

## Department of Computer Science & Information Technology

### BSCS 4-Year Schedule Planning Guide

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#### Sample Schedule Plans: Overview

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The BS major program in Computer Science currently requires 47 computer science credits comprising 12 specified computer science courses, 3 CS elective courses, statistics, discrete mathematics, calculus. It also requires a minimum 15 credits of mathematics, including the required courses, and a total of 30 credits of mathematics and science, including at least two semesters of lab science.

Intermediate and advanced CS courses all have prerequisites which must be completed before registering for them. The prerequisite structure is shown in the chart on page 6.

The Hood Core Curriculum Foundation requires courses in First Year Seminar, English Composition, Mathematics, Foreign Language, and Health & Wellness. Completing the mathematics requirement for the CS major meets the Core Curriculum mathematics requirement.

The Core Curriculum Methods of Inquiry requires courses in Literature, Visual & Performing Arts, Scientific Thought, History, Social and Behavioral Science and Philosophy. Completing the science requirement for the CS major meets the Core Curriculum Science requirement.

For the Core Curriculum, students must take at least one course which addresses Global Perspectives. The course CSIT 302 Impact of Computers on Society, required for the CS major, meets the Global Perspectives requirement.

This guide provides four sample program plans showing how to fit all core, major, and elective requirements into four years. It is intended to assist the student in planning when to take courses in the core curriculum, major, math & science, and electives. It is not intended to replace consultation with an advisor.

**4-year Plan 1****Level 3 math placement****Begin major courses in first year, first semester.**

<b>Freshman year: Fall</b> 15-16 credits (7-8 core, 4 major, 4 math/sci)	<b>Freshman year: Spring</b> 15-16 credits (4-5 core, 4 major, 7 math/sci)
FYS 101-03 Joy of Computing (3cr) or other FYS. CS 201 CS I (4cr) Math 201 Calculus I (4cr) Core Methods of Inquiry: Soc & Behav (3-4cr) PE (1cr)	ENGL 1xx (3-4cr) CS 202 CS II (4cr) Math 202 Calculus II (4cr) Math 207 Discrete Math (3cr) PE (1cr)
<b>Sophomore year: Fall</b> 15 credits (8 core, 3 major, 4 math/sci)	<b>Sophomore year: Spring</b> 17 credits (7 core, 6 major, 4 math/sci)
CS 219 Data Structures (3cr) For Lang 101 (4cr) Lab ScienceA I (4cr) Core Methods of Inquiry: History (4cr)	CS 226 Computer Organization (3cr) CS 319 Algorithms (3cr) For Lang 102 (4cr) Lab ScienceA II (4cr) Core Methods of Inquiry: Philosophy (3cr)
<b>Junior year: Fall</b> 16 credits (0 core, 9 major, 7 math/sci)	<b>Junior year: Spring</b> 16-18 credits (3-4 core, 6 major, 4 math/sci, 3-4 elective)
CS 324 Software Engineering (3cr) CS 471 Programming Languages (3cr) CS Elective (3cr) Lab ScienceB I or level 200+ Math (4cr) Math 112 Statistics (3cr)	CS 329 DBMS (3cr) CS 464 Operating Systems (3cr) Lab ScienceB II or level 200+ Math (4cr) Core Methods of Inquiry: Arts (3-4cr) Free Elective (3-4cr)
<b>Senior year: Fall</b> 16-17 credits (4 core, 9 major, 3-4elective)	<b>Senior year: Spring</b> 12-14 credits (6 major, 6-8 elective)
CS 474 Capstone Proseminar (3cr) CS Elective (3cr) CSIT 302 Impact of Computers on Society (3cr) Core Methods of Inquiry: Literature (4cr) Free Elective (3-4cr)	CS 475 Senior Project (3cr) CS Elective (3cr) Free Elective (3-4cr) Free Elective (3-4cr)

**Total credits shown:** 122-129 depending on core and elective choices where both 3 & 4 credit courses are options.

A student must either select some 4-credit options or take an additional course. A student who selects primarily 4-credit courses may take fewer electives if desired.

