

BACHELOR OF SCIENCE IN INFORMATICS (DATA SCIENCE MINOR)

Web Site: <https://twu.edu/informatics/undergraduate-programs/>

The B.S. in Informatics with Data Science Minor begins with a comprehensive computer science core and combines academic components from the computer science and mathematics programs. This hybrid interdisciplinary and interprofessional program prepares students for diverse careers available to those with in-demand science and mathematics-oriented degrees. The program teaches key components of informatics and data science such as data analysis, visualization, machine learning, and big data. At TWU, small class sizes provide quality learning environments and active engagement with an outstanding, caring, and eager faculty.

Marketable Skills

Defined by the Texas Higher Education Coordinating Board's 60x30 Strategic Plan (<https://reportcenter.highered.texas.gov/agency-publication/miscellaneous/the60x30-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."

1. In consult with customers or other departments on project status, proposals, or technical issues, such as software system design or maintenance, software testing, and validation procedures, adapt to new hardware, or to upgrade interfaces and improve performance.
2. Work effectively as a member of an interdisciplinary project team to coordinate database and project development, determine project scope and limitations, critically analyze issues, and solve problems.
3. Develop and implement procedures for data management, data storage and retrieval, evaluating data quality, data security, data transfer, data analysis, modeling, and visualization.
4. Plan, coordinate, and implement security measures to safeguard information in computer files against accidental or unauthorized damage, modification, or disclosure.
5. Prepare reports or correspondence concerning project specifications, activities, or status.
6. Demonstrate personal accountability and work habits, integrity, and ethical behavior.
7. 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, SPSS, modeling software.

Admissions

All applicants must meet the general undergraduate admission requirements (<http://catalog.twu.edu/undergraduate/admission-information/>).

Degree Requirements

Total Semester Credit Hours (SCH): 120

Major: 43 SCH **Minor:** 18 SCH

Program Code: INFO.BS.DATASCI **CIP Code:** 11.0104.00

Texas Core Curriculum

Code	Title	SCHs
ENG 1013	Composition I	3
ENG 1023	Composition II	3
Mathematics		3
Life & Physical Sciences		6
Language, Philosophy, & Culture		3
Creative Arts		3
HIST 1013	History of the United States, 1492-1865	3
HIST 1023	History of the United States, 1865 to the Present	3
POLS 2013	U.S. National Government	3
POLS 2023	Texas Government	3
Social & Behavioral Sciences		3
CAO: Women's Studies		3
CAO: First Year Seminar, Wellness or Mathematics		3
Total SCHs		42

Courses Required for Major

Code	Title	SCHs
CSCI 1423 & CSCI 1421	Programming Fundamentals I and Programming Fundamentals I - Laboratory	4
CSCI 1513	Introduction to Informatics	3
CSCI 2493	Programming Fundamentals II	3
CSCI 3053	Data Structures	3
CSCI 3423	Database Management	3
CSCI 3513	Information Systems Project Management	3
CSCI 3603	Foundations of Data Science	3
CSCI 3703	Interface Design and Development	3
CSCI 4313	Networking and Data Communication	3
HS 3383	Legal and Ethical Issues in Health Informatics	3
LS 3053	Interdisciplinary Information Retrieval	3
MATH 1713	Elementary Statistics II	3
NURS 2213	Introduction to Health Informatics	3
CSCI 4923	Capstone in Interprofessional Informatics	3
Total SCHs		43

Courses Required for Minor

Code	Title	SCHs
Choose 18 SCH (approved by advisor)		18
CSCI 2513	Information Security and Ethics	
CSCI 3113	Fundamentals of SAS Programming	
CSCI 4303	Advanced Modeling and Visualization	
CSCI 4513	Data Warehousing	
CSCI 4623	Big Data and High Performance Computing	
CSCI 4723	Machine Learning	
CSCI 4823	Principles of Data Mining	
MATH 2014	Calculus I	

MATH 4013	Probability and Statistics	
Total SCHs		18

Departmental Requirements

Code	Title	SCHs
MATH 1703	Elementary Statistics I (may be applied from core)	3
Elective (to include 3 SCH global perspectives)		15
Total SCHs		18

Recommended Plan of Study

First Year

Fall		TCCN	SCHs
CSCI 1421	Programming Fundamentals I - Laboratory		1
CSCI 1423	Programming Fundamentals I	COSC 1436	3
CSCI 1513	Introduction to Informatics		3
ENG 1013	Composition I	ENGL 1301	3
HIST 1013	History of the United States, 1492-1865	HIST 1301	3
MATH 1703	Elementary Statistics I (Recommended Core)	MATH 1342	3
UNIV 1231	Learning Frameworks: The First Year Experience	EDUC 1100, EDUC 1200, EDUC 1300	1
SCHs			17

Spring		TCCN	SCHs
CSCI 2493	Programming Fundamentals II	COSC 1437	3
ENG 1023	Composition II	ENGL 1302	3
HIST 1023	History of the United States, 1865 to the Present	HIST 1302	3
MATH 1713	Elementary Statistics II		3
Creative Arts Core			3
SCHs			15

Second Year

Fall		TCCN	SCHs
CSCI 3053	Data Structures		3
MATH 1013	Financial and Quantitative Literacy (Recommended Core CAO)	MATH 1332	3
NURS 2213	Introduction to Health Informatics		3
POLS 2013	U.S. National Government	GOVT 2305	3
Life/Physical Sciences Core			3
SCHs			15

Spring		TCCN	SCHs
CSCI 3513	Information Systems Project Management		3
POLS 2023	Texas Government	GOVT 2306	3
Multicultural Women's Studies (CAO) Core			3
Life/Physical Sciences Core			3
Language, Philosophy, & Culture Core			3
SCHs			15

Third Year

Fall		TCCN	SCHs
CSCI 3423	Database Management		3
CSCI 3603	Foundations of Data Science		3
LS 3053	Interdisciplinary Information Retrieval		3
Social & Behavioral Science Core			3
Minor Course			3
SCHs			15

Spring		TCCN	SCHs
CSCI 3703	Interface Design and Development		3
Elective (Upper-Level Major Discipline)			3
Minor Course			3
Minor Course			3
Elective (Upper Level)			3
SCHs			15

Fourth Year

Fall		TCCN	SCHs
CSCI 4313	Networking and Data Communication		3
HS 3383	Legal and Ethical Issues in Health Informatics		3
Minor Course			3
Minor Course (Upper Level)			3
Elective (Global Perspectives course)			3
SCHs			15

Spring		TCCN	SCHs
CSCI 4923	Capstone in Interprofessional Informatics		3
Minor Course (Upper Level)			3
Elective (Upper Level)			3
Elective			3
Elective			1
SCHs			13

Total SCHs:			120
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