Computer Science

An Associate of Science with an emphasis in Computer Science is a transfer degree intended to provide students with an overwhelming majority of the first two years’ coursework required for a Bachelor of Science in Computer Science. A degree in Computer Science is a degree is programming: creating new software applications. This is a high-demand, high-paying field that offers job security and ongoing growth as the number of computing devices and demand for sophisticated operating systems, web and productivity applications, and game increases. We encourage all students interested in this program to pursue a co-enrollment option with the university. For information contact ~~Debra Carino, 503-594-3170 or~~ *~~dcarino@clackamas.edu~~*  *Jen Miller (503-594-3138, jen.miller@clackamas.edu) or* Richard Albers (503-594-3166, *richa@clackamas.edu)*

CAREERS

AS degrees are not designed to be direct-to-work credentials. Students completing a Bachelor of Science in Computer Science, *depending upon internships and focused electives*, would be qualified for a career in computer programming with possible job titles including, but not limited to:

• application developer

• game developer

• web developer

PROGRAM OUTCOMES

Upon successful completion of this program, students should be able to:

• explain the software development lifecycle and the specific tools and processes used to create software,

• describe the components, purposes, and benefits of both structured and object-oriented programming paradigms and demonstrate the development of software using them in a high-level language;

~~• use mathematical and scientific knowledge to logically/programmatically model physical events,~~

~~• describe why and how to use several complex data structures to store and manipulate data in software applications,~~

~~• articulate and justify technical solutions to an audience through oral, written, and graphical communication;~~

~~• communicate the importance of professional and ethical responsibilities and be aware of codes of conduct and other sources of guidance for professionally ethical decision making,~~

• explain and demonstrate various ways information is stored and manipulated, at both a low and high level, in computer systems and software,

• employ mathematics and computing techniques in a system and rigorous manner to solve technical problems,

• exhibit good teamwork skills and serve as effective members of project teams~~,~~

~~• transfer smoothly into a related Bachelor of Science program at a four-year college or university.~~

 *Associate of Science with an emphasis in
Computer Science with Portland State University*

PREREQUISITES

Students entering the Associate of Science degree are expected to have the following courses complete, or to place at a level higher than the courses indicated:

• CS-120 Survey of Computing

• WR-095 Paragraph to Essay

• MTH-112 Trigonometry/Pre-Calculus

PROGRAM REQUIREMENTS—FIRST YEAR

FALL TERM CREDITS

BI-211 General Biology for Science Majors

 (Cellular Biology)

 or CH-221 General Chemistry

 or PH-211 Physics with Calculus 5

CS-161 Computer Science I 4

MTH-251 Calculus I 5

**WINTER TERM**

BI-212 General Biology for Science Majors

 (Animal Biology)

 or CH-222 General Chemistry

 or PH-212 Physics with Calculus 5

CS-162 Computer Science II 4

MTH-252 Calculus II 5

**SPRING TERM**

BI-213 General Biology for Science Majors

 (Plant Biology & Ecology)

 or CH-223 General Chemistry

 or PH-213 Physics with Calculus 5

CS-260 Data Structures 4

MTH-253 Calculus III 5

— — Arts & Letters or Social Science electives 3-4

**SUMMER TERM**

COMM-111 Public Speaking 4

WR-121 English Composition 4

— — Arts & Letters or Social Science electives 3-4

— — Arts & Letters or Social Science electives 3-4

PROGRAM REQUIREMENTS—SECOND YEAR

FALL TERM CREDITS

CS-201 Computer Systems II 4

— — Computer Science recommended electives 3-4

— — Science electives 4

WINTER TERM

CS-202 Program Structures 4

CS-250 Discrete Structures I 4

WR-227 Technical Report Writing 4

— — Computer Science recommended electives 3-4

**SPRING TERM**

CS-251 Discrete Structures II 4

— — Computer Science recommended electives 3-4

— — Computer Science recommended electives 3-4

— — Arts & Letters or Social Science electives 3-4

*Credits required for degree 90-106*

Arts & Letters or Social Science electives

Any 100 level or above Arts & Letters or Social Science course in the prefixes of:

Arts & Letters

ART, ASL, BA, COMM, ENG, FR, GER, HUM, J, MUS, MUP, PHL, R, SPN, TA, WR

Social Science

ANT, EC, GEO, HST, PS, PSY, SOC, SSC, WS

Computer Science recommended electives

Students must choose 12-16 credits from the following two categories. Students do not need to complete all of the electives within any one category.

• Operating Systems

 Transfer students will be expected to be fluent with UNIX/Linux systems used in university labs. These courses, CS-140 and CS-240L, will help students with no Linux experience build the necessary competencies.

• Additional Languages

 These courses, CS-125H, CS-133S, CS-234J, and CS-234P, will help students expand their language repertoire to enhance their marketability and job opportunities.

Science electives

Any General Education science course listed under prefixes: BI, CH, ESR, G, and PH on p.50 of this catalog.