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. Students must maintain a program grade-point average (GPA) of at least 3.00.

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 (at least 56 s.h.) as undergraduates, but no previous coursework in education. Students’ science coursework should be equivalent to that required by the University of Iowa Science Education program.

Students may need to complete additional courses or other requirements to meet state standards for teacher preparation, licensure, or endorsements.

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>
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</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>
</tbody>
</table>

These two taken concurrently:

- EDTL:4753 Secondary Science Methods III with Field Experience, 3 hours
- EDTL:4779 Secondary School Science Practicum, 2 hours

These three taken concurrently:

- EDTL:4087 Seminar: Curriculum and Student Teaching, 3 hours
- EDTL:4091 Observation and Laboratory Practice in the Secondary School, 6 hours
- EDTL:4092 Observation and Laboratory Practice in the Secondary School, 6 hours

Electives

A minimum of one graduate course in biology, chemistry, earth science, or physics is required. Students who have satisfied portions of the required science coursework listed above must take additional science coursework to meet the minimum requirement of 48 s.h. of 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.

TEP: Secondary Education

Graduate students may be admitted to a program leading to teacher licensure/certification as “certification only” candidates in the Graduate College. They are subject to all Graduate College policies; see the Manual of Rules and Regulations on the Graduate College website. Eligible graduate students also may complete initial teacher licensure/certification requirements by earning an MAT in teaching and learning (science education).

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 with a major in biology, chemistry, environmental sciences, geoscience, or physics may apply to 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.

**Science Specialization (Broad Field Science Block)**

The following courses are required for the undergraduate degree in science studies at the University of Iowa. They need not be repeated by MAT candidates who need one or more advanced courses in their major science area, or by students from other interdisciplinary science discipline programs that prepare teachers for grades 6–9.

<table>
<thead>
<tr>
<th>Course #</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIED:4135</td>
<td>The Nature of Science</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Two of these (unless completed during undergraduate study):</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>
</tbody>
</table>

Education courses required for the combined program are listed under "Combined Program" above. 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.