

Office of the Registrar
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2023-2024 U...

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Computer

Science: Security, BS

← Return to: [College of Science](#)

About the Program

Purdue Computer Science is one of the country's top-ranked programs. Faculty members are shaping the future of information technology through cutting-edge research. Students can take courses that include such topics as graphics and animation, web programming, competitive programming, cryptography and security, networks, software engineering, distributed systems, information systems, artificial intelligence, and bioinformatics.

The flexible curriculum offers students the opportunity to be involved in a dynamic discipline that will continue to grow and to contribute significantly to progress in many other disciplines and ultimately to changes in human society that are nothing short of profound. Students learn communication skills, teamwork, and problem-solving skills and acquire the necessary technical skills for positions in computing throughout society.

[Computer Science Website](#)

[Computer Science Major Change \(CODO\) Requirements](#)

Computer Science students begin by taking six core courses that teach them the

fundamentals of computer science. Students then take coursework in a concentration, which allows them to deepen their understanding in a specific area. The Security track is designed to prepare students to become computer scientists who:

- understand the importance of and are capable of designing and developing secure software,
- are familiar with the societal impact of insecure software and related infrastructure, and
- are familiar with and can use techniques for testing and assessing systems for secure operation.

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[Requirements](#)

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Degree Requirements

120 Credits
Required

Curriculum and Degree Requirements for College of Science

A College of Science degree is conferred when a student successfully completes all requirements in their degree program. Students will complete coursework or approved experiential learning activities to meet the following three degree components:

1. Major

2. Science Core Curriculum
3. Electives

Students may use any of the following options to meet College of Science degree requirements:

- Purdue Coursework
- AP, IB, and CLEP credit.
The use of AP and IB coursework varies between College of Science degree plans.
- [Transfer Credit](#). Students should consult the Admissions Transfer Credit Resource page for all available transfer options.

College of Science degree programs vary widely in their approval and use of the proceeding options and thus students are strongly encouraged to work closely with their academic advisors and to regularly consult their MyPurduePlan to view the use of each option in their degree plan.

Most College of Science degree programs contain elective credits students may use to pursue courses that relate to their interests or which support their major area of study. The elective area of a degree plan may also be used to complete [minors](#), second majors and certificates such as the Entrepreneurial Certificate. With the exception of courses on the No Count List, any Purdue course may be used to meet the elective area of a student's degree plan.

College of Science Core Requirements

All Students starting Purdue University Fall semester, 2007 or later are required to pursue the 2007 Science Core curriculum.

The College of Science Core Curriculum requires the completion of approved coursework and/or

experiential learning opportunities in the following academic areas:

- [Composition and Presentation](#)
- [Computing](#)
- [Cultural Diversity \(Language and Culture\)](#)
- [General Education](#)
- [Great Issues in Science](#)
- [Laboratory Science](#)
- [Mathematics](#)
- [Science Technology and Society](#)
- [Statistics](#)
- [Teambuilding and Collaboration](#)
- [No Count List](#)

Earning Core Curricular Requirements through Experience

Students may meet selected core curriculum requirements through approved experiential learning opportunities. Interested students should contact their academic advisor for more information on this option and incorporating experiential learning into their four-year program of study. For more information on earning requirements through experience, please [click here](#).

Computer Science Major Courses (46-50 credits)

Required CS Major Math Courses (7-8 credits)

Must have C or better to meet prerequisite for certain upper level CS courses

- [MA 26100 - Multivariate Calculus](#)
or
- [MA 27101 - Honors Multivariate Calculus](#)

- [MA 26500 - Linear Algebra](#) or
- [MA 35100 - Elementary Linear Algebra](#)

Required CS Major Core Courses (21 credits)

Must have C or better in all courses.

