CALIFORNIA STATE UNIVERSITY, LOS ANGELES

SUBJECT MATTER PROGRAM IN NATURAL SCIENCE

Single Subject Teaching Credential in Science

Student Name:_____ CIN:_____
Email address:_____ Phone:_____
GE Year / Major Year:_____ Advisor:_____

Requirements for this program of study

The Subject Matter Program in Natural Science is intended for students who are seeking to fulfill the California subject matter requirements for the Single Subject teaching credential in Science. This program of study only fulfills the subject matter requirement for a teaching credential; it does not by itself meet the requirements for a degree or a teaching credential. Students should speak with a Natural Science adviser for further information. Students must earn a grade of C or higher in all courses that satisfy the following program requirements.

Single Subject Credential in Science

For students who already possess a bachelor's degree, the California Commission on Teacher Credentialing has approved the following program as satisfying the subject matter requirements of the Single Subject teaching credential in Science. The following programs are not degree programs; they are intended to meet the subject matter requirements as part of the teacher credentialing process. Students should consult with a Natural Science program adviser and with a credential adviser in the Charter College of Education. Refer to the Charter College of Education section for regulations governing all teaching credential programs.

The following worksheets show the subject matter requirements for each of the emphasis areas.

SUBJECT MATTER REQUIREMENTS – BIOLOGY EMPHASIS OR CHEMISTRY EMPHASIS

Requirement	Units	Transfer institution and equivalent course	Or Cal State L.A. course number and title	Term	Grade
CORE (49 or 51 units)					
Core requirements for all emphasis areas (46 or 48 units)					
ASTR 1510 - Principles of Astronomy	2				
ASTR 1520 - Principles of Astronomy: Laboratory	1				
BIOL 1100 – Principles of Biology I	5				
BIOL 1200 – Principles of Biology II	5				
CHEM 1100 - General Chemistry I	5				
CHEM 1110 - General Chemistry II	5				
GEOL 1500 - Earth Revealed	3				
GEOL 2520 - Historical Geology	4				
MATH 2110 – Calculus I	4				
MATH 2120 – Calculus II	4				
*PHYS 1100 or 2100 - Physics A	4 or 5				
*PHYS 1200 or 2200 - Physics B	4 or 5				
***PHYS 2100 and 2200 (5,5) is required for Physics Emphasis students and recommended for Chemistry Emphasis students in lieu of PHYS 1100 and 1200.**					
Capstone course (3 units)					
NATS 4950 - Natural Science Field Studies	3				
EMPHASIS AREA (22-26 units)					
Students must **choose one emphasis area** from among biology, chemistry, geoscience, or physics.					
Biology Emphasis (24 units)					
BIOL 3000 - Biostatistics	3				
BIOL 3400 - Cell Biology and Genetics	3				
BIOL 3800 - Ecology and Evolution	3				
CHEM 2200 - Organic Chemistry I	4				
MICR 3100 - General Microbiology	4				
Upper Division Electives (7 units) *Select upper division electives with advisor approval from the following: upper division BIOL course(s), NATS 3980 - Field Observations in Science Education (1), NATS 4000 - Crosscutting Concepts in Natural Science (3), NATS 4200 - Cultures of Science (3). A maximum of 3 units of directed study is allowed.*					
Elective					
Elective					
Elective					
TOTAL SEMESTER UNITS REQUIRED	73				
Chemistry Emphasis (26 units)					
CHEM 2200 - Organic Chemistry I	4				
CHEM 2201 - Organic Chemistry Laboratory I	1				
CHEM 3200 - Organic Chemistry II	4				
CHEM 3500 - Quantitative Analysis	4				
CHEM 3600 - Inorganic Chemistry	4				
CHEM 4300 - Introduction to Biochemistry	3				
Upper Division Electives (6 units) *Select upper division electives with advisor approval from the following: upper division CHEM course(s), NATS 3980 - Field Observations in Science Education (1), NATS 4000 - Crosscutting Concepts in Natural Science (3), NATS 4200 - Cultures of Science (3). A maximum of 3 units of directed study is allowed.*					
Elective					
Elective					
Elective					
TOTAL SEMESTER UNITS REQUIRED	75				

SUBJECT MATTER REQUIREMENTS – GEOSCIENCE EMPHASIS OR PHYSICS EMPHASIS

Requirement	Units	Transfer institution and equivalent course	Or Cal State L.A. course number and title	Term	Grade
CORE (49 or 51 units)					
Core requirements for all emphasis areas (46 or 48 units)					
ASTR 1510 - Principles of Astronomy	2				
ASTR 1520 - Principles of Astronomy: Laboratory	1				
BIOL 1100 – Principles of Biology I	5				
BIOL 1200 – Principles of Biology II	5				
CHEM 1100 - General Chemistry I	5				
CHEM 1110 - General Chemistry II	5				
GEOL 1500 - Earth Revealed	3				
GEOL 2520 - Historical Geology	4				
MATH 2110 – Calculus I	4				
MATH 2120 – Calculus II	4				
*PHYS 1100 or 2100 - Physics A	4 or 5				
*PHYS 1200 or 2200 - Physics B	4 or 5				
***PHYS 2100 and 2200 (5,5) is required for Physics Emphasis students and recommended for Chemistry Emphasis students in lieu of PHYS 1100 and 1200.**					
Capstone course (3 units)					
NATS 4950 - Natural Science Field Studies	3				
EMPHASIS AREA (22-26 units)					
Students must **choose one emphasis area** from among biology, chemistry, geoscience, or physics.					
Geoscience Emphasis (24 units)					
GEOG 2680 - Introduction to Geospatial Sciences	4				
GEOG 4100 - Applied Climatology	3				
GEOL 3010 - Mineralogy and Petrology	3				
GEOL 3210 - Geology of Southern California	3				
GEOL 4350 - Coastal Processes and Environments	3				
Upper Division Electives (8 units) *Select upper division electives with advisor approval from the following: upper division GEOL or GEOG course(s), NATS 3980 - Field Observations in Science Education (1), NATS 4000 - Crosscutting Concepts in Natural Science (3), NATS 4200 - Cultures of Science (3). A maximum of 3 units of directed study is allowed.*					
Elective					
Elective					
Elective					
TOTAL SEMESTER UNITS REQUIRED	73				
Physics Emphasis (22 units)					
MATH 2130 - Calculus III	3				
PHYS 2300 - Modern Physics	4				
Upper Division Electives (15 units) *Select upper division electives with advisor approval from the following: upper division PHYS or MATH course(s), NATS 3980 - Field Observations in Science Education (1), NATS 4000 - Crosscutting Concepts in Natural Science (3), NATS 4200 - Cultures of Science (3). Must include one PHYS lab course. A maximum of two MATH courses is allowed. A maximum of 3 units of directed study is allowed.*					
Elective - PHYS laboratory course					
Elective					
Elective					
Elective					
Elective					
TOTAL SEMESTER UNITS REQUIRED	73				