

Liberal Arts and Sciences Emphasis in Science and Mathematics AS Major - Active

Department: General Education

Approval: December 2015

Effective Semester: Fall 2016

The Liberal Arts and Sciences degree is designed for students who wish to have a broad knowledge of arts and sciences plus additional knowledge in an "Area of Emphasis." This degree can be a good option for students planning to transfer to a university as it provides the flexibility for students to satisfy both general education and lower division major requirements for specific universities while meeting associate degree requirements at the same time. For more detailed information on transfer requirements, students should speak with a counselor and refer to www.ASSIST.org.

The courses in the Science and Mathematics emphasis cover 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.

Learning Outcomes

Upon completion of this program, students will be able to:

- Apply scientific inquiry and investigation of evidence to critically evaluate scientific arguments.
- Communicate scientific ideas and theories effectively.
- Apply scientific principles, theories, or models to explain the behavior of natural phenomena.
- Apply scientific knowledge and reasoning to human interaction with the natural world and issues impacting society.
- Apply mathematical concepts through numerical, symbolic, graphical, and verbal methods to interpret quantitative information, solve problems, and communicate results

Each course used to meet this "area of emphasis" requirement must be completed with a grade of "C" or higher (or "Credit" or "Pass" if the course was taken on a "credit/no credit" or "pass/no pass" basis). Where appropriate, courses in the "area of emphasis" may also be counted for a General Education area.

Assuming students start this AS with transfer-level math and English eligibility, the minimum time for completion is 4 semesters. Completion time will vary based on student preparation and number of units completed per semester.

Courses Required for the Major in Liberal Arts and Sciences Emphasis in Science and Mathematics AS

Course	Units
Complete 18 units from the following courses (at least one each from Science and Math options):	
SCIENCE COURSES: CHOOSE AT LEAST ONE:	
ANAT 14 - Introduction to Human Anatomy and Physiology	4.00
ANAT 25 - General Human Anatomy	4.00
ANTH 1 - Biological Anthropology	3.00
ASTR 1 - Cosmic Evolution	3.00
ASTR 4 - Life in the Universe	3.00
ASTR 16 - Observational Astronomy	1.00
ASTR 17 - Planets	3.00
ASTR 18 - Stars	3.00
ASTR 19 - Galaxies and the Universe	3.00
BIO 9 - Human Biology	4.00
BIO 11 - The Science of Living Organisms	4.00
BIO 12 - Plant Biology	4.00
BIO 14 - Plant Ecology	4.00
BIO 15 - Biology of HIV	3.00
BIO 19 - Ecology	4.00
BIO 20 - Introduction to Ecology	3.00
BIO 30 - Ecology and the Human Environment	3.00

