

LIBERAL ARTS AND SCIENCES

Associate in Science Degree | Transfer Degree | Department of Chemistry and Chemical Technology

Program Description

Liberal Arts and Sciences: Earth Systems and Environmental Science Option

A student interested in the Associate in Science (AS) degree in Liberal Arts and Sciences has to choose one of four options: Biology, Chemistry, Earth Systems and Environmental Science, or Physics. Each option prepares students for transfer to a complementary four-year degree program. Students in the Chemistry and the Earth Systems and Environmental Science options transfer to four-year science programs (biochemistry, biology, chemistry, earth and environmental science, etc.), teacher education programs, pharmacy schools, or engineering programs (biomedical, chemical, environmental). Enrichment programs are offered to encourage students to continue their education beyond the bachelor degree by attending graduate or other professional programs (e.g., medical school, physician assistant programs, physical therapy programs).

Learning Outcomes

Upon successful completion of the Liberal Arts and Sciences program requirements, students will be able to:

1. Identify and apply the fundamental concepts and methods of a life or physical science.
2. Apply the scientific method to explore natural phenomena, including hypothesis development, observation, experimentation, measurement, data analysis, and data presentation.
3. Interpret and draw appropriate inferences from quantitative representation such as formulas, graphs, or tables and represent quantitative problems expressed in natural language in a mathematical format.
4. Use algebraic, numerical, graphical, or statistical methods to solve mathematical problems and to apply mathematical methods in a scientific field.

Upon successful completion of the Earth Systems and Environmental Science option requirements, students will be able to:

1. Demonstrate knowledge of research and theory of plate tectonics.
2. Apply research skills to successfully classify rock samples or unknown chemicals.
3. Write an essay to clearly explain discipline-specific ideas.

LIBERAL ARTS AND SCIENCES CURRICULUM (PATHWAYS)

60 Credits required for AS Degree

Curriculum Coordinator: Dr. Sheldon Skaggs

Required Core

- A. English Composition (6 Credits)
- B. Mathematical and Quantitative Reasoning
 - MTH 30¹ Pre-Calculus Mathematics *OR* MTH 31 Analytic Geometry and Calculus I (4 Credits)
- C. Life and Physical Science
 - CHM 11¹ General College Chemistry 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
 - CHM 12¹ General College Chemistry II (4 Credits)

Restricted Elective Select one course from Area A-E.² (3 Credits)

SUBTOTAL 19

Major Requirements

- Free Electives⁴ (0 - 4 Credits)
- MTH 31³ Analytic Geometry and Calculus I (0 - 4 Credits)
- MTH 32 Analytic Geometry and Calculus II (5 Credits)

SUBTOTAL 27

Earth Systems and Environmental Science Option Requirements

- CHM 27 Principles of Laboratory Safety (2 Credits)
- CHM 33 Quantitative Analysis (4 Credits)
- Choose two of the three courses below:
 - ESE 11 Earth Systems Science: The Earth *OR* ESE 12 Earth Systems Science: The Atmosphere *OR* ESE 13 Earth Systems Science: The Ocean (8 Credits)
- ESE 21 Earth Systems Science: The Environment (4 Credits)

TOTAL 27

¹ This program has obtained a waiver to require STEM variant courses in Required Core Area B and Area C and Flexible Core 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.

² Restricted Elective: must select one course from Flexible Core A-E. No more than two courses in any discipline or interdisciplinary field.

³ Students in this major are required to take MTH 30 or MTH 31 to fulfill required Core Area B. Note that MTH 30 is a prerequisite to MTH 31, so students who take MTH 30 to fulfill Required Core B will not have free elective credits.

⁴ It is recommended that students take either GIS 11 or GIS 12 to fulfill free elective credits.

Students are encouraged to check the Transfer Planning website for information on articulation agreements.

