

Teaching and Learning, MAT

Science Education

The Master of Arts in Teaching in teaching and learning with a science education subprogram requires a minimum of 48 s.h. of graduate credit with a Graduate College program grade-point average (GPA) of at least 3.00 for graduation. Admission to the MAT requires admission to the Teacher Education Program (TEP), and students must maintain TEP academic and professional standards.

The program is designed primarily for graduates of bachelor's degree programs in science who decide that they would like to become teachers. It features advanced work in science along with the courses required for certification, enabling students to earn a master's degree and teaching certification at the same time. It is assumed that students have completed considerable coursework in science as undergraduates, but no previous coursework in education. Students' science coursework should be equivalent to that required by the University of Iowa Science Studies program.

The MAT in teaching and learning with a science education subprogram requires the following work.

Professional Education Foundation Sequence

Course #	Title	Hours
All of these:		
EDTL:3002	Teaching and Learning Technologies (must be taken during student's first semester in the college)	2
EDTL:3091	Secondary Education Program Orientation and Classroom Management	3
EDTL:3095	Teaching Reading in Secondary Content Areas (must be taken during student's first semester in the college)	1
EDTL:4900	Foundations of Special Education	3
EPLS:3000	Foundations of Education	3
EPLS:4180	Human Relations for the Classroom Teacher	3
One of these:		
PSQF:1075	Educational Psychology and Measurement	3
PSQF:6200	Educational Psychology	3
Science education courses taken in the following sequence:		
EDTL:4750	Assessment in Science, Technology, Engineering, and Mathematics (STEM)	2
EDTL:4751	Learning in the Science, Technology, Engineering, and Mathematics (STEM) Classroom	2

EDTL:4752	Secondary Science Methods II With Field Experience	3
These two taken concurrently:		
EDTL:4753	Secondary Science Methods III With Field Experience	3
EDTL:4779	Secondary School Science Practicum	2
These three taken concurrently:		
EDTL:4087	Seminar: Curriculum and Student Teaching	3
EDTL:4091	Observation and Laboratory Practice in the Secondary School	6
EDTL:4092	Observation and Laboratory Practice in the Secondary School	6

Broad Field Science Block

Students must take the following courses (12 s.h.) unless they completed equivalent courses as undergraduates.

Course #	Title	Hours
This course:		
SIED:4135	The Nature of Science	4
Two of these:		
SIED:4102	Societal and Educational Applications of Earth Science and Environmental	4
SIED:4103	Societal and Educational Applications of Biological Sciences	4
SIED:4105	Societal and Educational Applications of Physical Sciences	4
SIED:4106	Societal and Educational Applications of Chemical Concepts	4
SIED:4110	Exploring the Geology, Mining History, and Environmental Issues of the Colorado Rockies	4

Electives

Students may need to complete additional coursework to meet the minimum requirement of 48 s.h. of graduate credit. This coursework may also apply to earning an endorsement; see the following "Endorsements" section.

Endorsements

The science education TEP is approved by the state of Iowa as preparation for teaching licensure with one or more of the following endorsements: grades 5-12 biological sciences, grades 5-12 chemistry, grades 5-12 earth science, grades 5-12 physics, and grades 5-12 all science.

Added endorsement programs for additional teaching areas are available, including grades 5-12 basic science and subject areas other than science.

Science Education Content Courses

In addition to the science content courses that students completed in their undergraduate studies, students must complete the broad field science block and must complete additional science courses as needed to meet the

requirements of the subject areas the students are preparing to teach. Science content course requirements, including the broad field science block, may be satisfied with any combination of graduate or undergraduate credit.

Final Examination

Students complete final examinations before their student teaching semester. Two written final exams, one in science education and one in a science specialization area, are required. Students may not duplicate course examinations in these areas.

Teacher Education Program Academic and Professional Standards

State of Iowa teacher preparation standards require that teacher candidates demonstrate the content, pedagogical, and professional knowledge, skills, and dispositions necessary to help all students learn. Because of this, the College of Education and the Teacher Education Program have established academic and professional standards that students must maintain. For graduate-level teacher candidates and MAT candidates in science education, these standards include:

- a UI minimum cumulative GPA of 2.75 on A-F graded graduate courses (consistent with the academic standing policy of the Graduate College);
- a minimum TEP major GPA of 2.00 (2.70 for good standing);
- a minimum UI term GPA of 1.50 during fall or spring enrollment;
- a grade of C-minus or higher in TEP major courses; and
- no notices of concern in professional dispositional qualities.

Liberal Arts Core

State of Iowa teacher preparation standards require a core of liberal arts knowledge including but not limited to English composition, mathematics, natural sciences, social sciences, and humanities. Students who have not completed these requirements with their previous coursework will need additional coursework. Bachelor's degree graduates of the College of Education or the College of Liberal Arts and Sciences have met these requirements with the GE CLAS Core if a course in mathematics, statistics, or computer science was selected for the Quantitative and Formal Reasoning requirement. For additional information about these standards, contact the Office of Student Services.

Admission

Applicants must meet the admission requirements of the Graduate College. They must have a bachelor's degree with a major or the equivalent in one of the sciences. A GPA of at least 3.00 is required for admission and must be maintained throughout the program. Applicants must meet all Teacher Education Program (TEP) application requirements.

Combined Program

BA/MAT

College of Liberal Arts and Sciences students who want to teach science and are working toward a Bachelor of Arts degree typically have a major in biology, chemistry, earth

and environmental sciences, geographical and sustainability sciences, or physics, but the BA/MAT in science education is open to all majors wanting to obtain the combined Bachelor of Arts/Master of Arts in Teaching with a science education subprogram offered by the College of Liberal Arts and Sciences and the College of Education. The combined program enables students to earn a BA and an MAT in five years by beginning to earn graduate credit during their fourth year of undergraduate study and by counting up to 19 s.h. of qualifying credit toward both degrees.

BA students are admitted to the combined program before their fourth year. They may begin taking education courses during their third year, but they may not earn graduate credit for them until their fourth and fifth years, after they have been admitted to the combined program. Students take 30 s.h. of coursework during the fifth year and must complete all remaining requirements for both degrees that year.

Education courses required for the combined program are listed under "Combined Program." Requirements for the BA degree are listed under the BA in biology, BA in chemistry, BA in earth and environmental sciences, BA in geographical and sustainability science, and BA in physics (College of Liberal Arts and Sciences) in the catalog.