**4-year Plan 2****Level 3 math placement****Begin major courses in first year, second semester.**

<b>Freshman year: Fall</b> 16 credits (8 core, 0 major, 8 math/sci)	<b>Freshman year: Spring</b> 15-16 credits (3-4 core, 4 major, 8 math/sci)
FYS 101 (Joy of Computing) (3cr) or other FYS Math 201 Calculus I (4cr) Lab ScienceA I (4cr) Core Methods of Inquiry: History (4cr) PE (1cr)	ENGL 1xx (3-4cr) Math 202 Calculus II (4cr) Lab ScienceA II (4cr) CS 201 CS I (4cr)
<b>Sophomore year: Fall</b> 15-16 credits (8-9 core, 4 major, 36 math/sci)	<b>Sophomore year: Spring</b> 16-17 credits (7-8 core, 6 major, 3 math/sci)
CS 202 CS II (4cr) Math 207 Discrete Math (3cr) For Lang 101 (4cr) Core Methods of Inquiry: Arts (3-4 cr) PE (1cr)	CS 219 Data Structures (3cr) CS 329 DBMS (3cr) For Lang 102 (4cr) Core Methods of Inquiry: Soc & Behav (3-4 cr) Math 112 Statistics (3cr)
<b>Junior year: Fall</b> 16-17 credits (9 major, 4 math/sci, 3-4 elective)	<b>Junior year: Spring</b> 16 credits (3 core, 6 major, 4 math/sci), 3-4elective
CS 226 Computer Organization (3cr) CS 324 Software Engineering (3cr) CS Elective (3cr) Lab ScienceB I or level 200+ Math (4cr) Free Elective (3-4cr)	CS 319 Algorithms (3cr) CS 464 Operating Systems (3cr) CSIT 302 Impact of Computers on Society (3cr) Lab ScienceB II or level 200+ Math (4cr) Core Methods of Inquiry: Philosophy (3cr)
<b>Senior year: Fall</b> 16-17credits (4 core, 9 major, 3-4 elective)	<b>Senior year: Spring</b> 12-3 credits (4 core, 6 major, 6-7 elective)
CS 471 Programming Languages (3cr) CS 474 Capstone Proseminar (3cr) CS Elective (3cr) Core Methods of Inquiry: Literature (4cr) Free Elective (3-4cr)	CS 475 Senior Project (3cr) CS Elective (3cr) Free Elective (3-4cr) Free Elective (3cr)

**Total credits shown:** 122-129 depending on core and elective choices where both 3 & 4 credit courses are options.

A student must either select some 4-credit options or take an additional course. A student who selects primarily 4-credit courses may take fewer electives if desired.

**4-year Plan 3****Level 2 or level 2L mathematics placement****Begin major courses in the first year second semester**

<b>Freshman year: Fall</b> 14-16 credits (11-12 core, 0 major, 3-4 elective)	<b>Freshman year: Spring</b> 15-16 credits (8-9 core, 4 major, 3 math/sci)
FYS 101 (Joy of Computing) (3cr) or other FYS Math 120 Precalculus (3cr) OR Math 120 + Math 120L (4cr) For Lang 101 (4cr) Core Methods of Inquiry: Soc & Behav (3-4 cr) PE (1cr)	ENGL 1xx (3-4cr) CS 201 CS I (4cr) Math 207 Discrete Math (3cr) For Lang 102 (4cr) PE (1cr)
<b>Sophomore year: Fall</b> 16 credits (4 core, 4 major, 8 math/sci)	<b>Sophomore year: Spring</b> 17-18 credits (3-4 core, 6 major, 8 math/sci)
CS 202 CS II (4cr) Math 201 Calculus I (4cr) Lab ScienceA I (4cr) Core Methods of Inquiry: History (4cr)	CS 226 Computer Organization (3cr) CS 219 Data Structures (3cr) Math 202 Calculus II (4cr) Lab ScienceA II (4cr) Core Methods of Inquiry: Arts (3-4 cr)
<b>Junior year: Fall</b> 16 credits (3 core, 6 major, 7 math/sci)	<b>Junior year: Spring</b> 16-17 credits (9 major, 7 math/sci)
CS 324 Software Engineering (3cr) CS Elective (3cr) Math 112 Statistics (3cr) Lab ScienceB I or level 200+ Math (4cr) Core Methods of Inquiry: Philosophy (3cr)	CS 319 Algorithms (3cr) CS 329 DBMS (3cr) CS Elective (3cr) Lab ScienceB I or level 200+ Math (4cr) Free Elective (3-4cr)
<b>Senior year: Fall</b> 16-17 credits (4 core, 9 major, 3-4 elective)	<b>Senior year: Spring</b> 12-13 credits (9 major, 3-4 elective)
CS 471 Programming Languages (3cr) CS 474 Capstone Proseminar (3cr) CSIT 302 Impact of Computers on Society (3cr) Core Methods of Inquiry: Literature (4cr) Free Elective (3-4 cr)	CS 464 Operating Systems (3cr) CS 475 Senior Project (3cr) CS Elective (3cr) Free Elective (3-4cr)

