

LIBERAL ARTS: EMPHASIS IN MATH AND SCIENCE

Associate in Arts

Non-Transfer: Option 1 (Major Code: 01378) ^{Footnote 1}

Transfer Preparation: Options 2 & 3 (Major Code: 01870) ^{Footnotes *, 1, 2}

The Associate of Arts in Liberal Arts Degree is designed for students who wish a broad knowledge of liberal arts and sciences plus additional coursework in an "Area of Emphasis." The Associate of Arts in Liberal Arts Degree would be an ideal choice for those students planning on transferring to the California State University or University of California as the student can satisfy their general education requirements, plus focus on transferable course work that relates to majors at CSU or UC.

- Choose either Option 1, 2 or 3 for the General Education pattern related to your educational goal.
- Complete a minimum of 18 units from the courses listed below. For Option 1, courses cannot be double-counted to satisfy general education requirements.
- Complete a minimum of 60 degree applicable transferable semester units (including major and general education courses).
- For ALL OPTIONS: complete necessary Southwestern College Graduation and Proficiency requirements (See Southwestern College Catalog)
- Courses with an "*" are not UC transferable.
- Courses should be selected with the assistance of a counselor. Refer to ASSIST.org (<https://assist.org/>) for transfer details.
- Completion of the Liberal Arts Degree does not guarantee acceptance into a four year institution nor into a major.

Program Student Learning Outcome

- Demonstrate mathematical and quantitative reasoning skills necessary to engage competently in personal, professional, civic, and social contexts.

Code	Title	Units
Option 1 ^{Footnote 1}		
	<i>Southwestern College Associate Degree General Education</i>	
	Minimum units necessary to meet Southwestern Associate Degree requirements	18
Option 2 ^{Footnotes *, 1, 2}		
	<i>CSU GE Breadth</i>	
	Minimum units necessary to meet CSU/GE Certification requirements	39
Option 3 ^{Footnotes *, 1, 2}		
	<i>IGETC</i>	
	Minimum units necessary to meet IGETC Certification requirements	34

These courses emphasize the natural sciences which examine the physical universe, its life forms and its natural phenomena. Courses in Math emphasize the development of mathematical and quantitative reasoning skills beyond the level of intermediate algebra. Students will be able to demonstrate an understanding of the methodologies of science as investigative tools. Students will also examine the influence that the

acquisition of scientific knowledge has on the development of the world's civilizations.

Code	Title	Units
Math & Science Emphasis		
These courses emphasize the natural sciences which examine the physical universe, its life forms and its natural phenomena. Courses in Math emphasize the development of mathematical and quantitative reasoning skills beyond the level of intermediate algebra. Students will be able to demonstrate an understanding of the methodologies of science as investigative tools. Students will also examine the influence that the acquisition of scientific knowledge has on the development of the world's civilizations.		
Select a minimum of 18 units of the following courses:		18
ANTH 101	BIOLOGICAL ANTHROPOLOGY	
ANTH 101L	LABORATORY IN BIOLOGICAL ANTHROPOLOGY	
ASTR 100	PRINCIPLES OF ASTRONOMY	
ASTR 109	ASTRONOMY LABORATORY	
ASTR 120	SOLAR SYSTEM ASTRONOMY	
ASTR 150	DISCOVERY OF THE COSMOS	
ASTR 170	THE RADICAL UNIVERSE	
ASTR 180	LIFE IN THE UNIVERSE	
ASTR 201	ASTRONOMY FOR SCIENCE MAJORS	
ASTR 205	ELEMENTARY ASTROPHYSICS	
BIOL 100	PRINCIPLES OF BIOLOGY	
BIOL 101	PRINCIPLES OF BIOLOGY LABORATORY	
BIOL 111	CANCER BIOLOGY	
BIOL 130	ANIMAL BIOLOGY: A BEHAVIORAL APPROACH	
BIOL 131	ANIMAL BIOLOGY LABORATORY	
BIOL 140	ENVIRONMENTAL BIOLOGY	
BIOL 145	ECOMUNDO: ECOLOGY AND ENVIRONMENTAL SCIENCE	
BIOL 150	NATURAL HISTORY OF PLANTS AND ANIMALS	
BIOL 151	INTRODUCTION TO FERMENTATION SCIENCE	
BIOL 151L	INTRODUCTION TO FERMENTATION SCIENCE LAB	
BIOL 160	MARINE BIOLOGY	
BIOL 161	MARINE BIOLOGY LABORATORY	
BIOL 180	HUMAN HEREDITY, EVOLUTION, AND SOCIETY	
BIOL 185	BIOLOGY OF ALCOHOL AND OTHER DRUGS	
BIOL 190	HUMAN ANATOMY AND PHYSIOLOGY	
BIOL 210	GENERAL ZOOLOGY	
BIOL 211	INTRODUCTION TO CELL AND MOLECULAR BIOLOGY	
BIOL 212	BIOLOGY OF PLANTS	
BIOL 215	BIOSTATISTICS	
BIOL 260	HUMAN ANATOMY	
BIOL 261	PRINCIPLES OF HUMAN PHYSIOLOGY	

