

## *Master of Arts in Science Teaching (M.A.T.) (48 s.h. minimum)*

This degree is designed primarily for those who decide that they would like to become teachers and have already completed a B.S. or B.A. in an area of science. It features advanced work in science along with the courses required for certification. It is a means by which candidates can attain a Master's degree and certification at the same time. Students should have the equivalent degree program as those in science education in the College of Liberal Arts at The University of Iowa. An applicant with a strong major from another institution may be licensed only in that particular science discipline. A GPA of 3.0 is recommended for admission.

### ***I. PROFESSIONAL EDUCATION SEQUENCE REQUIREMENTS (44 s.h.)\****

EDTL:3091	Secondary Education Orientation and Classroom Management	3 s.h.
EDTL:3095	Teaching Reading in Secondary Content Areas	1 s.h.
EDTL:3002	Technology in the Classroom	2 s.h.

*(Above classes are to be taken in 1<sup>st</sup> semester of registration after admission)*

EPLS:3000	Foundations of Education	3 s.h.
EDTL:4900	Foundations of Special Education	3 s.h.
PSQF:6200	Educational Psychology and Measurement (May substitute PSQF:1075)	3 s.h.
EPLS:4180	Human Relations for the Classroom Teacher	3 s.h.

*(This course may be waived only in N310 Lindquist Center)*

***The following courses must be taken in sequence. These courses are not offered in summer sessions.***

EDTL:4751	Science Teaching and Practicum with Early Learners (Fall only)	3 s.h.
EDTL:4752	Methods of Teaching Science (Prerequisite: EDTL:4751) (Spring only)	3 s.h.
EDTL:4753	Instructional Issues in Teaching Science (Prerequisite: EDTL:4752; Corequisite: EDTL:4779) (Fall only)	3 s.h.

EDTL:4779	Secondary School Science Practicum (Corequisite: EDTL4753) (Fall only)	2 s.h.
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***The following courses are taken concurrently as the student teaching semester. Student teaching will ONLY be offered during the SPRING semester:***

EDTL:4087	Seminar: Curriculum and Student Teaching, <b>sec. 91</b>	3 s.h.
EDTL:4091	Observation and Laboratory Practice in the Secondary School, <b>sec. 91</b>	6 s.h.
EDTL:4092	Observation and Laboratory Practice in the Secondary School, <b>sec. 91</b>	6 s.h.

### ***II. Science Specialization***

The following courses are required for M.A.T. students to meet state pedagogical requirements. The applications courses *MAY* also count for content requirements.

**Required Courses** *(unless completed as part of the undergraduate degree):*

SIED:4135	The Nature of Science (Fall Only)	3-4 s.h.
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**TWO OF THE FOLLOWING** *(unless completed at the undergraduate level):*

SIED:4102	Societal and Educ. Appl. of Earth Science and Environmental Science (Fall only) <b>OR</b>	3-4 s.h.
SIED:4103	Societal and Educational Applications of Biological Sciences (Fall only)	3-4 s.h.
SIED:4105	Societal and Educational Applications of Physical Sciences (Spring only) <b>OR</b>	3-4 s.h.
SIED:4106	Societal and Educational Applications of Chemical Concepts (Spring only)	3-4 s.h.

### ***III. COMPREHENSIVE EXAMINATION***

A final examination, at the discretion of the examining committee, consists of two written components. The science and science education comprehensive examinations do not duplicate course examinations, but assess both science education and the science specialization area chosen by the candidate.

***\*All courses listed are restricted to persons admitted to Teacher Education Program with the exception of PSQF:1075, EPLS:3000 and EDTL:4900***

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The University of Iowa  
 Optional Additional Endorsement Requirements MAT  
**For advising purposes ONLY**  
 (Effective Fall 2016)

**Minimum Science Content Course State of Iowa licensure Endorsement**

- Primary Emphasis area consisting of a minimum of 24 s.h. or a degree in one of the science disciplines (Biology, Chemistry, Earth Science, or Physics) for endorsement in the discipline; **and**
- The Broad Science Field Block (See below);

**Additional endorsements in the state of Iowa can be optionally obtained in the following manners:**

- 15 s.h. in a science discipline (Biology, Chemistry, Earth Science, or Physics) other than the primary Emphasis area, for endorsement in the discipline; **OR**
- 36 s.h. minimum to include a minimum of 9 s.h. from each of the science disciplines (Biology, Chemistry, Earth Science, or Physics) chosen in consultation with your advisor.

**Course Options for Emphasis Areas** (Courses numbered below 3000 can satisfy semester hour requirements for license endorsements, but do not contribute to semester hour requirements of graduate degrees.)

