Bachelor of Science in Computer Science and Master of Science in Computer Engineering

FIRST YEAR

Fall
- CS 1411, Programming Principles I* 4
- MATH 1451, Calculus I* 4
- ENGL 1301, Essentials of Coll. Rhetoric† 3
- Life and Physical Sciences†† 3
- TOTAL 15

Spring
- CS 1412, Programming Principles II 4
- MATH 1452, Calculus II* 4
- PHYS 1408, Principles of Physics I* 4
- Life and Physical Sciences†† 3
- ENGLISH 1302, Advanced College Rhetoric* 3
- TOTAL 18

SECOND YEAR

Fall
- CS 2413, Data Structures 4
- MATH 2450, Calculus III* 3
- PHYS 2401, Principles of Physics II 3
- TOTAL 10

Spring
- CS 2350, Comp. Org. & Assembly Lang. 3
- CS 2365, Object- Oriented Programming 3
- ENGR 2392, Engineering Ethics 3
- TOTAL 9

THIRD YEAR

Fall
- CS 3361, Concepts of Program. Lang. 3
- CS 3364, Des. & Analysis of Algorithms 3
- Elective (CS) ‡ 3
- Elective (Core Curriculum)* 6
- POLS 2302, American Public Policy 3
- TOTAL 18

Spring
- CS 3365, Software Engineering I 3
- CS 3375, Computer Architecture 3
- CS 3383, Theory of Automata 3
- Elective (CS) ‡ 3
- Elective (Core Curriculum)* 6
- TOTAL 18

FOURTH YEAR

Fall
- CS 4365, Software Engineering II 3
- CS 4366, Sr. Capstone Project 3
- CS 4373, Software Modeling & Arch 3
- Graduate Elective (CS) # 3
- Graduate Elective (Core Curriculum) ‡ 3
- TOTAL 15

Spring
- CS 4369, Sr. Capstone Project 3
- CS 4377, Software Modeling & Arch 3
- Graduate Elective (CS) # 3
- Graduate Elective (Core Curriculum) ‡ 3
- TOTAL 15

FIFTH YEAR

Fall
- Graduate Elective (SE)** 6
- CS 6000, Master's Thesis †† 3
- TOTAL 9

Spring
- Graduate Elective (SE)** 6
- CS 6000, Master's Thesis †† 3
- TOTAL 9

TOTAL HOURS: 150

NOTE: 6 hours of graduate work are dually counted in place of 6 hours of CS undergraduate electives for the B.S. degree.

* Foundationally required course.
† Any core curriculum 4-hour Life and Physical Sciences lab and lecture except Physics (see www.depts.ttu.edu/officialpublications/catalog_AcademicsCore2014.php#Science).
‡ Computer Science electives: choose from any 3000- or 4000-level computer science courses that are not required for the CS major.
§ Courses needed to fulfill the university core curriculum requirements, including 6 hours of U.S. history, 3 hours of Social and Behavioral Sciences electives, and 3 hours each of Social and Behavioral Sciences electives. The 3-hour multicultural requirement must also be satisfied. This can be done by either completing an approved study abroad program, including assessment by the Study Abroad Office, or by taking a course from the multicultural list. If taking a multicultural course, it is recommended that the course also meet either the Creative Arts or Social and Behavioral Sciences requirement, thus fulfilling two requirements. For details, consult the core curriculum requirements on page 59 of this catalog.
# Graduate CS Elective Courses: To be determined in consultation with thesis or departmental graduate advisor.
†† Master's Thesis: The 6 hours for CS 6000 shown here are only a minimum number. Due to their nature, some thesis projects may require an earlier start and/or take longer to complete. Also, if pursuing the project option, substitute 3 hours of CS 6001, 3 hours of graduate Software Engineering, and 6 hours of graduate CS electives for the 6 hours of CS 6000. Elective courses are determined in consultation with a computer science graduate advisor. Thesis and non-thesis students must pass the Final Comprehensive Examination as required by the university.
‡‡ Oral Communication elective.

