STATISTICS (M.S. IN DATA SCIENCE AND BUSINESS ANALYTICS)

The Master of Science in Data Science and Business Analytics program is designed to give graduates a core of computing, business, statistics, and operations research skills to identify, analyze, and solve analytics problems; to integrate those skills in an interdisciplinary way that other, single-discipline-oriented analytics degree might not; and to provide in-depth training in an analytics area of specialization. The Statistics major is designed to meet demand in industry for talent with solid statistical foundations.

Admission Requirements

Applicants must meet requirements for admission to the Graduate School (https://bulletins.wayne.edu/graduate/general-information/admission/). Additional admission requirements include:

- GPA of 3.0 or better
- English language proficiency passing test scores (for international applicants)
- Multivariate calculus course (equivalent to MAT 2030)
- One linear algebra course (equivalent to MAT 2250)
- One basic statistics course (equivalent to STA 2210, MAT 6150 or DSE 5070)
- One programming course (equivalent to CSC 1100 or higher or DSE 5070)

Students who have not completed the above courses can be admitted but have to complete corresponding courses before starting the program.

Program Requirements

Completion of the Master of Science in Data Science and Business Analytics with a major in Statistics requires a minimum of 30 credits. Courses cannot be double-counted even if listed in multiple modules. Coursework includes:

Code	Title	Credits
Module I: Core Courses		
The following 3 courses (9 credits) are required.		
DSB 6000	Data Science Strategy & Leadership	
DSE 6000	Computing Platforms for Data Science	
STA 5030	Statistical Computing and Data Analysis	
Module II: Major Courses		
Students have to finish following courses (11 credits) if they have not completed the courses before admission.		
MAT 5700	Introduction to Probability Theory	
STA 5800	Introduction to Mathematical Statistics	
STA 5820	Introduction to Data Science	
or CSC 5825	Introduction to Machine Learning and Applications	
If any of the above courses were completed before admission to the program, students must complete three courses (9 credits) in Module II. Students can choose from any of the following courses.		
STA 7810	Advanced Statistics Theory I	
DSA 6100	Statistical Learning for Data Science and Analytics	
DSA 6200	Operations Research	
or MAT 5770	Mathematical Models in Operations Research	
DSE 6200	Modern Databases	
CSC 7825	Machine Learning	
Module III: Elective Courses		
Students are required to select 4-6 credits from the following list. The number of credits will be based on coursework completed for Module II.		
Statistics Courses		
STA 5830	Applied Time Series	
STA 6830	Design of Experiments	
STA 6840	Applied Regression Analysis	
STA 7810	Advanced Statistics Theory I	
Probability Courses		
MAT 5710	Introduction to Stochastic Processes	
MAT 5750	Mathematics of Finance	
Mathematics Courses		
MAT 5070	Elementary Analysis	
MAT 5100	Numerical Methods I	
MAT 5410	Applied Linear Algebra	
MAT 5600	Introduction to Analysis I	
MAT 5610	Introduction to Analysis II	
MAT 5770	Mathematical Models in Operations Research	
MAT 5870	Methods of Optimization	
MAT 5890	Special Topics in Mathematics	
MAT 6420	Advanced Linear Algebra	
MAT 6990	Internship in Mathematical Sciences	
Computer Science Courses		
CSC 5800	Intelligent Systems: Algorithms and Tools	
CSC 6220	Parallel Computing I: Programming	
CSC 6710	Database Management Systems I	
CSC 6800	Artificial Intelligence I	
CSC 7220	Parallel Computing II: Algorithms and Applications	
CSC 7300 & CSC 7301	Bioinformatics I: Biological Databases and Data Analysis and Bioinformatics I: Programming Lab	
CSC 7410	Bioinformatics II	
CSC 7710	Database Management Systems II	
CSC 7800	Artificial Intelligence II	
CSC 7810/ IE 7811	Data Mining: Algorithms and Applications	
CSC 7825	Machine Learning	
Industrial Engineering Courses		
IE 7220	Advanced Statistical Methods	
IE 7710	Stochastic Processes	
IE 7860	Intelligent Analytics	
Economics Courses		
ECO 7110	Econometrics II	
ECO 7120	Econometrics III	
Data Science Courses		
DSA 6200	Operations Research	
DSA 6300	Decision Analysis and Simulation	
DSE 6200	Modern Databases	
Technology and Information Systems Analysis Courses		
TIS 7570	Advanced Business Analytics	
Module IV: Practicum		
Select 6 credits from the following:		
STA 5830	Applied Time Series	
STA 6830	Design of Experiments	

STA 6840	Applied Regression Analysis
STA 7800	Data Science and Analytics Practicum
MAT 7999	Master's Essay Direction
IE 7860	Intelligent Analytics

Academic Scholarship: All coursework must be completed in accordance with the regulations of the Graduate School (https://bulletins.wayne.edu/graduate/general-information/academic-regulations/) and the College of Liberal Arts and Sciences (https://bulletins.wayne.edu/graduate/college-liberal-arts-sciences/academic-regulations/). Students may enroll on a full-time or part-time basis but must complete requirements within six years of admission.