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 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

<table>
<thead>
<tr>
<th>Course #</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>All of these:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EDTL:3002</td>
<td>Teaching and Learning Technologies (must be taken during student's first semester in the college)</td>
<td>2</td>
</tr>
<tr>
<td>EDTL:3091</td>
<td>Secondary Education Program Orientation and Classroom Management</td>
<td>3</td>
</tr>
<tr>
<td>EDTL:3095</td>
<td>Teaching Reading in Secondary Content Areas (must be taken during student's first semester in the college)</td>
<td>1</td>
</tr>
<tr>
<td>EDTL:4900</td>
<td>Foundations of Special Education</td>
<td>3</td>
</tr>
<tr>
<td>EPLS:3000</td>
<td>Foundations of Education</td>
<td>3</td>
</tr>
<tr>
<td>EPLS:4180</td>
<td>Human Relations for the Classroom Teacher</td>
<td>3</td>
</tr>
<tr>
<td>One of these:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PSQF:1075</td>
<td>Educational Psychology and Measurement</td>
<td>3</td>
</tr>
<tr>
<td>PSQF:6200</td>
<td>Educational Psychology</td>
<td>3</td>
</tr>
<tr>
<td>Science education courses taken in the following sequence:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EDTL:4750</td>
<td>Assessment in Science, Technology, Engineering, and Mathematics (STEM)</td>
<td>2</td>
</tr>
<tr>
<td>EDTL:4751</td>
<td>Learning in the Science, Technology, Engineering, and Mathematics (STEM) Classroom</td>
<td>2</td>
</tr>
<tr>
<td>EDTL:4752</td>
<td>Secondary Science Methods II with Field Experience</td>
<td>3</td>
</tr>
<tr>
<td>EDTL:4753</td>
<td>Secondary Science Methods III with Field Experience</td>
<td>3</td>
</tr>
<tr>
<td>EDTL:4779</td>
<td>Secondary School Science Practicum</td>
<td>2</td>
</tr>
<tr>
<td>EDTL:4087</td>
<td>Seminar: Curriculum and Student Teaching</td>
<td>3</td>
</tr>
<tr>
<td>EDTL:4091</td>
<td>Observation and Laboratory Practice in the Secondary School</td>
<td>6</td>
</tr>
<tr>
<td>EDTL:4092</td>
<td>Observation and Laboratory Practice in the Secondary School</td>
<td>6</td>
</tr>
</tbody>
</table>

Broad Field Science Block

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

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

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.

Comprehensive Examination
Students complete comprehensive examinations before
their student teaching semester. Two written comprehensive
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 academic standing
  policy of the Graduate College);
• a minimum TEP major GPA of 2.00 (2.70 for good
  standing);
• 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,
environmental sciences, geoscience, 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 environmental sciences, BA in geoscience, and BA in
physics (College of Liberal Arts and Sciences) in the catalog.