

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 Minnesota State Mankato 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.

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.

FOR ALL SCIENCE TEACHING PROGRAMS

Required General Education (3 credits):

HLTH 310 Drug Education (3)

Required General Science Core (31 credits):

AST	101	Introduction to Astronomy (3)
BIOL	105W	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 (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 Laboratory (1)
CHEM	479	Teaching Physical Science (4)
CHEM	495	Senior Seminar (1)

Required Minor: None.

EARTH SCIENCE 5-12 BS TEACHING

Required General Education (3 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 Sciences (4)

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

GEOG	440	Field Studies: Colorado (3)
GEOG	440	Field Studies: Field Methods (3)
GEOG	480	Seminar (1-4)
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 Geographic Information Systems (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)
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 (4)
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

SCIENCE TEACHING

PHYSICS (5-12) BS TEACHING

Required General Education (3 credits)

Recommended General Education (22-23 credits)

Including MATH 121

Required General Science Core (31-33 credits)

Required Professional Education (30 credits)

Required for Major (Core, 21 credits):

MATH	122	Calculus II (4)
PHYS	381	Tutoring Physics (2)
PHYS	435	Modern Physics I (3)
PHYS	436	Modern Physics II (3)
PHYS	465	Computer Applications in Physics (3)
PHYS	482	Teaching Methods and Materials in Physical Science (4)
PHYS	493	Undergraduate Research (1-2)

Electives (Minimum of 8 Credits)*

Students may use Physics 221 and 222 to fulfill their Physics Electives requirement only if Physics 211 and 212 are completed successfully.

Alternatively, students with a strong interest in applying advanced mathematical skills to problems in physics are encouraged to choose a minimum of 8 credits* of higher level Physics or Mathematics as approved by the student's advisor to fulfill the Physics Elective requirement.

*This is reduced to 6 credits if Physics 221 and 222 have been taken in place of 211 and 212 in partial fulfillment of the General Science Core requirements.

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