Combined Bachelor of Science and Master of Science in Computer Science

FIRST YEAR

Fall
- CS 1411, Programming Principles I* 4
- MATH 1451, Calculus I* 4
- ENGL 1301, Essentials of Coll. Rhetoric* 3
- MATH 1452, Calculus II* 4
- PHYS 1408, Principles of Physics I* 4
- Life and Physical Sciences†† 3
- TOTAL 15

Spring
- CS 1412, Programming Principles II 4
- MATH 1452, Calculus II* 4
- MATH 1454, Calculus III* 4
- PHYS 1409, Principles of Physics II* 4
- Life and Physical Sciences†† 3
- ENGLISH 1302, Advanced College Rhetoric* 3
- TOTAL 15

SECOND YEAR

Fall
- CS 2413, Data Structures 4
- ECE 2372, Modern Digital Syst. Design 3
- ENGR 2392, Engineering Ethics 3
- TOTAL 18

Spring
- CS 2350, Comp. Org. & Assembly Lang. 3
- MATH 2450, Calculus III* 3
- PHYS 2401, Principles of Physics II 3
- TOTAL 18

THIRD YEAR

Fall
- CS 3361, Concepts of Program. Lang. 3
- CS 3364, Des. & Analysis of Algorithms 3
- Elective (CS) ‡ 3
- Elective (Core Curriculum)* 6
- POLS 2302, American Public Policy 3
- TOTAL 18

Spring
- CS 3365, Software Engineering I 3
- CS 3375, Computer Architecture 3
- CS 3383, Theory of Automata 3
- Elective (CS) ‡ 3
- Elective (Core Curriculum)* 6
- TOTAL 18

FOURTH YEAR

Fall
- CS 4365, Software Engineering II 3
- CS 4366, Senior Capstone Project 3
- CS 4373, Software Modeling & Arch 3
- Graduate Elective (CS) # 3
- Graduate Elective (Core Curriculum) ‡ 3
- TOTAL 15

Spring
- CS 4369, Senior Capstone Project 3
- CS 4377, Software Modeling & Arch 3
- Graduate Elective (CS) # 3
- Graduate Elective (Core Curriculum) ‡ 3
- TOTAL 15

FIFTH YEAR

Fall
- Graduate Elective (CS)** 6
- CS 6000, Master's Thesis †† 3
- TOTAL 9

Spring
- Graduate Elective (CS)** 6
- CS 6000, Master's Thesis †† 3
- TOTAL 9

TOTAL HOURS: 150

NOTE: 6 hours of graduate work are dually counted in place of 6 hours of CS undergraduate electives for the B.S. degree.

* Foundationally required course.
† Any core curriculum 4-hour Life and Physical Sciences lab and lecture except Physics (see www.depts.ttu.edu/officialpublications/catalog_AcademicsCore2014.php#Science).
‡ Computer Science electives: choose from any 3000- or 4000-level computer science courses that are not required for the CS major.
§ Courses needed to fulfill the university core curriculum requirements, including 6 hours of U.S. history, 3 hours of Social and Behavioral Sciences electives. The 3-hour multicultural requirement must also be satisfied. This can be done by either completing an approved study abroad program, including assessment by the Study Abroad Office, or by taking a course from the multicultural list. If taking a multicultural course, it is recommended that the course also meet either the Creative Arts or Social and Behavioral Sciences requirement, thus fulfilling two requirements. For details, consult the core curriculum requirements on page 59 of this catalog.
# Graduate Core Courses: Select two from CS 5381, 5383, 5384, and two from CS 5352, 5375, 5386.
** Graduate Elective Courses: To be determined in consultation with a thesis or departmental graduate advisor.
†† Master's Thesis: The 6 hours for CS 6000 shown here are only a minimum number. Due to their nature, some thesis projects may require an earlier start and/or take longer to complete. Also, if pursuing the project option, substitute 3 hours of CS 6001, 3 hours of graduate Software Engineering, and 6 hours of graduate CS electives for the 6 hours of CS 6000. Elective courses are determined in consultation with a computer science graduate advisor. Thesis and non-thesis students must pass the Final Comprehensive Examination as required by the university.
‡‡ Oral Communication elective.


3352. Introduction to Systems Programming (3). Prerequisite: CS 2350 or ECE 3362 and CS 2413. Introduction to system software including assemblers, linkers, loaders, and compilers. Other topics addressed include design of utility and networking software, shell programming, and script languages.

3361. Concepts of Programming Languages (3). Prerequisite: CS 2413. Study of programming language design. The investigation and comparison of different programming language paradigms.

3364. Design and Analysis of Algorithms (3). Prerequisite: CS 1382, 2413, and MATH 2360. A theoretical course focusing on the design and analysis of computer algorithms.

3365. Software Engineering I (3). Prerequisite: CS 2365 or 2413, MATH 3342 or equivalent. Introduces theory and practice for software engineering. Topics include software life cycle,