BIO 31/GEOG 31/SUST 31 - Introduction to Environmental Science	3.00
BIO 32 - Marine Biology	3.00
BIO 32L - Marine Biology Laboratory	1.00
BIO 33 - Introduction to Conservation Biology	3.00
BIO 40 - Plants and Animals of California	3.00
BIO 61 - The Biology of Cancer	3.00
BIO 100A - General Biology	5.00
BIO 100B - General Biology	5.00
BIO 120 - Introduction to Microbiology	4.00
BIO 121 - Sanitation Principles and Practices	2.00
BIO 225/SUST 225 - Environmental Toxicology	3.00
BTEC 115 - Recombinant DNA Biotechnology	5.00
BTEC 120 - Cell Biotechnology	5.00
CHEM 32 - Introduction to Medical Chemistry	4.00
CHEM 40 - Introduction to Chemical Principles	5.00
CHEM 101A - General College Chemistry	6.00
CHEM 101B - General College Chemistry	5.00
CHEM 103A - General Chemistry for Engineering	5.00
CHEM 110 - Chemistry and the Environment	3.00
CHEM 208A - Organic Chemistry	4.00
CHEM 208B - Organic Chemistry	4.00
CHEM 212A - Organic Chemistry	6.00
CHEM 212B - Organic Chemistry	6.00
ENRG 3 - Introduction to Alternative Energy	3.00
ENRG 3L - Introduction to Alternative Energy Laboratory	1.00
O H 76 - Fall and Winter Plant Identification	4.00
O H 77 - Spring and Summer Plant Identification	4.00
GEN 10 - Heredity and Evolution	3.00
GEN 11 - Genetics Laboratory	1.00
GEOG 1 - Physical Geography	3.00
GEOG 1L - Physical Geography Laboratory	1.00
GEOG 31/BIO 31/SUST 31 - Introduction to Environmental Science	3.00
GEOL 10 - Physical Geology	3.00
GEOL 10L - Physical Geology Lab	2.00
GEOL 11 - Historical Geology	3.00
GEOL 11L - Historical Geology Lab	1.00
GEOL 30 - Environmental Geology	3.00
GEOL 30L - Environmental Geology Lab	1.00
M B 10 - Emerging Diseases	3.00
NUTR 12 - Introduction to Nutrition for Allied Health	3.00
NUTR 51 - Nutrition and Culinary Arts	2.00
NUTR 52 - Introduction to Nutrition	3.00
OCAN 1 - Oceanography	3.00
OCAN 1L - Oceanography Lab	2.00
PALE 1 - Introduction to Paleontology	4.00
P SC 11 - Conceptual Physical Science	3.00
P SC 11L - Physical Science Laboratory	1.00
PHYC 2A - Introductory Physics	3.00
PHYC 2AL - Introductory Physics Laboratory	1.00
PHYC 2B - Introductory Physics	3.00
PHYC 2BL - Introductory Physics Laboratory	1.00
PHYC 4A - Classical Mechanics for Scientists and Engineers	3.00
PHYC 4AL - Mechanics Laboratory for Scientists and Engineers	1.00
PHYC 4B - Electromagnetism for Scientists and Engineers	3.00

PHYC 4BL - Electromagnetism Laboratory for Scientists and Engineers	1.00
PHYC 4C - Waves and Thermodynamics for Scientists and Engineers	3.00
PHYC 4CL - Waves and Thermodynamics Laboratory for Scientists and Engineers	1.00
PHYC 4D - Modern Physics for Scientists and Engineers	3.00
PHYC 4DL - Modern Physics Laboratory for Scientists and Engineers	1.00
PHYC 10 - Conceptual Physics	3.00
PHYC 10L - Conceptual Physics Laboratory	1.00
PHYC 20 - Physics of Sports	3.00
PHYC 40 - Elementary Physics	3.00
PHYC 41 - Preparatory Physics	3.00
PHYS 1 - Introductory Human Physiology	5.00
PHYS 12 - Introduction to Human Physiology	4.00
PHYS 67 - Exploring Neuroscience: An introduction to the Brain	3.00
PSYC 1B - Biological Psychology	3.00
SUST 31/BIO 31/GEOG 31 - Introduction to Environmental Science	3.00
SUST 225/BIO 225 - Environmental Toxicology	3.00
ZOOL 10 - Animal Biology	4.00
MATH COURSES: CHOOSE AT LEAST ONE:	
ECON 5 - Introductory Statistics for Economics, Business and Social Sciences	5.00
ET 50 - Technical Mathematics	4.00
LALS 5 - Introduction to Statistical Methods in Latin American and Latino/a Studies	5.00
MATH 70 - Liberal Arts Math	3.00
MATH 75 - Mathematical Analysis for Business	3.00
MATH 80 - Probability and Statistics	4.00
MATH 90 - Precalculus Algebra	5.00
MATH 92 - College Algebra	5.00
MATH 95 - Trigonometry	3.00
MATH 97 - Precalculus Review	5.00
MATH 100A - Short Calculus I	3.00
MATH 100B - Short Calculus II	3.00
MATH 110A - Calculus I	5.00
MATH 110B - Calculus II	5.00
MATH 110C - Calculus III	5.00
MATH 115 - Discrete Mathematics	3.00
MATH 120 - Linear Algebra	3.00
MATH 125 - Differential Equations	3.00
MATH 130 - Linear Algebra and Differential Equations	5.00
PHIL 12A - Symbolic Logic	5.00
PSYC 5 - Statistics for Behavioral Sciences	5.00
	Total: 18.00
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