MATHEMATICS

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

Program Description

The Mathematics curriculum provides a broad background in science and the humanities as well as a thorough grounding in higher mathematics, particularly calculus and its applications. In addition to computational techniques, students learn the rudiments of rigorous mathematical argument and proof. Problem-solving and reasoning skills learned in the course of studying mathematics not only provide a solid base for transfer to a senior college, but also assist in a wide variety of career options and disciplines such as physical and biological sciences, computer science, education, economics, business, finance, health, human services and social science.

Learning Outcomes

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

1. Perform numerical, symbolic and algebraic computations

2. Demonstrate understanding of the relationship between the graphical and the algebraic presentations of functions.

3. Correctly manipulate abstract concepts to construct and reproduce proofs in calculus and in more advanced mathematics courses.

4. Construct and present clear and rigorous mathematical arguments in calculus and linear algebra using mathematically appropriate language and notation.

5. Demonstrate a progression of critical thinking and problem solving skills within the sequence of mathematics courses.

6. Demonstrate the ability to appropriately apply mathematical techniques to model and address problems in a variety of scientific and other fields.

MATHEMATICS CURRICULUM (PATHWAYS)

60 Credits required for AS Degree
Curriculum Coordinator: Dr. Maria Psarelli

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, *OR* CHM 11, *OR* PHY 11, *OR* PHY 31 (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
  • SCIENCE II[2] BIO 12, *OR* CHM 12, *OR* PHY 12, *OR* PHY 32 (4 Credits)

Restricted Elective Select one course from Area A-E. (3 Credits)[1]

  SUBTOTAL 19

Major Requirements

  • MTH 32 Analytic Geometry and Calculus II (4 Credits)

  • MTH 33 Analytic Geometry and Calculus III (4 Credits)

  • MTH 42 Linear Algebra (4 Credits)

  • MTH *OR* CSI (Two chosen from MTH 34, 35, 44, 46, 48, CSI 35)[3] (7-8 Credits)

  • Free Elective[1,3] (3-8 Credits)

  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/Restricted Electives; and MTH 31 will be required in the major courses. Free electives reduced to 3-4.

  • If student is exempted from MTH 28 but MTH 30 is required, then MTH 30 applies to Scientific World Restricted Electives.

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

[3] CSI 35 has as prerequisite CSI 30, for which a student will need to use free elective credits.

NOTES: The program has been given a waiver to require its students 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."