

BACHELOR OF SCIENCE IN COMPUTER SCIENCE

Web Site: <https://twu.edu/computer-science/degree-programs/bs-in-computer-science/>

The Bachelor of Science in Computer Science at Texas Woman's University offers students the opportunity to build a strong foundation of skills and knowledge in a broad and rapidly changing technical field while also allowing them to focus their upper-level studies around topics in Computer Science such as Database Administration, Software Development, Web and Mobile Applications, Networking & Data Communications, Hardware and Robotics, Interface and Information Architecture, and other areas based on student interest and aptitude.

The program seeks to engender student confidence, adaptability, and understanding of real-world and cross-professional applicability of technology for all regardless of gender, race, ethnicity, or disability.

Students enrolled in the program are offered the opportunity to participate in lively, collaborative, and ever-changing classroom activities and curriculum as facilitated by a diverse, knowledgeable, caring, and eager faculty. Graduates of the program go on to obtain a variety of technology jobs.

Marketable Skills

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

1. Work effectively as a member of a project team to coordinate database and project development, determine project scope and limitations, critically analyze issues, and solve problems.
2. Develop and implement procedures for data management, data storage and retrieval, evaluating data quality, data security, data transfer, data analysis, modeling, and visualization.
3. Plan, coordinate, and implement security measures to safeguard information in computer files against accidental or unauthorized damage, modification, or disclosure.
4. Design, create, and administer a computer network.
5. Create web-based applications to acquire, present, and deliver data to customers.
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, HTML, JavaScript, PHP, SAS, SPSS, modeling software.

Admissions

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

Degree Requirements

Total Semester Credit Hours (SCH): 120

Major: 44 SCH; **Required Minor:** 18 SCH

Program Code: COMPSCI.BS **CIP Code:** 11.0101.00

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 2443	Computer Organization and Machine Language	3
CSCI 2493	Programming Fundamentals II	3
CSCI 3053	Data Structures	3
CSCI 3413	Software Engineering	3
CSCI 3423	Database Management	3
CSCI 3443 & CSCI 3441	Digital Logic and Computer Architecture and Digital Logic and Computer Architecture - Laboratory	4
CSCI 3503	Operating Systems	3
CSCI 3613	Algorithm Analysis and Design	3
CSCI 4313	Networking and Data Communication	3

Computer Science Electives

Take 12 SCH from the following Essential and Applied Computing courses

Essential options - Take a minimum of 2 of the following courses:

CSCI 3313	App Development for Mobile Devices
CSCI 3323	Robotics Design and Development
CSCI 3703	Interface Design and Development
CSCI 4623	Big Data and High Performance Computing
CSCI 4723	Machine Learning
CSCI 4803	Programming for the Web
CSCI 4823	Principles of Data Mining

Applied Options - Take a minimum of 1 of the following courses:

CSCI 2513	Information Security and Ethics
CSCI 3103	Applied Computer Graphics
CSCI 3353	Interactive Digital Art
CSCI 3603	Foundations of Data Science
CSCI 3803	Website Development
CSCI 4303	Advanced Modeling and Visualization
CSCI 4353	Advanced Interactive Digital Art
CSCI 4513	Data Warehousing
Total SCHs	44

Departmental Requirements

Code	Title	SCHs
MATH 2014	Calculus I	4
MATH 3013	Discrete Mathematics	3
MATH 3073	Matrix Methods	3-4
or MATH 2024	Calculus II	
or MATH 4013	Probability and Statistics	
Electives/Minor		24

All students must complete three semester credit hours in approved Global Perspectives courses (graduation requirement).

Recommended Plan of Study

First Year

Fall	TCCN	SCHs
CSCI 1421	Programming Fundamentals I - Laboratory	1
CSCI 1423	Programming Fundamentals I	3
ENG 1013	Composition I	3
HIST 1013	History of the United States, 1492-1865	3
UNIV 1231	Learning Frameworks: First-Year Seminar	1
Mathematics Core (Math 1313 suggested)	EDUC 1100, EDUC 1200, EDUC 1300	3
Social/Behavioral Science Core		3
SCHs		17

Spring	TCCN	SCHs
CSCI 2493	Programming Fundamentals II	3
ENG 1023	Composition II	3
HIST 1023	History of the United States, 1865 to the Present	3
MATH 2014	Calculus I (CAO Core)	4
Creative Arts Core	MATH 2413	3
SCHs		16

Second Year

Fall	TCCN	SCHs
CSCI 3053	Data Structures	3
CSCI 3423	Database Management	3
POLS 2013	U.S. National Government	3
Life/Physical Sciences Core	GOVT 2305	3
Language, Philosophy, and Culture Core		3
SCHs		15

Spring	TCCN	SCHs
CSCI 2443	Computer Organization and Machine Language	3
CSCI 3503	Operating Systems	3
MATH 2053	Women and Minorities in Engineering, Mathematics, and Science	3
POLS 2023	Texas Government	3
Life/Physical Science Core	GOVT 2306	3
SCHs		15

Third Year

Fall	TCCN	SCHs
CSCI 3413	Software Engineering	3
CSCI 3443	Digital Logic and Computer Architecture	3
CSCI 3441	Digital Logic and Computer Architecture - Laboratory	1
CSCI Elective (Major)		3
Minor		3
Minor		3
SCHs		16

Spring	TCCN	SCHs
CSCI 3613	Algorithm Analysis and Design	3
MATH 3013	Discrete Mathematics	3
Minor		3
Elective		6
SCHs		15

Fourth Year

Fall	TCCN	SCHs
CSCI 4313	Networking and Data Communication	3
CSCI elective (Major)		3
Minor		3
Minor (Upper Level)		3
Elective		2
SCHs		14

Spring	TCCN	SCHs
MATH 3073	Matrix Methods	3
CSCI elective (Major)		3
Minor (Upper Level)		3
Elective		3
SCHs		12

Total SCHs: 120