COMPUTER SCIENCE

Associate in Science Degree | Transfer Degree | Department of Mathematics and Computer Science

Program Description

The Computer Science curriculum provides an introduction to the field of computer science to ensure successful transfer to a senior college Computer Science program. Students learn to construct, verify and implement algorithms by writing and running programs in standard programming languages. The curriculum provides a broad background in science and the humanities, as well as a thorough grounding in discrete and continuous mathematics. The Computer Science AS program articulates with the Computer Science BS program at Lehman College and the BS In Computer Science and Information Security at John Jay College. BCC Computer Science graduates have successfully transferred to City College, Polytechnic University, Rensselaer Polytechnic Institute, Clarkson University, Pace University and others.

Learning Outcomes

Upon successful completion of the Computer Science program requirements, students will be able to:

1. Demonstrate the ability to apply knowledge of computing and mathematics appropriate to the discipline.
2. Demonstrate the ability to analyze a problem, and identify and define the computing requirements appropriate to its solution.
3. Demonstrate the ability to choose and use current techniques, skills, and tools necessary for computing practices.
4. Demonstrate the ability to apply mathematical foundations, algorithmic principles, and computer science theory in modeling and design of computer-based systems.
5. Demonstrate the ability to analyze the local and global impact of computing on individuals, organizations and society.

COMPUTER SCIENCE CURRICULUM (PATHWAYS)

60 Credits required for AS Degree

Curriculum Coordinator: Dr. Sharon Persinger

Required Core

A. English Composition (6 Credits)

B. Mathematical and Quantitative Reasoning

- MTH 31[1] Calculus and Analytic Geometry I (4 Credits)

C. Life and Physical Sciences

- SCIENCE I[2] BIO 11 General Biology I, *OR* CHM 11 General College Chemistry I, *OR* PHY 11 College Physics I, *OR* PHY 31 Physics I (4 Credits)

SUBTOTAL 14

Flexible Core

A. World Cultures and Global Issues (3 Credits)

B. U.S. Experience in its Diversity (3 Credits)

C. Creative Expression (3 Credits)

D. Individual and Society (3 Credits)

E. Scientific World

- CSI 30[1] Discrete Mathematics I (3 Credits)

Additional course from the Flexible Core E

- SCIENCE II[2] BIO 12 General Biology II, *OR* CHM 12 General College Chemistry II, *OR* PHY 12 College Physics II, *OR* PHY 32 Physics II (4 Credits)

SUBTOTAL 19

Major Requirements

- MTH 32 Analytic Geometry and Calculus II (4 Credits)
- MTH 33 Analytic Geometry and Calculus III (4 Credits)
- CSI 31 Introduction to Computer Programming I (3 Credits)
- CSI 32 Introduction to Computer Programming II (3 Credits)
- CSI 35 Discrete Mathematics II (3 Credits)
- CSI 33 Data Structures (3 Credits)

Free Electives (0-7 Credits)[3]

SUBTOTAL 27

[1] If a student is required to take MTH 28 College Algebra and Elementary Trigonometry or MTH 30 Precalculus, then the following applies:

- If MTH 28 is required, then MTH 28 applies to Required Core B; MTH 30 applies to Scientific World; and CSI 30 and MTH 31 will be required in the major courses. Free electives reduced to 0.
- If student is exempted from MTH 28 but MTH 30 is required, then MTH 30 applies to Required Core B and MTH 31 will be required in the major courses. Free electives reduced to 3.

[2] SCI I and II must form a sequence, e.g., BIO 11 and 12.

[3] Free electives are available only to students who start the math sequence with MTH 30 or 31. See note #1.

NOTES: The program has been given a waiver to require specific STEM/STEM Variant courses in Required Area B, Required Area C and Flexible Area E. If students transferring into this program complete different courses in these areas, they will be certified as having completed the Common Core requirements, but it may not be possible for them to finish their degree within the regular number (60) of credits. Students who plan to transfer from this program should consult the requirements of the senior college of their choice, including any language requirements. All BCC associate degree students must take two courses designated as "writing intensive."