**Emphasis Areas**

<b>Biology Emphasis Area (24 s.h.)</b>	
BIOL:1411 Foundations of Biology	4 s.h.
BIOL:1412 Diversity of Form and Function	4 s.h.
BIOL:2512 Fundamental Genetics <b>OR</b>	4 s.h.
BIOL:2211 Genes, Genomes & the Human Cond	3 s.h.
BIOL:1311 Human Genetics in the 21 <sup>st</sup> Century (Fall)	3 s.h.
BIOL:1370 Understanding Evolution (Spring) <b>OR</b>	3 s.h.
BIOL:3172 Evolution	4 s.h.
HHP:3500 Human Physiology <b>OR</b>	3 s.h.
BIOL:3343 Animal Physiology (Spring)	3 s.h.
BIOL:2673 Ecology (Fall) <b>OR</b>	3 s.h.
BIOL:2374 Biogeography (Spring)	3 s.h.
BIOL:3233 Introduction to Develop. Bio (Fall) <b>OR</b>	3 s.h.
BIOL:2723 Cell Biology (Spring) <b>OR</b>	3 s.h.
BIOL:3363 Plant Developmental Bio (Spring) <b>OR</b>	3 s.h.
BIOC:3110 Biochemistry	3 s.h.

<b>Chemistry Emphasis Area (25 s.h.)</b>	
CHEM:1110 Principles of Chemistry I	4 s.h.
CHEM:1120 Principles of Chemistry II	4 s.h.
CHEM:2210 Organic Chemistry I	3 s.h.
CHEM:2220 Organic Chemistry II	3 s.h.
*CHEM:2021 Basic Measurements	3 s.h.
CHEM:2410 Organic Chemistry Lab	3 s.h.
CHEM:3250 Inorganic Chemistry (Spring)	2 s.h.
CHEM:3110 Analytical Chemistry I (Fall) <b>OR</b>	3 s.h.
BIOC:3110 Biochemistry <b>OR</b>	3 s.h.
CHEM:4431 Physical Chemistry I	3 s.h.
<b>*Options ONLY if Chemistry is a Secondary Emphasis Area.</b>	

<b>Earth Science Emphasis Area (24 s.h.)</b>	
EES:1040 Evolution and History of Life	4 s.h.
EES:1030 Introduction to Earth Science <b>OR</b>	4 s.h.
EES:1050 Introduction to Geology	4 s.h.
EES:1080 Introduction to Environmental Science	4 s.h.
EES:3840 Structural Geology <b>OR</b>	4 s.h.
EES:3000 Geologic Training Assignment (Summer)**	3 s.h.
EES:3300 Sedimentary Geology (Fall)	4 s.h.
EES:3140 Energy and the Environment <b>OR</b>	3 s.h.
EES:1050 Foundations of GIS <b>OR</b>	3 s.h.
EES:4010 Field Methods in Physical Geography (Fall)	3 s.h.
EES:3080 Introduction to Oceanography (Spring) <b>OR</b>	2 s.h.
EES:3070 Marine Ecosystems and Conser. (Fall only)	3 s.h.
EES:3210 Principles of Paleontology (Fall) <b>OR</b>	3 s.h.
EES:3360 Soil Genesis and Geomorphology (Fall) <b>OR</b>	3 s.h.
EES:3020 Earth Surface Processes (Fall)	3 s.h.

<b>Physics Emphasis Area (24 s.h.)</b>	
PHYS:1611; 1612 Introductory Physics (Majors) <b>OR</b>	8 s.h.
*PHYS:1511; 1512 College Physics (Algebra;) <b>OR</b>	8 s.h.
PHYS:1701; 1702 Physics I, II (Calc)	8 s.h.
PHYS:1703 Physics III (Calc) (Fall) <b>OR</b>	4 s.h.
PHYS:3710 Intermediate Mechanics (Spring)	3 s.h.
PHYS:1410 Physics of Sound (Spring) <b>OR</b>	3-4 s.h.
*PHYS:1200 Physics of Everyday Experience	3 s.h.
ASTR:1771 General Astronomy I <b>OR</b>	4 s.h.
*ASTR:1070 Stars, Galaxies, & the Universe <b>OR</b>	3-4 s.h.
*ASTR:1080 Exploration of the Solar System (Spring)	3 s.h.
PHYS:3850 Electronics (Spring) <b>OR</b>	4 s.h.
PHYS:3811 Electricity & Magnetism (Fall)	3 s.h.
<b>*Options ONLY if Physics is a Secondary Emphasis Area.</b>	

**Broad Science Field Block**

<b>Broad Science Field Courses</b>		
SIED:4102 Societal and Educational Applications of Earth Science and Environmental Science (Fall only) ** <b>OR</b>		3-4 s.h.
SIED:4103 Societal and Educational Applications of Biological Sciences (Fall only)		3-4 s.h.
SIED:4105 Societal and Educational Applications of Physical Sciences (Spring only) <b>OR</b>		3-4 s.h.
SIED:4106 Societal and Educational Applications of Chemical Concepts (Spring only)		3-4 s.h.
SIED:4135 The Nature of Science (Fall Only)		3-4 s.h.
**** EES:3000 can substitute for this course.		