

## Program Progression Guides

**Disclaimer:** The [2023-2024 Purdue West Lafayette catalog](#) is considered the source for academic and programmatic requirements for students entering programs during the Fall 2023, Spring 2024, and Summer 2024 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.

| University Degree Requirements   |   |   |
|--|---|---|
| Minimum 2.0 Cumulative GPA   | Minimum 120 Credits that fulfill degree requirements  | 32 Residency Credits (30000 and above) at a Purdue University campus  |
| University Core Curriculum**   |   |   |
| <ul style="list-style-type: none"> <li>Human Cultures: Behavioral/Social Science</li> <li>Human Cultures: Humanities</li> <li>Information Literacy</li> <li>Oral Communication</li> </ul> <p><a href="#">University Core Curriculum Course Listing</a></p>     | <ul style="list-style-type: none"> <li>Quantitative Reasoning</li> <li>Science</li> <li>Science, Technology &amp; Society Selective</li> <li>Written Communication</li> </ul>   |   |
| Civic Literacy Proficiency - <a href="https://www.purdue.edu/provost/about/provostInitiatives/civics/">https://www.purdue.edu/provost/about/provostInitiatives/civics/</a>   |   |   |
| Required Major Program Courses   |   |   |
| Departmental specific requirements: All major required courses, all track requirements and track selectives, and their pre-requisites, regardless of department, must be completed with a grade of C or better.  |   |   |
| College of Science Core Curriculum   |   |   |
| <ul style="list-style-type: none"> <li>Written Communication – 3-4 credits</li> <li>Technical Writing and Presentation – 3-6 credits</li> <li>Teaming &amp; Collaboration (NC)</li> <li>General Education - 9 credits</li> </ul>                               | <ul style="list-style-type: none"> <li>Foreign Language &amp; Culture – 0-9 credits</li> <li>Great Issues - 3 credits</li> <li>Laboratory Science – 6-8 credits</li> <li>Science, Technology &amp; Society – 1-3 credits</li> </ul> | <ul style="list-style-type: none"> <li>Mathematics - 6-10 credits</li> <li>Statistics - 3 credits</li> <li>Computing - 3 credits</li> </ul> |
| Degree Electives   |   |   |
| Any Purdue or transfer course approved to meet degree requirements in accordance with individual departmental policies. Consult the <a href="#">No Count course list</a> for courses, which may not be used to meet any College of Science degree requirement. |   |   |

\* 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.

## 2023-24 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 <sup>CC</sup> ***                             | Co-req CALC I   | 3            | CS 18200 ***                   | CS 18000 & CALC I |
| 1            | CS 19300 *   | Co-req CS 18000 | 3            | CS 24000 ***                   | CS 18000          |
| 4-5          | MA 16100 <sup>CC</sup> or 16500 <sup>CC</sup> (CALC I) | ALEKS 85+       | 4-5          | MA 16200 or MA 16600 (CALC II) | CALC I            |
| 3-4          | Science Core Option                                    |                 | 3-4          | Science Core Option            |                   |
| 1-3          | Free Elective  |                 | 1-3          | Free Elective                  |                   |
| 1            | Free Elective  |                 |              |                                |                   |
| <b>14-18</b> |  |                 | <b>14-18</b> |                                |                   |

| 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                         |                             |
| <b>15-17</b> |                                 |                     | <b>16-17</b> |                                       |                             |

| 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               |              |
| 3-4          | Science Core Option                    |              | 3-4          | Science Core Option               |              |
| 3            | Free Elective                          |              | 3            | Free Elective                     |              |
| 1            | Recommended: CS 39100* (Free elective) |              |              |                                   |              |
| <b>16-17</b> |  |              | <b>15-17</b> |                                   |              |

| 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         |              |
| <b>15-17</b> |                       |              | <b>15-17</b> |                       |              |

### Science Core Curriculum Options

(one course needed for each requirement unless otherwise noted)

#### Options recommended for first- and second-year students

Written Communication<sup>UC</sup>  
 Computing (CS 18000)  
 Foreign Language and Culture<sup>UC</sup> (3 courses needed)  
 Science, Technology & Society Selective<sup>UC</sup>

#### Options recommended for third- and fourth-year students

Technical Writing and Presentation<sup>UC</sup> (COM 217 recommended)  
 General Education<sup>UC</sup> (3 courses needed)  
 Lab Science<sup>UC</sup> (2 courses needed)  
 Great Issues

<sup>UC</sup> 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 course CS 19300 is required with CS 17700 or CS 18000. This is not a degree requirement. CS 29100 sophomore seminar and CS 39100 junior seminar are optional but recommended.

Superscript of CC (eg CS 18000<sup>CC</sup>) indicates a Critical Course

\*\*\* All major required courses, all track requirements and track selectives, and their pre-requisites, regardless of department, must be completed with a grade of C or better (effective Fall 2023)

## 2023-24 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                      |

## 2023-24 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 35100      | Cloud Computing                           |
| 3       | CS 35200      | Compilers                                 |
| 3       | CS 35300      | Principles Of Concurrency And Parallelism |
| 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 43900      | Introduction to Data Visualization        |
| 3       | CS 44000      | Large-Scale Data Analytics                |
| 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 47500      | Human-Computer Interaction                |
| 3       | CS 47800      | Introduction to Bioinformatics            |
| 3       | CS 48300      | Introduction to the Theory of Computation |

|   |              |                                       |
|---|--------------|---------------------------------------|
| 3 | CS 48900     | Embedded Systems                      |
| 3 | CS 49000-DSO | Distributed Systems                   |
| 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     |