- [CS 18000 - Problem Solving And Object-Oriented Programming](#) ♦
(satisfies Computing and Teambuilding requirements for College of Science core)
- [CS 18200 - Foundations Of Computer Science](#) ♦
- [CS 24000 - Programming In C](#) ♦
- [CS 25000 - Computer Architecture](#)
- [CS 25100 - Data Structures And Algorithms](#)
- [CS 25200 - Systems Programming](#)

Security Concentration (18 credits)

Required Courses

- [CS 35400 - Operating Systems](#)
- [CS 35500 - Introduction To Cryptography](#)
- [CS 42600 - Computer Security](#)

Selectives

Choose 3 courses.

- [CS 35200 - Compilers:](#)

Principles And
Practice

- CS 38100 -
Introduction To
The Analysis Of
Algorithms
- CS 42200 -
Computer
Networks
- CS 49000 - Topics
In Computer
Sciences For
Undergraduates -
SWS Software
Security
- CS 30700 -
Software
Engineering I or
- CS 40800 -
Software Testing
- CS 34800 -
Information
Systems or
- CS 44800 -
Introduction To
Relational
Database Systems
or
- CS 47300 - Web
Information Search
And Management
- CS 35300 -
Principles Of
Concurrency And
Parallelism or
- CS 45600 -
Programming
Languages
- CS 37300 - Data
Mining And
Machine Learning
or
- CS 47100 -
Introduction to
Artificial
Intelligence
- CS 48900 -
Embedded
Systems or
- CS 49000 - Topics
In Computer
Science For
Undergraduates -
DSO Distributed
Systems

Other Departmental/P rogram Course Requirements (32-54 credits)

COLLEGE OF SCIENCE CORE REQUIREMENTS

^ - Labeled as a Science
Core Selection in the four
year plan of study

* - Requirement may be
met with a zero credit
experiential learning
option. See your advisor
for more information.

Composition & Presentation

Written Communication (3-4 credits)

Choose one course
from the Written
Communication list
[here](#). (satisfies
Written
Communication and
Information Literacy
for core)

Technical Writing And Presentation* (0- 6 credits)

Students may elect
to take one course
(COM 21700), a
combination of
courses, or
experiences to meet
the TWTP
requirement. The list
of approved courses
and experiences
can be found **here**
(ADD LINK IN
ACALOG). (satisfies
OC for core)

Special Note:
Students
completing
both COM

11400 (elective) and
COM

21700 (Technical
Writing and
Presentation
requirement) may
use both courses to
meet degree
requirements.

*Students wishing to
meet the Technical
Presentation and/or
Technical Writing
requirement through
experience are
required to
complete
the [Experiential
Learning Contract
process](#).

International
Students Only:
International
students whose
primary high
school/equivalent
instruction
was not in English
may meet this
requirement with a
course option only.

Computing

*Met with required
major coursework.*

Cultural Diversity (Language & Culture)^* (0-9 credits)

Choose courses from
this [list](#) to fulfill each
Option below (select
courses COULD satisfy
Humanities for core).

- Language &
Culture Option I
- Language &
Culture Option II
- Language &
Culture Option III

General Education^ (9 credits)

Choose courses from

this [list](#) to fulfill each Option below (select courses COULD satisfy Behavioral/Social Science for core).

- General Education Option I
- General Education Option II
- General Education Option III

Great Issues In Science (3 credits)

Choose one from this [list](#).

Laboratory Science (6-8 credits)

Choose courses from this [list](#) to fulfill each Option below (satisfies Science for core).

- Laboratory Science Option I
- Laboratory Science Option II

Mathematics (8-10 credits)

(satisfies Quantitative Reasoning for core)

- [MA 16100 - Plane Analytic Geometry And Calculus I](#)
(must have C or better to meet prerequisite for [CS 18200](#)) or
- [MA 16500 - Analytic Geometry And Calculus I](#)
(must have C or better to meet prerequisite for [CS 18200](#))
- [MA 16200 - Plane Analytic Geometry And Calculus II](#) or
- [MA 16600 - Analytic Geometry And Calculus II](#)

Multidisciplinary Experience[^]* (0-3 credits)

Choose one from the Science Technology and Society [list here](#), excluding those on the College of Science No Count list (satisfies STS for core).

