MASTER OF SCIENCE IN INFORMATICS (DATA SCIENCE/DATA ANALYTICS)

Web Site: https://twu.edu/informatics/graduate-program/

The M.S. in Informatics program provides graduate students with a flexible, adaptable, interprofessional, and interdisciplinary approach to the study of informatics, delivered in a hybrid learning environment. Majors in this program will build upon a set of foundational courses and choose discipline-specific courses within an approved Application Area (Clinical Applications, Cybersecurity, Data Science/Data Analytics, Health Studies, Sports Informatics, or Community Informatics) to complete the major. The program is delivered collaboratively by Academic Components, including Computer Science, Nursing, Health Studies, Kinesiology, and Library and Information Studies.

Course content for the degree provides a central set of knowledge and skills that all informatics students will possess and then allows students to explore and refine their understanding of informatics as it is applied to high-demand professions and careers.

Majors will learn to use technology and data analytics to derive meaningful information from data for data and decision-driven practice in user-centered systems.

Informatics is the interprofessional study and application of information science, computer science, cognitive science, and organizational science to the arts, sciences, and professions.

Informatics includes a formal study of information, including:

- its structure, properties, uses, and function in society
- the people who use the information and the technologies that are developed to record, organize, store, retrieve, and disseminate the information

Marketable Skills

Defined by the Texas Higher Education Coordinating Board's 60x30 Strategic Plan (https://reportcenter.highered.texas.gov/agency-publication/miscellaneous/thecb-60x30-strategic-plan/) as, "Those skills valued by employers that can be applied in a variety of work settings, including interpersonal, cognitive, and applied skills areas. These skills can be either primary or complementary to a major and are acquired by students through education, including curricular, co-curricular, and extracurricular activities."

a. Work as a member of a project team to coordinate database and project development and determine project scope and limitations.
b. Develop and implement procedures for data management, data storage and retrieval, distributed systems, evaluating data quality, data security, data transfer, data analysis, modeling, and visualization.
c. Plan, coordinate, and implement security measures to safeguard information in computer files against accidental or unauthorized damage, modification, or disclosure.
d. Disseminate research by writing reports, publishing papers, or presenting at professional conferences.
e. Design, create, and administer a computer network.
f. Demonstrate personal accountability and work habits, integrity, and ethical behavior.
g. Proficient in the software tools to achieve the skills listed, including but not limited to Java, Python, Perl, SQL, NoSQL, R, Microsoft Project, Microsoft Visio, Tableau, SAS, or SPSS.

Admissions

All students must meet the University requirements as outlined in the Admission to the TWU Graduate School (http://catalog.twu.edu/graduate/graduate-school/admission-graduate-school/) section of the catalog.

This academic program may have additional admission criteria that must also be completed as outlined on the program's website.

Degree Requirements

Total Semester Credit Hours Required

The degree program consists of a minimum of 36 semester credit hours (SCH) of graduate coursework comprised of 15 SCH of foundations in computer science, 15 SCH of discipline-specific coursework in one of the application areas below, and 3 SCH in software/statistical tools. The program is completed with an interprofessional, interdisciplinary capstone project.

Recommended course sequence

CSCI 5103 should be taken in the first semester of study.
CSCI 5203 should be taken in the first year of study.
Capstone in Informatics should be taken in the last year of study.

All other courses may be taken in any sequence unless a required prerequisite is noted. Contact the advisor if you have any questions.

Code	Title	SCHs
Computer Science Core		
Required Courses		
CSCI 5103	Fundamentals of Informatics	3
CSCI 5203	Database Systems	3
CSCI 5673	Big Data: Management, Access, and Use	3
Select two of the following		6
CSCI 5123	Foundations of Information Systems Security	
CSCI 5413	Data Communication Networks	
CSCI 5443	Human-Computer Interface	
CSCI 5513	Data and Information Visualization	
CSCI 5573	Foundations of Data Science	
CSCI 5803	Data Warehousing	
CSCI 5823	Modeling Machine Learning	
CSCI 5833	Data Mining and Analysis	
Software/Statistical Tools		**3**
Select one of the following (in consultation with advisor)		
CSCI 5663	Statistical Programming	
HS 5703	Applied Statistics in Health Promotion	
KINS 5033	Applied Statistical Principles	
MATH 5573	Statistical Methods I	
MATH 5583	Statistical Methods II	
MKT 5153	Research Methods in Business	
NURS 6933	Analysis of Nurse-Generated Data	
PSY 5304	Advanced Psychological Statistics I	

Application Area (see options below)		**15**
Interprofessional Capstone		**3**
Select one of the following in consultation with advisor		
CSCI 5923	Capstone in Informatics	
HS 5923	Capstone in Informatics	
KINS 5753	Capstone in Informatics	
LS 5923	Capstone in Informatics	
NURS 5923	Capstone in Informatics	
Total SCHs		**36**

Application Area: Data Science/Data Analytics Option

Code	Title	SCHs
Select five of the following		**15**
CSCI 5413	Data Communication Networks	
CSCI 5443	Human-Computer Interface	
CSCI 5513	Data and Information Visualization	
CSCI 5573	Foundations of Data Science	
CSCI 5803	Data Warehousing	
CSCI 5823	Modeling Machine Learning	
CSCI 5833	Data Mining and Analysis	
MATH 5483	Theory of Probability and Statistics I	
MATH 5493	Theory of Probability and Statistics II	
MATH 5833	Computer-Aided Mathematical Modeling	
MATH 5583	Statistical Methods II	
MATH 5863	Applied Statistics and Convex Optimization	
MGT 5743	Project Management	
Total SCHs		**15**

Cooperative Education

In order for coursework in Cooperative Education to be counted as degree credit, department and advisory committee approval must be received during the semester in which the course is taken. This approval is in addition to approval to enroll in Cooperative Education coursework. Only three semester credit hours of Cooperative Education may be counted toward the Master's degree.