PURDUE UNIVERSITY

Computer Science
College of Science

2021-2022

Program Progression Guides

Disclaimer: The 2021-2022 Purdue West Lafayette catalog is considered the source for academic and programmatic requirements for students entering programs during the Fall 2021, Spring 2022, and Summer 2022 semesters. The Program Progression Guide assists students in the development of an individualized 8-semester plan. Students are encouraged to use this guide, MyPurduePlan* (online degree auditing tool) and the Student Educational Planner (SEP) as they work with their academic advisor towards the completion of their degree requirements.
Notification: Each student is ultimately responsible for knowing, monitoring and completing all degree requirements.

An undergraduate degree in the College of Science requires completion of the following degree requirements.

<table>
<tr><th colspan="3">University Degree Requirements</th></tr>
<tr><td>Minimum 2.0 Cumulative GPA</td><td>Minimum 120 Credits that fulfill degree requirements</td><td>32 Residency Credits (30000 and above) at a Purdue University campus</td></tr>
<tr><th colspan="3">University Core Curriculum**</th></tr>
<tr><td colspan="2">Human Cultures: Behavioral/Social Science
Human Cultures: Humanities
Information Literacy
Oral Communication
University Core Curriculum
Course Listing</td><td>Quantitative Reasoning
Science
Science, Technology & Society Selective
Written Communication</td></tr>
<tr><th colspan="3">Civic Literacy Proficiency - https://www.purdue.edu/provost/about/provostInitiatives/civics/</th></tr>
<tr><td colspan="3"></td></tr>
<tr><th colspan="3">Required Major Program Courses</th></tr>
<tr><td colspan="3">Departmental specific requirements: A minimum of a C is required in all CS courses and all track requirements regardless of department.</td></tr>
<tr><th colspan="3">College of Science Core Curriculum</th></tr>
<tr><td>Freshman Composition – 3-4 credits
Technical Writing and Presentation – 3-6 credits
Teaming & Collaboration (NC)
General Education - 9 credits</td><td>Foreign Language & Culture – 0-9 credits
Great Issues - 3 credits
Laboratory Science – 6-8 credits
Multidisciplinary – 1-3 credits</td><td>Mathematics - 6-10 credits
Statistics - 3 credits
Computing - 3 credits</td></tr>
<tr><th colspan="3">Degree Electives</th></tr>
<tr><td colspan="3">Any Purdue or transfer course approved to meet degree requirements in accordance with individual departmental policies. Consult the No Count course list for courses, which may not be used to meet any College of Science degree requirement.</td></tr>
</table>

* This audit is not your academic transcript and it is not official notification of completion of degree or certificate requirements.

** University Core Curriculum Outcomes may be met through completion of the College of Science Core curriculum. Students should consult with their academic advisors and MyPurdue Plan for course selections.

2021-22 Computer Science Degree Progression Guide

The Computer Science Department has suggested the following degree progression guide for the Computer Science Degree. Students will work with their academic advisors to determine their best path to degree completion. Course pre-requisites are specific to this degree plan.

Credit	Fall 1st Year	Prerequisite	Credit	Spring 2nd Year	Prerequisite
4	CS 18000[CC] ***	Co-req CALC I	3	CS 18200 ***	CS 18000 & CALC I
1	CS 19100 *	Co-req CS 18000	3	CS 24000 ***	CS 18000
1	CS 19300 *	Co-req CS 19100	4-5	MA 16200 or MA 16600 (CALC II)	CALC I
4-5	MA 16100[CC] or 16500[CC] (CALC I)	ALEKS 85+	3-4	Science Core Option	
3-4	Science Core Option		1-3	Free Elective	
13-15			**14-18**		

Credit	Fall 2nd Year	Prerequisite	Credit	Spring 2nd Year	Prerequisite
4	CS 25000 ***	CS 18200 & CS 24000	4	CS 25200 ***	CS 25000 & CS 25100
3	CS 25100 ***	CS 18200 & CS 24000	3	MA 26500 or MA 35100	CALC II & (co-req CALC III)
4-5	MA 26100 or MA 27101 (CALC III)	CALC II	3	Science Core Option (sugg: COM 21700)	
3-4	Science Core Option		3-4	Science Core Option	
1	Free Elective (rec. CS 29100)		3	Free Elective	
15-17			**16-17**		

