

To complete the Science Education major, students must also complete the Biology, Chemistry or Physics Major, or complete the Earth Space Science Concentration.

Earth Space Science Concentration 39 credits

ENVI 212 Geographic Information Systems 3 credits
ENVI 115 Earth from Space: Contemporary Remote Sensing 3 credits
ENVI 130 World Cultures and Environments 3 credits
ENVI 211 Physical Geography 3 credits
ENVI 270 Earth History 3 credits
ENVI 353 Weather and Climate 3 credits
ENVI 360 General Astronomy 3 credits
ENVI 361 Oceanography 3 credits
ENVI 452 Quaternary Environments 3
ENVI 460 Conservation and Sustainability of Natural Resources 3 credits
ENVI 479 Global Biogeochemical Cycles 3 credits

Approved Electives Choose 6 Credits

ENVI 376 - Dinosaurs, Quakes, and Volcanoes 3 credits
ENVI 450 - Environmental Modeling and Mapping
ENVI 455 - Groundwater Hydrology
ENVI 456 - Lakes and Wetlands
ENVI 463 - Soil Genesis and Classification
ENVI 465 - Fundamentals of Tree Ring Research
ENVI 471 - Quaternary Paleoecology

Biology Major - 40 credits not taken in the Science Education core: See also degree requirements listed in the Biology program section of the catalog.

Biology Core (24 credits)

CHEM 351 - Organic Chemistry I 3 credits AND
CHEM 351L - Organic Chemistry Laboratory I 1 credit
CHEM 352 - Organic Chemistry II 3 credits AND
CHEM 352L - Organic Chemistry Laboratory II 1 credit
BIO 380 - Genetics 3 credits AND (F, Prerequisite: BIO102, MATH111)
BIO 380L - Genetics Laboratory 1 credit
BIO 350 - Ecology and Evolution 3 credits AND (F, Prerequisite: BIO102)
BIO 350L - Laboratory in Ecology and Evolution 1 credit
BIO 330 - General Physiology 3 credits AND (S, Prerequisite: BIO102, CHEM 352& 352L, PHYS105&105L)
BIO 330L - G. Physiology Laboratory 1 credit
BIO 374 - Cellular and Microbial Biology 3 credits AND (S, Prerequisite: CHEM 352& 352L)
BIO 374L - Cell. & Micro. Laboratory 1 credit

Biology Electives : A minimum of 16 credits beyond the core curriculum selected from:

Cell Biology: BIO 405 - Cellular Development 3 hours. BIO 406 - Cell and Tissue Culture , + Lab. BIO 408 - General Immunology , + lab. BIO 418 - Cellular and Molecular Biology II.

Ecology & Evolution: BIO 450 - Advanced Ecology, BIO 451 - Field Study of Ecosystems (Summer only), BIO 454 - Animal Behavior, BIO 455 - Humans and the World Environment , BIO 458 - Wildlife Management , plus Lab, BIO 415 - Natural History: A Study of the Diversity of Life , BIO 480 – General Evolution, BIO 4XX – Conservation Biology

Biology of Organisms: BIO 424 - Vertebrate Zoology , with lab. BIO 425 - Herpetology, with lab. BIO 426 - Ornithology , with lab. BIO 428 - Mammalogy , with lab. BIO 427 - Plant Taxonomy , with lab.

Physiology: BIO 431 - General Endocrinology , BIO 434 - Introduction to Neurobiology (IUSM-TH), BIO 476 - Microbial Physiology

Botany. BIO 437 - Plant Physiology , with lab. BIO 445 - Plant Anatomy. BIO 447 - Comparative Morphology of Vascular Plants. BIO 427 - Plant Taxonomy , with lab (Spring, alternate years), BIO 465 - Fundamentals of Tree-Ring Research (EES, Dr. Speer)

Microbiology: BIO 475 - Mechanisms of Microbial Disease , BIO 476 - Microbial Physiology.