Statistics (3 credits)

- [STAT 35000 - Introduction To Statistics](#) ♦ or
- [STAT 51100 - Statistical Methods](#) ♦

Team-Building and Collaboration

Met with required major coursework.

Electives (16-42 credits)

[CS 19300 - Tools](#) is a required freshman seminar course; corequisites with [CS 18000](#). This is not a degree requirement. [CS 29100 - Sophomore Development Seminar](#) and [CS 39100 - Junior Resources Seminar](#) are optional but recommended.

Grade 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.

GPA Requirements

- 2.0 Major and

Graduation GPA
required for Bachelor of
Science degree.

Course Requirements & Notes

- Enrollment in freshman seminar course CS 19300 is required with CS 18000. This not a degree requirement. CS 29100 - Sophomore Development Seminar and CS 39100 - Junior Resources Seminar are optional but recommended.
- No course can be counted both for a required and selective course within the same track.

College of Science Pass/No Pass Option Policy

- Only free electives and courses at the 50000-level general education requirement may be taken under the pass/not-pass option.
- The pass/not-pass grade mode may be entered for courses which are not required by a student's major(s), minor(s) or science core curriculum.
- Grade mode Passing is equivalent to at a minimum grade of C- had a letter grade been awarded.
- Students may elect to use the pass/not-pass option for no more than 20% of the 124/120 credit requirement for graduation and for no more than two courses per academic year (Fall-Summer).
- The pass/not-pass option cannot be elected

for a course that has already been completed with a letter grade. University Regulation.

- Students may take elective credit while abroad using the P/NP mode. In the case of universities which only post P/NP, the University will apply a calculation process to determine a letter grade.
- Department of Languages and Cultures P/NP policy and Language Placement results. Students must take advanced coursework for a letter grade to receive credit for lower-level language courses.

College of Science Transfer Credit Policy

College of Science degree programs vary widely in their approval and use of non-Purdue originated credit (AP, IB, CLEP, and transfer credit). Students work closely with their academic advisors and degree plan audits to review the use and approval of each non-Purdue credit option.

University Requirements

University Core Requirements

For a complete listing of University Core Course Selectives, visit the [Provost's Website](#).

- Human Cultures: Behavioral/Social Science (BSS)
- Human Cultures: Humanities (HUM)
- Information Literacy (IL)

- Oral Communication (OC)
- Quantitative Reasoning (QR)
- Science #1 (SCI)
- Science #2 (SCI)
- Science, Technology, and Society (STS)
- Written Communication (WC)

Civics Literacy Proficiency Requirement

The Civics Literacy Proficiency activities are designed to develop civic knowledge of Purdue students in an effort to graduate a more informed citizenry. For more information visit the Civics Literacy Proficiency [website](#).

Students will complete the Proficiency by passing a test of civic knowledge, and completing one of three paths:

- Attending six approved civics-related events and completing an assessment for each; or
- Completing 12 podcasts created by the Purdue Center for C-SPAN Scholarship and Engagement that use C-SPAN material and completing an assessment for each; or
- Earning a passing grade for one of [these approved courses](#) (or transferring in approved AP or departmental credit in lieu of taking a course).

Upper Level Requirement

- Resident study at Purdue University for

at least two semesters and the enrollment in and completion of at least 32 semester hours of coursework required and approved for the completion of the degree. These courses are expected to be at least junior-level (30000+) courses.

- Students should be able to fulfill *most, if not all*, of these credits within their major requirements; there should be a clear pathway for students to complete any credits not completed within their major.

Sample 4-Year Plan

Fall 1st Year

- [CS 18000 - Problem Solving And Object-Oriented Programming](#) ♦ ***
- [MA 16100 - Plane Analytic Geometry And Calculus I](#) or
- [MA 16500 - Analytic Geometry And Calculus I](#)
- Science Core Selection - Credit Hours: 3.00-4.00 (English Composition suggested.)
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 1.00 (CS 19300 suggested.)

