
PH 3200	Introduction to Biostatistics	
TIS 3400	Quantitative Methods II: Statistical Methods	
Core Computing Course (select one of the following)		**3-4**
CSC 1100	Problem Solving and Programming	
CSC 2000	Introduction to C++ Programming Language	
Core Statistics Courses		**11**
MAT 5700	Introduction to Probability Theory	
STA 5800	Introduction to Mathematical Statistics	
STA 6840	Applied Regression Analysis [1]	
Core Statistical Computing Course		**3**
STA 5030	Statistical Computing and Data Analysis	
Additional Statistics Course (select one of the following)		**3-4**
MAT 5540	Topological Data Analysis	
MAT 5710	Introduction to Stochastic Processes	
MAT 5770	Mathematical Models in Operations Research	
STA 5820	Introduction to Data Science	
STA 5830	Applied Time Series	
MAT 5890	Special Topics in Mathematics (Topic must be approved by the Math Department) [2]	
STA 6830	Design of Experiments	
Elective Courses (Select two of the following, one of which must be chosen from the first 7 options, ending with MAT 5870.) [3]		**6-8**
Any additional course listed in "Additional Statistical Courses". [2]		
MAT 2350	Elementary Differential Equations (MAT 2350 is recommended, if available.)	
or MAT 2150	Differential Equations and Matrix Algebra	
MAT 5070	Elementary Analysis [3]	
MAT 5100	Numerical Methods I	
MAT 5410	Applied Linear Algebra	
MAT 5600	Introduction to Analysis I	
MAT 5870	Methods of Optimization	
MAT 5740	The Theory of Interest	
ECO 6100	Introduction to Econometrics	
TIS 5570	Introduction to Business Analytics	
CSC 5825	Introduction to Machine Learning and Applications	
DSA 6000	Data Science and Analytics	
EER 8800	Variance and Covariance Analysis	

EER 8820	Multivariate Analysis
EER 8860	Nonparametric, Permutation, Exact, and Robust Methods
EER 8992	Research and Experimental Design
IE 6210	Applied Engineering Statistics
IE 6611	Fundamentals of Six Sigma
PS 5630	Statistics and Data Analysis in Political Science I
PSY 6500	Advanced Psychological Statistics
SOC 6280	Social Statistics
SW 9100	Social Statistics and Data Analysis
Capstone Course	
MAT 5993	Writing Intensive Course in Mathematics [1]
Total Credits	**44-49**

1 MAT 5993 is linked with STA 6840, and so they must be taken together.

2 MAT 5890 must be a statistics course and must be approved by the Department of Mathematics. In case of two or more different MAT 5890 courses, one will be counted as the "Additional Statistics Course" and the other as an "Elective Course."

3 Strongly recommended for students interested in graduate study.