BIOL 265	GENERAL MICROBIOLOGY	MATH 130	INTRODUCTION TO COMPUTER PROGRAMMING
CHEM 100	INTRODUCTION TO GENERAL CHEMISTRY	MATH 140	DATA STRUCTURES AND ALGORITHMS
CHEM 102	GENERAL, ORGANIC, AND BIOLOGICAL CHEMISTRY	MATH 230	COMPUTER ORGANIZATION AND ARCHITECTURE
CHEM 110	ELEMENTARY ORGANIC AND BIOLOGICAL CHEMISTRY	MATH 244	PRE-CALCULUS WITH TRIGONOMETRY
CHEM 151	INTRODUCTION TO FERMENTATION SCIENCE	MATH 250	ANALYTIC GEOMETRY AND CALCULUS I
CHEM 151L	INTRODUCTION TO FERMENTATION SCIENCE LAB	MATH 251	ANALYTIC GEOMETRY AND CALCULUS II
CHEM 170	PREPARATION FOR GENERAL CHEMISTRY	MATH 252	ANALYTIC GEOMETRY AND CALCULUS III
CHEM 200	GENERAL CHEMISTRY I	MATH 253	INTRODUCTION TO DIFFERENTIAL EQUATIONS
CHEM 210	GENERAL CHEMISTRY II	MATH 254	INTRODUCTION TO LINEAR ALGEBRA
CHEM 240	ORGANIC CHEMISTRY I	MATH 260	DISCRETE MATHEMATICS
CHEM 242	ORGANIC CHEMISTRY II	MATH 265	DISCRETE STRUCTURES
CHEM 244	ORGANIC ANALYSIS AND SPECTROSCOPY	PHS 101	INTRODUCTION TO THE PHYSICAL SCIENCES
CHEM 250	ANALYTICAL CHEMISTRY	PHS 110	INTRODUCTION TO OCEANOGRAPHY
CIS/BUS 101	INTRODUCTION TO BUSINESS INFORMATION SYSTEMS	PHYS 150	FUNDAMENTALS OF PHYSICS I
CIS 115	INTRODUCTION TO PROGRAMMING USING C++	PHYS 151	FUNDAMENTALS OF PHYSICS LABORATORY I
CIS 153	PROGRAMMING INTERNET VISUAL/ MOBILE APPLICATIONS USING JAVA	PHYS 152	FUNDAMENTALS OF PHYSICS II
ENGR 120C	INTRODUCTION TO COMPUTER PROGRAMMING - C/C++ LANGUAGE	PHYS 153	FUNDAMENTALS OF PHYSICS LABORATORY II
GEOG 100	INTRODUCTION TO GEOGRAPHY-- PHYSICAL ELEMENTS	PHYS 270	PRINCIPLES OF PHYSICS I
GEOG 101	PHYSICAL GEOGRAPHY LABORATORY	PHYS 271	PRINCIPLES OF PHYSICS LABORATORY I
GEOG 130	WEATHER AND CLIMATE	PHYS 272	PRINCIPLES OF PHYSICS II
GEOG 150	EXPLORING OUR WORLD-MAPS AND GEOSPATIAL SCIENCE	PHYS 273	PRINCIPLES OF PHYSICS LABORATORY II
GEOG 160	GEOGRAPHY OF CALIFORNIA	PHYS 274	PRINCIPLES OF PHYSICS III
GEOL 100	PRINCIPLES OF GEOLOGY	PHYS 275	MODERN PHYSICS AND PRINCIPLES OF PHYSICS LABORATORY III
GEOL 101	GENERAL GEOLOGY LABORATORY	PSYC 255	INTRODUCTION TO PSYCHOLOGICAL RESEARCH
GEOL 104	INTRODUCTION TO EARTH SCIENCE	PSYC/SOC 270	STATISTICS FOR THE BEHAVIORAL SCIENCES
MATH 100	MATHEMATICS FOR GENERAL EDUCATION	PSYC/SOC 271	DATA ANALYSIS IN PSYCHOLOGY AND SOCIOLOGY
MATH 101	COLLEGE ALGEBRA	PSYC/SOC 280	STATISTICAL METHODS FOR THE BEHAVIORAL SCIENCES
MATH 104	TRIGONOMETRY *	Total Units	18
MATH 110	MATHEMATICS FOR ELEMENTARY SCHOOL TEACHERS I	* Note: Courses with an "*" are not UC transferable.	
MATH 111	MATHEMATICS FOR ELEMENTARY SCHOOL TEACHERS II	¹ Option 1, 2, 3: For depth, include a minimum of two courses from a single discipline; for breadth, include at least two disciplines in your selection. These courses emphasize the natural sciences which examine the physical universe, its life forms and its natural phenomena. Courses in math emphasize the development of mathematical and quantitative reasoning skills beyond the level of intermediate algebra. Students will be able to demonstrate an understanding of the methodologies of science as investigative tools. Students will also examine the influence that the acquisition of scientific knowledge has on the development of the world's civilizations.	
MATH 112	CHILDREN'S MATHEMATICAL THINKING *	² Option 2 & 3: Students planning to transfer to a four-year college or university should complete courses specific to the transfer institution of choice. University requirements vary from institution to institution and are subject to change. Therefore, it is important to verify transfer	
MATH 115	STATWAY II		
MATH 118	FINITE MATHEMATICS		
MATH 119	ELEMENTARY STATISTICS		
MATH 120	CALCULUS FOR BUSINESS ANALYSIS		
MATH 121	APPLIED CALCULUS I		
MATH 122	APPLIED CALCULUS II		

major preparation and general education requirements through consultation with a counselor in either the Counseling Center or Transfer Center. See catalog Transfer Courses Information (<http://catalog.swccd.edu/student-success-support-program/student-services-and-college-services/other-services/transfer-courses/>) section for further information.