**Total credits shown:** 122-129 depending on core and elective choices where both 3 & 4 credit courses are options.

A student must either select some 4-credit options or take an additional course. A student who selects primarily 4-credit courses may take fewer electives if desired.

**4-year Plan 4****Level 2 or level 2L math placement****Begin major courses in the sophomore year.**

This plan also illustrates a possible 3-year program for a transfer student.

<b>Freshman year: Fall</b> 14-16 credits (11-12 core, 0 major, 3-4 elective)	<b>Freshman year: Spring</b> 16-17 credits (12-13 core, 0 major, 4 math/sci)
FYS 101 (Joy of Computing) (3cr) or other FYS Math 120 Precalculus (3cr) OR Math 120 + Math 120L (4cr) For Lang 101 (4cr) Core Methods of Inquiry: Soc & Behav (3-4 cr) PE (1cr)	ENGL 1xx (3-4cr) Math 201 Calculus I (4cr) For Lang 102 (4cr) Core Methods of Inquiry: History (4cr) PE (1cr)
<b>Sophomore year: Fall</b> 15 credits (3 core, 4 major, 8 math/sci)	<b>Sophomore year: Spring</b> 17-18 credits (3-4 core, 7 major, 7 math/sci)
CS 201 CS I (4cr) Math 202 Calculus II (4cr) Lab ScienceA I (4cr) Core Methods of Inquiry: Philosophy (3cr)	CS 202 CS II (4cr) CS 226 Computer Organization (3cr) Lab ScienceA II (4cr) Math 207 Discrete Math (3cr) Core Methods of Inquiry: Arts (3-4 cr)
<b>Junior year: Fall</b> 17 credits (3 core, 6 major, 4 math/sci, 3 elective)	<b>Junior year: Spring</b> 16 credits (12 major, 4 math/sci)
CS 219 Data Structures (3cr) CS 324 Software Engineering (3cr) Math 112 Statistics (3cr) Lab ScienceB I or level 200+ Math (4cr) Free Elective (3-4cr)	CS 319 Algorithms (3cr) CS 329 DBMS (3cr) CS Elective (3cr) CSIT 302 Impact of Computers on Society (3cr) Lab ScienceB I or level 200+ Math (4cr)
<b>Senior year: Fall</b> 15-12 credits (3-4 core, 9 major, 3 elective)	<b>Senior year: Spring</b> 12-13 credits (4 core, 9 major)
CS 471 Programming Languages (3cr) CS 474 Capstone Proseminar (3cr) CS Elective (3cr) Core Methods of Inquiry: Literature (4cr) Free Elective (3-4cr)	CS 464 Operating Systems (3cr) CS 475 Senior Project (3cr) CS Elective (3cr) Free Elective (3-4cr)

**Total credits shown:** 122-129 depending on core and elective choices where both 3 & 4 credit courses are options.

A student must either select some 4-credit options or take an additional course. A student who selects primarily 4-credit courses may take fewer electives if desired.

