

BACHELOR OF SCIENCE IN COMPUTER SCIENCE 4+1 GRADUATE TRACK

This degree may be earned in ten semesters if students average 16 hours per semester during the first 4 years and 11 hours per semester during the fifth year.

The Computer Science 4+1 program is an accelerated bachelor's plus master's degree pathway. The program includes nine dual-credit hours integrated into the bachelor's curriculum that count toward both undergraduate and graduate degree requirements for students in the 4+1 track. As a result, students can earn their BS in Computer Science and Master of Computing and Information Systems degrees in just five years.

In addition to completing the courses listed below, students in the 4+1 graduate track will complete one additional year of full-time study beyond the bachelor's degree to earn a master's degree.

COURSE	TITLE	S.H.
FIRST YEAR REQUIREMENT -STUDENT SUCCESS		
YSU 1500	Success Seminar	1-2
or YSU 1500S	Youngstown State University Success Seminar	
or HONR 1500	Intro to Honors	
General Education Requirements		
ENGL 1550	Writing 1	3-4
or ENGL 1549	Writing 1 with Support	
ENGL 1551	Writing 2	3
MATH 1571	Calculus 1	4
Arts and Humanities		6
PHIL 2625	Introduction to Professional Ethics	
HIST 2650	CL History of American Democracy	
Natural Sciences (2 courses; one course must include a lab)		6-7
Social and Behavioral Sciences (2 courses)		6
General Education Electives (9 s.h.)	Any Gen Ed Courses	9
Major Requirements		
CSIS 2610 & 2610L	Programming and Problem-Solving and Programming and Problem-Solving Lab	4-6
or CSIS 1595 & 1595L & CSIS 2605 & CSIS 2605L	Fundamentals of Programming and Problem-Solving 1 and Fundamentals of Programming and Problem-Solving 1 Lab and Fundamentals of Programming and Problem-Solving 2 and Fundamentals of Programming and Problem-Solving 2 Lab	
CSIS 3700 & 3700L	Data Structures and Objects and Data Structures and Objects Lab	4
CSIS 3701	Advanced Object-oriented Programming	3
CSIS 3740	Computer Organization	4
CSCI 3710	Introduction to Discrete Structures	3
CSCI 4890	Computer Projects	2
ENGL 3743	Introduction to Professional Writing	3
or INFO 3704	Business Communication	
Select at least 12 additional upper division semester hours from CSCI or CSIS upper division level courses, or STEM 4890. This must include at least 9 s.h. from the following courses:		12
CSIS 3722: Development of Databases		
CSIS 3723: Networking Concepts and Administration		
CSIS 3755: Information Assurance		

CSCI 3770: Survey of Programming Languages		
CSCI 5840: Theory of Finite Automata		
STEM 4890	STEM Internship	
Dual credit requirements 9 credit hours from the following list of approved courses		
CSCI 5801	Software Engineering	3
CSCI 5806	Operating Systems	3
CSCI 5870	Data Structures and Algorithms	3
Mathematics Minor		
MATH 1572	Calculus 2	4
MATH 3720	Linear Algebra and Matrix Theory	3
STAT 3743	Probability and Statistics	4
Additional MATH course	To meet 18 hour minor	3
Departmental Free Electives	Any CSIS/INFO/CSCI/CIS courses	12
Free Electives	Any courses to meet 120 total hours	12
Total Semester Hours		120-125

Students enrolled in the 4+1 program must submit a **Dual Credit Form** for their dual-credit courses to count toward both their bachelor's and master's degrees. The form must be reviewed and approved for the courses to apply to the graduate degree. **Do not register for any dual-credit courses until the Dual Credit Form has been reviewed and approved.** Dual-credit courses taken without prior approval cannot be retroactively applied to the graduate degree.

More info: <https://ysu.edu/registrars-office/dual-credit-enrollment>

Year 1		
Fall		S.H.
YSU 1500	Success Seminar	1-2
or YSU 1500S	or Youngstown State University Success Seminar	
or HONR 1500	or Intro to Honors	
CSIS 2610 & 2610L	Programming and Problem-Solving and Fundamentals of Programming and Problem-Solving 1 and Fundamentals of Programming and Problem-Solving 1 Lab and Fundamentals of Programming and Problem-Solving 2 and Fundamentals of Programming and Problem-Solving 2 Lab	4-6
or CSIS 1595 & 1595L & CSIS 2605 & CSIS 2605L		
MATH 1571	Calculus 1	4
ENGL 1550	Writing 1	3-4
or ENGL 1549	or Writing 1 with Support	
Gen Ed Social and Behavioral Sciences		3
Semester Hours		15-19
Spring		
CSIS 3700 & 3700L	Data Structures and Objects and Data Structures and Objects Lab	4
MATH 1572	Calculus 2 (minor)	4
ENGL 1551	Writing 2	3
Gen Ed Natural Science + Lab		3-4
Semester Hours		14-15
Year 2		
Fall		
CSIS 3701	Advanced Object-oriented Programming	3
CSIS 3740	Computer Organization	4
PHIL 2625	Introduction to Professional Ethics (AH)	3
HIST 2650	CL History of American Democracy (AH)	3
Gen Ed Electives (Any Gen Ed Course)		3
Semester Hours		16
Spring		
CSCI 3710	Introduction to Discrete Structures	3

MATH 3720	Linear Algebra and Matrix Theory	3
ENGL 3743 or INFO 3704	Introduction to Professional Writing or Business Communication	3
Gen Ed Social and Behavioral Sciences		3
Gen Ed Electives (any Gen Ed Course)		3
Semester Hours		15
Year 3		
Fall		
CSCI 5801	Software Engineering	3
CSCI/CSIS Upper Division Elective		3
STAT 3743	Probability and Statistics	4
Departmental Free Elective ^{Any CSIS/INFO/CSCI/CIS courses}		3
Free Elective		3
Semester Hours		16
Spring		
CSCI/CSIS Upper Division Elective		3
CSCI/CSIS Upper Division Elective		3
Math Minor Upper Division Elective		3
Gen Ed Natural Science		3
Gen Ed Electives (Any Gen Ed Course)		3
Semester Hours		15
Year 4		
Fall		
CSCI 5870	Data Structures and Algorithms	3
CSCI 4890	Computer Projects	2
Departmental Free Elective ^{Any CSIS/INFO/CSCI/CIS courses}		3
Free Elective		3
Free Elective		3
Semester Hours		14
Spring		
CSCI 5806	Operating Systems	3
CSCI/CSIS Upper Division Elective or STEM 4890		3
Departmental Free Elective ^{Any CSIS/INFO/CSCI/CIS courses}		3
Departmental Free Elective ^{Any CSIS/INFO/CSCI/CIS courses}		3
Free Elective		3
Semester Hours		15
Total Semester Hours		120-125

Learning Outcomes

Computer Science students in the BS degree program will:

- Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
- Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
- Communicate effectively in a variety of professional contexts.
- Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
- Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
- Apply computer science theory and software development fundamentals to produce computing-based solutions.