

Science Teaching

Web site: www.mnsu.edu/dept/biology
www.mnsu.edu/dept/chemgeol
www.mnsu.edu/dept/physast
www.mnsu.edu/dept/geog

Coordinators:

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The State of Minnesota grants science teacher licensure for grades 5-8 general science, 9-12 Chemistry, 9-12 Earth Science, 9-12 Life Science, and 9-12 Physics. Students earning a degree from MSU will qualify for two licenses (1) 5-8 general science and (2) 9-12 specialty.

Each major requires the 31 credit general core and a science emphasis that ranges from 27-35 credits of science and science teaching methods courses. In addition, the student must complete a 30 credit professional education component and the 3 credit Drug Education course.

The University Science Teaching Program must meet specific competencies to meet professional accreditation and licensure requirements. To stay within the required degree limits of 128 credit hours, students are strongly advised to select courses within the 44 credit general education program that meet both teaching program and general education needs. It is important for the student to meet with their advisor to assist with program planning.

A minor is not required for any of the science teaching programs; however, to broaden one's teaching opportunities, double majors are encouraged. For further details, the student should check with one of the science teaching advisors for an overview of available opportunities.

FOR ALL SCIENCE TEACHING PROGRAMS

Required General Education (3 credits):

HLTH 310 Drug Education (3)

Recommended General Education (22-23 credits):

AST 101 Introduction to Astronomy (3)
 BIOL 105 General Biology I (4)
 GEOL 121 Physical Geology (4)
 KSP 220 Human Relations in a Multicultural Society (3)
 PHYS 211 Principles of Physics I (4)

Choose one from the following:

MATH 112 College Algebra (4)
 MATH 113 Trigonometry (3)
 MATH 115 Precalculus (4)
 MATH 121 Calculus I (4)

Required General Science Core (31 credits):

AST 101 Introduction to Astronomy (3)
 BIOL 105 General Biology I (4)
 BIOL 106 General Biology II (4)
 CHEM 201 General Chemistry I (5)
 GEOL 121 Physical Geology (4)
 GEOL 310 Earth and Space Systems (3)
 PHYS 211 Principles of Physics I (4)*
 PHYS 212 Principles of Physics II (4)*

* Physics 221 (5) and 222 (5) may substitute. The additional credit hours will reduce the number of credits in the advanced physics courses.

Required for All Majors

(Professional Education, 30 credits):

See the SECONDARY EDUCATION section for additional information about admissions to Professional Education, and course requirements.

Required Minor: None.

CHEMISTRY 5-12 BS TEACHING 128

Required General Education (3 credits)

Recommended General Education (22-23 credits)

Required General Science Core (31 credits)

Required Professional Education (30 credits)

Required for Major (Core, 35 credits)

MATH 121 Calculus I (4)
 CHEM 202 General Chemistry II (5)
 CHEM 305 Analytical Chemistry (4)
 CHEM 320 Organic Chemistry I (with lab) (5)
 CHEM 360 Principles of Biochemistry I (4)
 CHEM 381 Introduction to Research (2)
 CHEM 412 Intermediate Inorganic Chemistry (2)
 CHEM 440 Physical Chemistry I (3)
 CHEM 450 Physical Chemistry Lab I (1)
 CHEM 479 Teaching in Physical Science (4)
 CHEM 495 Senior Seminar (1)

Required Minor: None.

EARTH SCIENCE 5-12 BS TEACHING 128

Required General Education (3 credits)

Recommended General Education (22-23 credits)

Required General Science Core (31 credits)

Required Professional Education (30 credits)

Required for Major (Core, 24 credits):

AST 125 Observational Astronomy (3)
 GEOG 217 Weather (3)
 GEOG 315 Geomorphology (3)
 GEOG 410 Climatic Environments (3)
 GEOL 122 Earth History (4)
 GEOL 201 Elements of Mineralogy (4)
 GEOG 464 Teaching Earth Science (4) OR
 GEOL 479 Teaching Earth Science (4)

Required for Major (Research, 1-3 credits):

GEOG 440 Field Studies: Colorado (3)
 GEOG 440 Field Studies: Field Methods (3)
 GEOG 480 Seminar: Snow and Ice (3)
 GEOG 499 Individual Study (1-3)
 GEOL 499 Individual Study (1-5)

Required for Major (Electives, 9 credits):

Must choose from at least two departments

AST 102 Introduction to the Planets (3)
 AST 104 Introduction to Experimental Astronomy (2)
 GEOG 373 Introduction to GIS (4)
 GEOG 420 Conservation of Natural Resources (3)
 GEOL 270 Structural Geology (4)
 GEOL 350 Environmental Geology (4)
 GEOL 450 Hydrogeology (3)

Required Minor: None.

LIFE SCIENCE 5-12 BS TEACHING 128

Required General Education (3 credits)

Recommended General Education (22-23 credits)

Required General Science Core (31 credits)

Required Professional Education (30 credits)

Required for Major (Core, 26 credits):

BIOL 211 Genetics (3)

Science Teaching

BIOL 215 General Ecology (4)
BIOL 220 Human Anatomy (4)
BIOL 270 Microbiology (4)
BIOL 301 Evolution (2)
BIOL 408 Vertebrate Ecology (4) OR
BIOL 409 Advanced Field Ecology
BIOL 485 Biology Teaching Methods and Materials (4)
BIOL 499 Individual Study: Research Project (1)

Required for Major (Electives, 9 credits):

Choose a minimum of 9 credits from Biology courses from the 300-400 level

PHYSICS (5-12) BS TEACHING

Required General Education (3 credits)

Recommended General Education (22-23 credits)

Required General Science Core (31 credits)

Required Professional Education (30 credits)

Required for Major (Core, 26-28 credits):

MATH 121 Calculus I (4)
MATH 122 Calculus II (4)
EET 112 Elementary Electronics (3)
EET 113 DC Circuits (3)
PHYS 381 Tutoring Physics (1-2)
PHYS 435 Modern Physics I (3)
PHYS 457 Optics (3)
PHYS 482 Teaching Methods and Materials in Physical Science (4)
PHYS 493 Undergraduate Research (1-2)

Required for Major (Electives, Minimum of 7 credits):

Choose a minimum of three credits from:

PHYS 441 Mechanics (4)
PHYS 447 Electricity and Magnetism I (3)
PHYS 453 Solid State Physics (2)
PHYS 461 Quantum Mechanics (4)
PHYS 465 Computer Applications in Physics (3)

Required Minor: None.

POLICIES/INFORMATION

GPA Policy. Students obtaining a degree in science teaching must maintain a minimum cumulative GPA of 2.50. Students who are not science teaching majors should consult an advisor concerning possible additional course requirements.

P/N Grading Policy. Courses leading to a degree in science teaching may not be taken on a P/N basis except where P/N grading is mandatory.
