

# 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 B.S. 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. Uma Iyer

### Required Core

- A. English Composition (6 Credits)
- B. Mathematical and Quantitative Reasoning
  - MTH 31<sup>1</sup> Calculus and Analytic Geometry I (4 Credits)
- C. Life and Physical Sciences

- SCIENCE I<sup>2</sup> 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 Discrete Mathematics I (3 Credits)

### Additional course from the Flexible Core E

- SCIENCE II<sup>2</sup> 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 (5 Credits)
- MTH 33 Analytic Geometry and Calculus III (5 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

- MTH 30<sup>1</sup> *AND/OR* Free Elective (1-5 Credits)

### SUBTOTAL 27

<sup>1</sup> Students requiring MTH 30 must use free elective credits for this purpose.

<sup>2</sup> SCI I and II must form a sequence, e.g., BIO 11 and 12.

**NOTES:** The program has been given a waiver to require its students to take MTH 31 to fulfill Required Area B, BIO 11 or CHM 11 or PHY 11 or PHY 31 to fulfill Required Area C, CSI 30 to fulfill Flexible Area E, and BIO 12 or CHM 12 or PHY 12 or PHY 32 to fulfill the 6th course in the Flexible Core. 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."