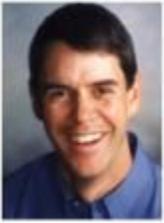# Computer Science

"Computer Science provides the kind of dynamic, interactive work environment few fields can match. Software developers and analysts invariably work in teams to tackle cutting-edge projects. We join forces with scientists, doctors, military commanders, social psychologists, and others to produce solutions that are bigger than the sum of their parts. We enjoy the satisfaction of working with our peers to make a common vision become reality. Our goal is to invent, create, and solve problems in exciting new ways."

Dr. Stephen Davies, chair

Department of Computer Science

Trinkle Hall Basement

Department Website

Department Chair
Stephen Davies
Trinkle, B22
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The **Computer Science** major includes challenging coursework in both theoretical and applied areas, and paves the way for a dynamic career path or graduate school. Nearly 100% of our department's graduates have received multiple lucrative job offers in high-tech positions by the time they graduate, often in software engineering, mobile computing, web application development, or scientific simulation and analysis. All Computer Science students complete a rigorous foundation in computer programming and software development, as well as courses in databases, computation theory, hardware design, and operating systems. Some of our many electives include artificial intelligence, data mining, computer security, networks, gaming, 3D graphics, scientific modeling, and web application development.

Our new minor in **Data Science**, offered jointly with the Department of Mathematics and the College of Business, teaches principles and builds skills in the science of how and why we use data. It is an attractive option that can enhance the credentials for students in a wide variety of disciplines. The 15-credit minor (five courses) is designed to provide students with the core fundamental coursework in data analysis, statistics, and programming to succeed in this rapidly developing area.

Also, our new **Information Security** Minor, offered jointly with the College of Business, provides students with a solid foundation in security fundamentals and also flexibly combines with a number of majors, such as Business, Computer Science, and Mathematics. This 17-credit minor (six courses) allows the student to position him or herself for a particular area of the information security job market, from managerial to software development. It includes in-depth and hands-on exposure to several key areas of information security such as system/OS security, penetration testing, and software security, thus allowing the student to obtain hands-on practical experience in these areas.

Course Placement:

- Students who are interested in pursuing the Computer Science major and/or Information Security minor, but who have little or no prior computer programming experience, should enroll in **CPSC 110.** This course provides the programming experience necessary to pursue the major or minor, and also partially satisfies the General Education requirement for Quantitative Reasoning.
- Students interested in exploring the Data Science minor should enroll in **DATA 101**, the gateway course for this minor. This course, like CPSC 110, includes some computer programming content, though the programs students write are not as long as in CPSC 110, and are focused on data analysis rather than algorithmic development.
- Students with prior computer programming experience in C++, Java, Python, JavaScript, VisualBasic, or another high-level programming language should consider enrolling in **CPSC 220**. Students with a solid foundation in programming may place into CPSC 220 without taking CPSC 110. Such students should send email to cpscdept@umw.edu for an evaluation of their current programming knowledge and possible permission to register for CPSC 220. AP credit or transfer credit equivalent to CPSC 110 is not required to obtain this permission.
- Students who have earned a 3 or 4 on the AP Computer Science A exam will be awarded three credits equivalent to CPSC 110. These students should select CPSC 220 as their first course in computer science.
- Students who earned a 5 on this exam will receive four credits equivalent to CPSC 220, and have CPSC 110 waived entirely. These students should select CPSC 240 as their first course in computer science.
- Students have earned a 5 or higher on the IB Information Technology in a Global Society HL exam will be awarded 3 credits equivalent to CPSC 110. These students should select CPSC 220 as their first course in computer science.
- Finally, students enrolling in CPSC 220 should also consider taking **CPSC 225** (Software Development Tools) and **CPSC 284** (Applied Discrete Mathematics), both of which are required for the Computer Science major.

In all cases, placement adjustments can be made during the first week of the semester.

Below please find some examples of first semester schedules for a computer science major. There are many variations of a first semester schedule; the examples are just meant to help you see that there are many ways to reach the same goals.

Example 1:

Course (credits)	Requirement(s) Met
1. CPSC 110** - Intro to Computer Science (3) 2. FSEM 100 – Computation: Minds and Machines (3) 3. CHEM 111 – General Chemistry I (4) 4. ARAB 101** - Beginning Arabic (3) 5. MUPR 205A - Class Piano I (1)	Major Prerequisite, QR FSEM Natural Science Language Elective

Example 2:

Course (credits)	Requirement(s) Met
1. CPSC 220** - Programming and Problem Solving (4) 2. FSEM 100 – Cryptology (3) 3. LATN 101** - Elementary Latin (3) 4. CPSC 225 – Software Development Tools (1) 5. CPSC 284 – Applied Discrete Mathematics (4)	Major course, QR FSEM Language Major course Major course, QR

Example 3: Athletes for varsity sports must register for the 400-level course of the sport. Practice times for varsity sports can vary, but generally speaking, athletes should allow for enough time to get to and from practice on weekdays from 3 - 6 p.m. Please check with the individual coach for your sport to verify specific practice times each semester.

Course (credits)	Requirement(s) Met
1. CPSC 110 – Intro to Computer Science (3) 2. PSYC 101 – General Psychology (3) 3. GEOG 205 - Intro to GIS & Cartography w/lab (4) 4. FSEM 100 – Numbers Rule Your World (3) 5. PHYD 404 – Intercollegiate Basketball – Women (1)	Major Prerequisite, QR Human Exp Elective FSEM Elective

Please note that not all sections of a course may have the Speaking Intensive (SI) or Writing Intensive (WI) attributes. These designations for a course are dependent on instructor and semester, and are listed in the Banner description for the semester in which you are registering.

**This particular course is in a discipline that allows students with demonstrated competence upon admission to UMW (such as AP/IB credit, dual enrollment, etc.) to begin courses at a higher level. Talk to your Student Success Coordinator if you believe you should start at a higher level.*