Credit	Fall 3rd Year	Prerequisite	Credit	Spring 3rd Year	Prerequisite
3	CS track requirement ***	Varies	3	CS track requirement/elective ***	Varies
3	CS track requirement ***	Varies	3	CS track requirement/elective ***	Varies
3	STAT 35000/STAT 51100	CALC II	3-4	Science Core Option	Varies
1	Recommended: CS 39100* (Free elective)		3-4	Science Core Option	
3-4	Science Core Option		3	Free Elective	
3	Free Elective				
16-17			**15-16**		

Credit	Fall 4th Year	Prerequisite	Credit	Spring 4th Year	Prerequisite
3	CS track elective ***	Varies	3	CS track elective ***	Varies
3-4	Science Core Option		3-4	Science Core Option	
3-4	Science Core Option		3-4	Science Core Option	
3	Free Elective		3	Free Elective	
3	Free Elective		3	Free Elective	
1	Free Elective				
16-18			**15-17**		

Science Core Curriculum Options (one course needed for each requirement unless otherwise noted)	
Options recommended for first- and second-year students	**Options recommended for third- and fourth-year students**
Freshman Composition[UC]	Technical Writing and Presentation[UC] (COM 217 recommended)
Computing (CS 18000)	General Education[UC] (3 courses needed)
Foreign Language and Culture[UC] (3 courses needed)	Lab Science[UC] (2 courses needed)
Multidisciplinary Experience[UC]	Great Issues

[UC] Select courses may also satisfy a University Core Curriculum requirement; see the University Core Requirement course list for approved courses. Students must have 32 credits at the 30000 level or above taken at Purdue.

* Enrollment in freshman seminar courses CS 19100 and CS 19300 is required with CS 17700 or CS 18000. They are not degree requirements. CS 29100 sophomore seminar and CS 39100 junior seminar are optional but recommended.

Superscript of CC (eg CS 18000 [CC]) indicates a Critical Course

***All CS core courses and all track requirements, regardless of department, must be completed with a grade of "C" or higher (effective Fall 2011). All prerequisites to CS core courses and track requirements, regardless of department, must be completed with a grade of C or higher (effective Fall 2015)

2021-22 Computer Science Major Science Courses

Credits	Course Number	Course Description
4	CS 18000	Problem Solving and object-Oriented Programming
3	CS 18200	Foundations of Computer Science
3	CS 24000	Programming in C
4	CS 25000	Computer Architecture
3	CS 25100	Data Structures
4	CS 25200	Systems Programming
4	MA 26100	Multivariate Calculus or MA 27101 (5 cr)
3	MA 26500	Linear Algebra or MA 35100

2021-22 Computer Science Major Tracks and Course Options

Students must declare a minimum of one track to pursue from the following list:
Space and time permitting, student may be able to pursue multiple tracks

Computational Science and Engineering
Computer Graphics and Visualization
Database and Information Systems
Algorithmic Foundations
Machine Intelligence
Programming Language
Security
Software Engineering
Systems Software

Credits	Course Number	Course Description
3	CS 30700	Software Engineering I
3	CS 31400	Numerical Methods
3	CS 33400	Fundamentals of Computer Graphics
3	CS 34800	Information Systems
3	CS 35200	Compilers
3	CS 35400	Operating Systems
3	CS 35500	Introduction to Cryptography
3	CS 37300	Data Mining & Machine Learning
3	CS 38100	Introduction to Algorithms
3	CS 40700	Software Engineering Senior Project
3	CS 40800	Software Testing
3	CS 42200	Computer Networks
3	CS 42600	Computer Security
3	CS 43400	Advanced Computer Graphics
3	CS 44800	Introduction to Relational Databases
3	CS 45600	Programming Languages
3	CS 47100	Introduction to Artificial Intelligence
3	CS 47300	Web Information Search & Management
3	CS 47800	Introduction to Bioinformatics
3	CS 48300	Introduction to the Theory of Computation
3	CS 48900	Embedded Systems
3	CS 49000-CLC	Cloud Computing
3	CS 49000-DSO	Distributed Systems
3	CS 49000-HCI	Human-Computer Interaction
3	CS 49000-IDV	Introduction to Data Visualization

3	CS 49000-LDA	Large-Scale Data Analytics
3	CS 49000-SWS	Software Security
3	CS 49700	Honors Research Project
3	CS 51000	Software Engineering
3	CS 51400	Numerical Analysis
3	CS 51500	Numerical Linear Algebra
3	CS 52000	Computational Methods In Optimization
3	CS 52500	Parallel Computing
3	CS 56000	Reasoning About Programs
3	CS 57700	Natural Language Processing
3	CS 57800	Statistical Machine Learning
3	CS 59000-SRS	Software Reliability and Security