Clinical Lab Science, Nursing, Medicine: BIO 272 - Clinical Microscopy, BIO 272L - Laboratory. BIO 273 - Hematology, BIO 273L - Laboratory. BIO 371 - Applied Microbiology , BIO 371L - Laboratory. BIO 375 - Immunohematology + BIO 375L - Immunohematology Laboratory 1 hour. BIO 412 - Pathophysiology

Genetics: BIO 482 - Recombinant DNA , BIO 482L - Recombinant DNA Laboratory.

Statistics: BIO 485 - Introduction to Biometry

Primary Research: BIO 490 - Seminar in Life Sciences (Departmental Seminar, 1 hr/week)

Other: BIO 491 - Special Topics in Life Sciences 1-4 hours
“New” courses advertised by professors. Examples include: Sex, Brains and Hormones; Emerging Infectious Diseases; Molecular Ecology; many others.

Student Research:

Research Capstone Sequence:

BIO 497 - Current and Historical Issues in Science and Capstone Research Proposal Development 1 hour, BIO 498 - Capstone Research 1 hour, BIO 499 - Research Capstone Presentations 1 hour

BIO 492 - Special Problems in Life Sciences 1-3 hours Student Research Hours (other than capstone)

Biochemistry: CHEM 431 - Biochemistry I , CHEM 431L - Biochemistry Laboratory

Chemistry Major (Pre-Professional concentration)*– minimum of 39 credits not taken in Science Education Core: See also degree requirements listed in the Chemistry program section of the catalog.
(Pre-Professional concentration)

Math 132 (Calculus II; 4 credits; F, S, and Sum)

Chem 351 (Organic Chem I; 3 credits; F and Sum)

Chem 351L (Organic Chem I Lab; 1 credit; F and Sum)
Chem 352 (Organic Chem II; 3 credits; S and Sum)
Chem 352L (Organic Chem II Lab; 1 credit; S and Sum)
Chem 321 (Analytical Chem; 4 credits; S)
Chem 321L (Analytical Chem Lab; 0 credit; S)
Chem 461 (Physical Chem I; 4 credits; F)
Chem 461L (Physical Chem I Lab; 1 credit; F)
Chem 341 (Inorganic Chemistry; 3 credits; S)
Chem 431 (Biochemistry I, 3 credits; F)
Chem 431L (Biochemistry I Lab; 1 credit; F)
Chem 432 (Biochemistry II; 3 credits; S)
Chem 400 (Senior Seminar; 1 credit; S)

Advanced Electives (7 credits required): Choose approved advanced courses in chemistry or related areas (e.g., mathematics, physics, or biology); consult the Catalog or DARS for specific approved courses. A maximum of 4 credits of Chem 495 (Internship in Chemistry) or 499 (Introduction to Research) may be counted. Chem 330 and 399 cannot be used as advanced electives.

*We recommend the Pre-Professional concentration for Science Education. Other possible concentrations are offered in the chemistry program. Please see your chemistry advisor for further information.

Physics Major (Chemical Physics concentration)*- minimum of 40 credits not taken in Science Education Core: See also degree requirements listed in the Physics program section of the catalog.
(Chemical physics concentration)

Math 132 (Calculus II; 4 credits; F, S, and Sum)
PHYS 215 - Modern Physics I 3 credits
PHYS 215L - Modern Physics I Laboratory 1 credits
PHYS 216 - Modern Physics II 3 credits
PHYS 216L - Modern Physics II Laboratory 1 credits
PHYS 310 - Analytical Mechanics 3 credits
PHYS 321 - Mathematical Methods for Physics I 2 credits
PHYS 322 - Mathematical Methods for Physics II 2 credits
PHYS 341 - Electricity and Magnetism 3 credits
PHYS 315 - Advanced Laboratory I 1 credits
PHYS 497 - Quantum Mechanics 3 credits
CHEM 321 - Analytical Chemistry 4 credits
CHEM 461 - Physical Chemistry I 4 credits
CHEM 461L - Experimental Physical Chemistry I 1 credits
CHEM 462 - Physical Chemistry II 4 credits
CHEM 462L - Experimental Physical Chemistry II 1 credits

* We recommend the Chemical Physics concentration for Science Education. Other possible concentrations are offered in the Physics program. Please see your chemistry advisor for further information.