LIBERAL ARTS AND SCIENCES, ASSOCIATE OF ARTS (AA): SCIENCE AND MATHEMATICS EMPHASIS

By completing the Liberal Arts and Sciences—Emphasis in Science and Mathematics Degree, students will be exposed to wide range of coursework to achieve a foundational understanding of mathematics and the natural sciences. Students will survey, analyze and interpret concepts, theories and methodologies as they relate to the natural sciences and mathematics and how this knowledge has shaped the course of human development over the ages. Additionally, students will develop critical thinking skills, mathematical and quantitative reasoning skills and research methodology.

Common university majors within the Science and Mathematics Emphasis include, but are not limited to, Astronomy, Astrophysics, Biochemistry, Biology, Chemical Physics, Chemistry, Earth Sciences, Environmental Studies, Geography (Physical), Geological Sciences, Mathematics and Physics.

Requirements

Associate Degree Graduation Requirements

Complete all of the following:

1. All Department Requirements listed below with a "C" or better or "P" in each course (at least 20% of the department requirements must be completed through SBCC).
2. One of the following three General Education options:
    a. OPTION 1: A minimum of 18 units of SBCC General Education Requirements (https://catalog.sbcc.edu/degrees-certificates-awards/#associatedegreestext) (Areas A-D) and Institutional Requirements (Area E) and Information Competency Requirement (Area F) OR
    b. OPTION 2: IGETC (https://catalog.sbcc.edu/transfer-curricula/#igetctext) Pattern OR
    c. OPTION 3: CSU GE Breadth (https://catalog.sbcc.edu/transfer-curricula/#csugebtext) Pattern
3. A total of 60 degree-applicable units (SBCC courses numbered 100 and higher).
4. Maintain a cumulative GPA of 2.0 or better in all units attempted at SBCC.
5. Maintain a cumulative GPA of 2.0 or better in all college units attempted.
6. A minimum of 12 units through SBCC.

Code	Title	Units
Department Requirements		
Complete 18 units from the following courses with at least one course in mathematics and one course in science:		18

Mathematics:

Code	Title	Units
CS 108	Discrete Structures	4
CS/MATH 118	Data Science for All	4
CS 133	Introduction to Programming for Engineers	3
FIN 100	Personal Finance	3
MATH 108	Mathematical Concepts for Elementary School Teachers-Number Systems	4
MATH 114	Mathematics for Liberal Arts Majors	4
MATH 117		4
or MATH 117A & MATH 117B	Elementary Statistics A and Elementary Statistics B	
or PSY 150	Statistics for the Behavioral Sciences	
or SOC 125	Introduction to Statistics in Sociology	
MATH 130	Calculus for Biological Sciences, Social Sciences and Business I	5
MATH 131	Calculus For Biological Sciences, Social Sciences And Business II	3
MATH 137	College Algebra	5
MATH 138	Precalculus - College Algebra and Trigonometry	4
MATH 150	Calculus with Analytic Geometry I	5
MATH 160	Calculus with Analytic Geometry II	5
MATH 180	Transition to Advanced Mathematics	4
MATH 200	Multivariable Calculus	4
MATH 210	Linear Algebra	4
MATH 220	Differential Equations	4

Science:

Code	Title	Units
ANTH 101	Physical Anthropology	3-4
or ANTH 101H	Physical Anthropology, Honors	
ANTH 101 & 101L	Physical Anthropology and Physical Anthropology Laboratory	4-5
or ANTH 101H & ANTH 101L	Physical Anthropology, Honors and Physical Anthropology Laboratory	
BIOL 100	Concepts Of Biology	4
BIOL 101	Plant Biology	4
BIOL 102	Animal Biology	5
BIOL 103	Cell and Molecular Biology	5
BIOL 110	Natural Science	3
BIOL 112	Evolution and Adaptation	3
BIOL 112 & BIOL 141	Evolution and Adaptation and Biology Laboratory	5
BIOL 120	Natural History	4
BIOL 122	Ecology	3
BIOL 122 & BIOL 123	Ecology and Ecology Laboratory	4
BIOL 124	Biological Oceanography	4
BIOL 125	Marine Biology	4
BIOL 126	Aquatic Ecosystems	3
BIOL 140	Principles of Biology	3