15-17 Credits

Spring 1st Year

- [CS 18200 - Foundations Of](#)

Computer Science ♦

- CS 24000 - Programming In C ♦

- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II

- Science Core First-Year Composition Selection - Credit Hours: 3.00-4.00
- Electives - Credit Hours: 1.00 - 3.00

14-18 Credits

Fall 2nd Year

- CS 25000 - Computer Architecture ***
- CS 25100 - Data Structures And Algorithms ***
- MA 26100 - Multivariate Calculus or
- MA 27101 - Honors Multivariate Calculus
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 1.00 (CS 29100 recommended)

15-17 Credits

Spring 2nd Year

- CS 25200 - Systems Programming ***
- MA 26500 - Linear Algebra or
- MA 35100 - Elementary Linear Algebra
- Science Core Selection - Credit Hours: 3.00 - 4.00

(COM
21700 suggested.)

- Science Core
Selection - Credit
Hours: 3.00 - 4.00
- Elective - Credit
Hours: 3.00

16-17 Credits

Fall 3rd Year

- [STAT 35000 - Introduction To Statistics](#) ♦ or
- [STAT 51100 - Statistical Methods](#) ♦
- Security
Concentration course
- Credit Hours: 3.00

- Security
Concentration course
- Credit Hours: 3.00

- Science Core
Selection - Credit
Hours: 3.00 - 4.00
- Elective - Credit
Hours: 1.00 ([CS 39100](#) recommended)
- Elective - Credit
Hours: 3.00

16-17 Credits

Spring 3rd Year

- Security
Concentration course
- Credit Hours: 3.00

- Security
Concentration course
- Credit Hours: 3.00

- Great Issues In
Science Selection -
Credit Hours: 3.00
- Science Core
Selection - Credit
Hours: 3.00 - 4.00
- Elective - Credit
Hours: 3.00

15-17 Credits

Fall 4th Year

- Security
Concentration course
- Credit Hours: 3.00

- Science Core
Selection - Credit
Hours: 3.00 - 4.00
- Science Core
Selection - Credit
Hours: 3.00 - 4.00
- Elective - Credit
Hours: 3.00
- Elective - Credit
Hours: 3.00
- Elective - Credit
Hours: 1.00

16-18 Credits

Spring 4th Year

- Security
Concentration course
- Credit Hours: 3.00

- Science Core
Selection - Credit
Hours: 3.00 - 4.00
- Science Core
Selection - Credit
Hours: 3.00 - 4.00
- Elective - Credit
Hours: 3.00
- Elective - Credit
Hours: 3.00

15-17 Credits

World Language Courses

World Language proficiency requirements vary by program. The following list is inclusive of all world languages PWL offers for credit; for acceptable languages and proficiency levels, see your advisor. (ASL-American Sign Language; ARAB-Arabic; CHNS-Chinese; FR-French; GER-German; GREK-Greek(Ancient); HEBR-Hebrew(Biblical); HEBR-

Hebrew(Modern); ITAL-
Italian; JPNS-Japanese;
KOR-Korean; LATN-Latin;
PTGS=Portuguese; RUSS-
Russian; SPAN-Spanish)

Critical Course

The ♦ course is
considered
critical.

In alignment with
the Degree Map
Guidance for
Indiana's Public
Colleges and
Universities,
published by the
Commission for
Higher Education
(pursuant to HEA
1348-2013), a
Critical Course is
identified as "one
that a student
must be able to
pass to persist
and succeed in a
particular major.
Students who
want to be
nurses, for
example, should
know that they
are expected to
be proficient in
courses like
biology in order
to be successful.
These would be
identified by the
institutions for
each degree
program".

Disclaimer

The student is
ultimately
responsible for
knowing and
completing all
degree
requirements.

Consultation with
an advisor may
result in an
altered plan
customized for
an individual

student.

The
myPurduePlan
powered by
DegreeWorks is
the knowledge
source for
specific

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completion.