## BSCS Course Prerequisite Structure

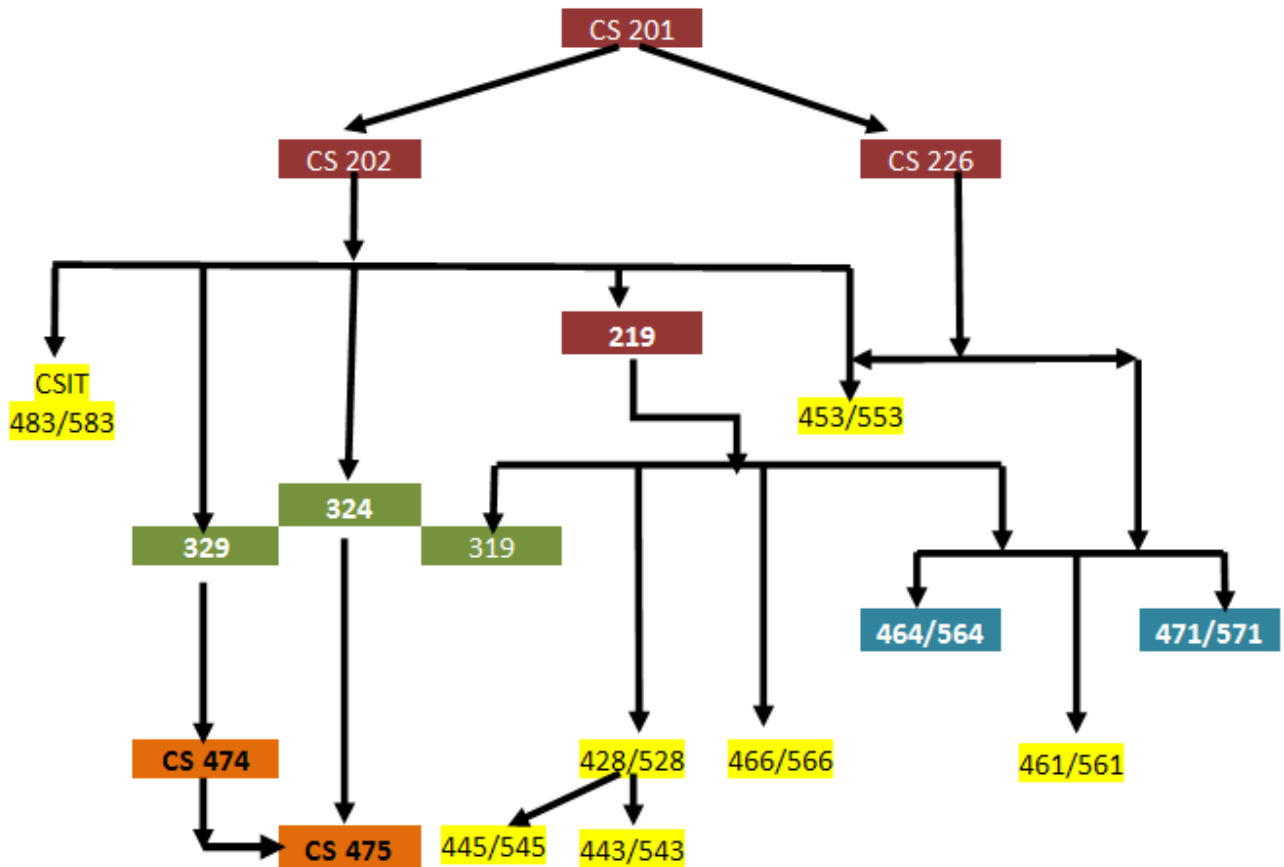
**Foundation:** CS I, CS II, Data structures, Computer Organization. These courses are Freshman/Sophomore or Sophomore level, depending on the student's entering preparation.

**Core:** Mid-level courses, which may be prerequisite to advanced courses. Algorithms, Database, Software Engineering. Sophomore/Junior level.

**Advanced Core:** Required courses with more prerequisites. Operating systems and Programming Languages. Junior/Senior level.

**Capstone:** Capstone Proseminar, Senior Project. Strictly senior level. Though only database and software engineering are specifically required, most required coursework should be completed **before** taking these courses, not piled up concurrently.

**Electives:** include AI, Data Comm, Architecture, Robotics, Machine Learning, Parallel Processing, Web Programming, Digital Logic(offered infrequently), and special topics.



