

COMPUTER SCIENCE MAJOR (BS)

Major Requirements

Bachelor of Science in Computer Science

127 credits

Major Requirements

For a major in Computer Science, students complete the following:

| Code | Title | Credits |
|--|---|---------|
| Foundation Courses | | |
| CPEG 2245 & 2245L | Digital Design I and Digital Design I Lab | 4 |
| CPSC 1101 | Introduction to Computing (placement based) | 3 |
| or ENGR 1031 | Fundamentals of Engineering | |
| CPSC 1131 | Fundamentals of Programming | 3 |
| CPSC 2231 & 2231L | Programming Workshop and Programming Workshop Lab | 4 |
| CPSC 2232 & 2232L | Data Structures and Data Structures Lab | 4 |
| MATH 1141 | Calculus I for Chemistry, Engineering, and Physics Majors ¹ | 4 |
| MATH 1142 | Calculus II for Chemistry, Engineering, and Physics Majors ¹ | 4 |
| MATH 2231 | Discrete Mathematics | 3 |
| Select two natural science electives with labs ¹ | | 8 |
| Select two elective courses in Mathematics ² | | 6 |
| Depth Courses | | |
| CPEG 3346 | Computer Systems Architecture | 3 |
| CPSC 2250L | Computer Science Sophomore Clinic | 1 |
| CPSC 2304 | Web Development | 3 |
| CPSC 3333 | Introduction to Cybersecurity | 3 |
| CPSC 3343 | Design and Analysis of Algorithms | 3 |
| CPSC 3351L | Computer Science Junior Clinic I | 1 |
| CPSC 3352L | Computer Science Junior Clinic II | 1 |
| CPSC 3354 | Theory of Programming Languages | 3 |
| ENGR 4961 | Senior Design Project I | 3 |
| ENGR 4962 | Senior Design Project II | 3 |
| SWEG 3301 | Software Engineering Methods | 3 |
| SWEG 3302 | Software Design Methods | 3 |
| CPSC 4331 | Operating Systems | 3 |
| Select one major elective from the following five courses: | | 3 |
| CPSC 4322 | Visual Analytics | |
| CPSC 4355 | Artificial Intelligence | |
| CPSC 4357 | Database Management Systems | |
| CPSC 4360 | Machine Learning | |
| CPSC 4521 | Information Visualization () | |
| Select a second major elective from the following two courses: | | 3 |
| CPSC 3349 | Cloud Computing | |

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|--|------------------|-----------|
| CPSC 4314 | Network Security | |
| Select two additional major electives in Computer Science ³ | | 6 |
| Total Credits | | 88 |

¹ Fulfills Magis Core requirement

² Math courses must be 2000 level or higher, courses are chosen under advisement of the faculty advisor and/or department chair

³ Major electives are chosen from the department, under advisement of the faculty advisor and department chair

In addition to Magis Core, foundation, and depth courses, students must complete two general electives (6 credits) for the BS in Computer Science Major.

Concentrations

Concentrations in Software Engineering and Computer Engineering are available to students majoring in Computer Science. These concentrations build on required courses in the program and require students to complete additional credits.

Computer Engineering Concentration

| Code | Title | Credits |
|--|---|--------------|
| CPEG 2245 & 2245L | Digital Design I and Digital Design I Lab | 4 |
| CPEG 3346 | Computer Systems Architecture | 3 |
| Select two courses from the following: | | 6-7 |
| CPEG 3246 | Digital Electronics Design II | |
| CPEG 3331 | Biomedical Signal Processing | |
| CPEG 4320 | Computer Networks | |
| or CPSC 4314 | Network Security | |
| CPEG 4332 | Biomedical Imaging | |
| ELEG 3348 & 3348L | Embedded Microcontrollers and Embedded Microcontrollers Lab | |
| Total Credits | | 13-14 |

Software Engineering Concentration

| Code | Title | Credits |
|------------------------|---|-----------|
| SWEG 3301 & CPSC 3351L | Software Engineering Methods and Computer Science Junior Clinic I | 4 |
| SWEG 3302 & CPSC 3352L | Software Design Methods and Computer Science Junior Clinic II | 4 |
| SWEG 4320 | Software Testing and Maintenance | 3 |
| SWEG 4321 | Software Project Management | 3 |
| or SWEG 4312 | Agile Software Engineering | |
| Total Credits | | 14 |