BIOL 140 & BIOL 141	Principles of Biology and Biology Laboratory	5
BIOL 142	Marine Science	3
BIOL 144	Biogeography	3
BIOL 150	Biodiversity	3
BIOL 161	DNA and Society	3
BIOL 171	Human Evolution	3
BIOL 172	Symbiosis	3
BMS 100	The Human Body	4
BMS 107	Human Anatomy	4
BMS 108	Human Physiology	4
BMS 118	Human Microanatomy	3
BMS 127	Medical Microbiology	4
BMS 136	Biology Of Human Sexuality	3
BMS 146	Human Form and Function	3
BMS 146 & 146L	Human Form and Function and Human Form and Function Laboratory	4
BMS 157	General Microbiology	4
BOT 100	Concepts of Botany	4
BOT 121	Plant Diversity	4
BOT 122	Flowering Plant Identification	3
BOT 123	Field Botany	3
CHEM 101	Introductory Chemistry	4
CHEM 104	Fundamentals Of General, Organic And Biological Chemistry	4
CHEM 110	Survey of Chemistry	3
CHEM 155	General Chemistry I	5
CHEM 156	General Chemistry II	5
CHEM 211	Organic Chemistry I	3
CHEM 211 & CHEM 221	Organic Chemistry I and Organic Chemistry Laboratory I	5.3
CHEM 212	Organic Chemistry II	3
CHEM 212 & CHEM 222	Organic Chemistry II and Organic Chemistry Laboratory II	5.5
EH 110	Introduction to Horticulture	3
ENVS 110	Humans And The Biological Environment	3
ENVS 110 & ENVS 111	Humans And The Biological Environment and Environmental Field Studies	4
ERTH 101	Introductory Astronomy	3
or ERTH 101H	Introductory Astronomy, Honors	
ERTH 101 & ERTH 102	Introductory Astronomy and Observational Astronomy Laboratory	4-5
or ERTH 101H & ERTH 102	Introductory Astronomy, Honors and Observational Astronomy Laboratory	
ERTH 104	Introductory Astrophysics	3
ERTH 106	Black Holes and the Universe	3
ERTH 111	Dynamic Earth - Physical Geology	3
or ERTH 111H	Dynamic Earth - Physical Geology, Honors	
ERTH 111 & 111L	Dynamic Earth - Physical Geology and Dynamic Earth - Physical Geology Laboratory	4-5
or ERTH 111H & ERTH 111L	Dynamic Earth - Physical Geology, Honors and Dynamic Earth - Physical Geology Laboratory	
ERTH 112	History Of The Earth	3
ERTH 112 & 112L	History Of The Earth and Historical Geology Laboratory	4
ERTH 115	Environmental Geology	3
or ENVS 115	Environmental Geology	
ERTH 115 & 115L	Environmental Geology and Environmental Geology Laboratory [1]	4
or ENVS 115 & 115L	Environmental Geology and Environmental Geology Laboratory	
ERTH/ENVS 116	Energy and Natural Resources	3
ERTH 122	Dinosaurs	3
ERTH 125	Mineralogy and Resources	5
ERTH 126	Petrology and Rock-Forming Minerals	5
ERTH 141/ GEOG 101	Physical Geography	3
ERTH 141 & 141L	Physical Geography and Physical Geography Laboratory [2]	4
or GEOG 101 & 101L	Physical Geography and Physical Geography Laboratory	
ERTH 151	Introductory Physical Oceanography	3
ERTH 151 & 151L	Introductory Physical Oceanography and Introductory Physical Oceanography Laboratory	4
ERTH/GEOG 152	Weather and Climate	3
ERTH 152 & 152L	Weather and Climate and Weather and Climate Laboratory [3]	4
or GEOG 152 & 152L	Weather and Climate and Weather and Climate Laboratory	
HIT 204	Basic Pathophysiology	3
PHSC 103	The Physical Universe	4
PHSC 107	Nanoscience in Society	4
PHYS 101	Conceptual Physics	3
PHYS 101 & 101L	Conceptual Physics and Conceptual Physics Laboratory	4
PHYS 102	Introductory Physics For Science Majors	4
PHYS 105	General Physics	4
PHYS 106	General Physics	4
PHYS 110	Introductory Physics	4
PHYS 111	Introductory Physics	4
PHYS 121	Mechanics Of Solids And Fluids	5
PHYS 122	Electricity and Magnetism	5
PHYS 123	Heat, Light and Modern Physics	5
PSY 110	Introduction to Physiological Psychology	3
ZOOL 110	Animal Physiology	3
ZOOL 122	Animal Diversity	3
ZOOL 122 & ZOOL 123	Animal Diversity and Animal Diversity Laboratory	4

ZOOL 124	Insect Biology	3
ZOOL 137	Ornithology	3
ZOOL 140	Animal Behavior	3

[1] ERTH 115 & 115L are the same as ENVS 115 & 115L.
[2] ERTH 141 & 141L are the same as GEOG 101 & 101L.
[3] ERTH 152 & 152L are the same as GEOG 152 & 152L.

Students are strongly advised to meet with a counselor to ensure appropriate course selection for their educational goal.

Learning Outcomes

1. The successful student is able to use the scientific method to develop and test a hypothesis.
2. The successful student is able to use mathematical approaches such as tabulation, graphing and statistics to quantify and analyze scientific data.
3. The successful student is able to use mathematics to predict and model scientific phenomena.

Recommended Sequence

Make an appointment with your SBCC academic counselor through Starfish to create a Student Education Plan that reflects a recommended course sequence for this program that is tailored to your individual needs.

How to schedule an Academic Counseling appointment (https://www.sbcc.edu/counselingcenter/counselingappointments.php).