**Assumptions:** The student

- is not restricted to a limited credit load
- has at least Level 2L Math Placement. Students who do not achieve this placement level may have difficulty pursuing the major.
- places at the 101-level in foreign language. Students who place into 103 or higher exempt the core requirement and can receive additional credits if they take the language the first semester.
- takes First Year Seminar
- is not participating in the Honors program. Students in the Honors program will take Honors colloquia in place of the FYS and three Methods of Inquiry courses and will take upper-level honors courses in place of electives. They must also complete a language through the 104-level.)

**Core Constraints:**

- The FYS currently acts as a wild card that can replace a Methods of Inquiry core course. However it is not clear if this option will continue, so these plans include all Methods of Inquiry categories plus the FYS.
- The required major course CSIT 302 Impact of Computers on Society also meets the Global Perspectives core requirement.
- The plans indicate specific Methods of Inquiry categories in specific semesters. These may be interchanged as needed.

**Major constraints:**

- The major courses will require three years to complete, typically more.
- Prospective transfer students who expect to complete the program in fewer than three years must successfully transfer the equivalents of most of the initial courses CS I & II, Calculus I & II, and discrete mathematics. Most Maryland community colleges which prepare students for transfer to College Park or UMBC have a standard CS I and CS II sequence.
- CS 474 and CS 475 can only be taken in the fall and spring respectively. Students who intend to finish in December should take the sequence the preceding year.

**Other constraints:**

- All science courses must be courses intended for science majors.
- Additional math courses must be at least 200-level.

## PROGRESS CHECKLIST

Name \_\_\_\_\_ Term Entered \_\_\_\_\_ Expected Grad \_\_\_\_\_

### Hood Core Curriculum and Total Credit (124) Requirements – See Hood College *Catalog*

#### Required Computer Science Courses

- CS 201 *Computer Science I*
- CS 202 *Computer Science II*
- CS 219 *Advanced Data Structures*
- CS 226 *Computer Organization and Design*
- CS 319 *Algorithm Analysis*
- CS 324 *Principles of Software Engineering*
- CS 329 *Introduction to Database Management Systems*
- CS 464 *Operating Systems*
- CS 471 *Programming Languages*
- CS 474 *Capstone Proseminar*
- CS 475 *Senior Project*
- CSIT 302 *Impact of Computers on Society (Also meets Global Studies requirement)*
  
- 9 credits of 300-level or above computer science elective courses, no more than three credits of which may be an internship or assistantship.
  
- CS \_\_\_\_\_
- CS \_\_\_\_\_
- CS \_\_\_\_\_



**Required Mathematics Courses (14 credits)**

- MATH 112 *Applied Statistics Statistics OR Math 213 Statistical Concepts and Methods (3 credits)*
- MATH 201 *Calculus I (4 credits)*
- MATH 202 *Calculus II (4 credits)*
- MATH 207 *Discrete Mathematics (3 credits)*

*Additional Mathematics for a minimum of 15 credits (including 14 credits for required courses). Courses should be at least 200-level and may not be computer lab workshops offered in conjunction with calculus, linear algebra, or other courses. MATH 398 Mathematics Tutorial may be used.*

- \_\_\_\_\_
- \_\_\_\_\_

*Science courses for a total of 30 credits of mathematics and science. Science courses should be selected from courses designed for science majors. Computer Science majors should be sure to take appropriate courses to meet Core Curriculum requirements. **Important: non-lab sciences do NOT count.***

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

**Science Courses which may be used to meet the requirement**

BIOL 112 Biology of Food & Nutrition	CHEM 209 Organic Chemistry I
BIOL 113 Newsstand Biology	CHEM 215 Quantitative Analysis
BIOL 114 Biodiversity: Past Present & Future	PHYS 101 General Physics I (Non-calculus)
BIOL 117 This Course Will Bug You	PHYS 102 General Physics II (Non-calculus)
BIOL 119 Biology of Marine Organisms	PHYS 203 Introductory Physics I (Calculus-based)
BIOL 201 Evolution & Ecology	PHYS 204 Introductory Physics II (Calculus-based)
BIOL 202 Physiology of Plants & Animals	PHYS 222 Intro Modern Physics
BIOL 203 Intro to Cell Biology & Genetics	PHYS 324 Mechanics
CHEM 101 General Chemistry I	PHYS 325 Electricity & Magnetism
CHEM 102 General Chemistry II	