

Teaching and Learning, MS

STEM Education

The Master of Science in teaching and learning with a STEM education subprogram requires 36 s.h. of graduate credit. Students must earn a UI cumulative grade-point average (GPA) of at least 2.75.

The program focuses on science, technology, engineering, and mathematics (STEM) education. The program includes coursework that may be used toward the K-12 STEM specialist endorsement. Degree requirements include online coursework to fit the schedule of a practicing teacher. The STEM education subprogram is not a licensure program.

The MS in teaching and learning with a STEM education subprogram requires the following coursework.

Required Courses

STEM Pedagogy Courses

| Course # | Title | Hours |
|---------------|----------------------------------------------|-------|
| All of these: | | |
| EDTL:6563 | STEM Through Mathematical Modeling | 3 |
| EDTL:6761 | STEM Research and Leadership Seminar | 3 |
| EDTL:6762 | STEM Experiential Learning | 3 |
| EDTL:6764 | STEM Extracurricular Experience and Capstone | 6 |

College of Education Course

| Course # | Title | Hours |
|--------------|------------------------|-------|
| This course: | | |
| EDTL:5095 | Issues in U.S. Schools | 3 |

Science/Mathematics Courses

| Course # | Title | Hours |
|---------------|-------------------------------------------------------------|-------|
| Two of these: | | |
| EDTL:4565 | Mathematics in Management and Social Sciences | 3 |
| EDTL:4768 | Computer Science Methods | 3 |
| EDTL:6766 | Physical Science Topics in STEM Education | 3 |
| EDTL:6767 | Systems Thinking in Biology and Integrated STEM Education | 3 |
| This course: | | |
| EDTL:6765 | STEM Independent Research (taken two times for 3 s.h. each) | 6 |

Electives

| Course # | Title | Hours |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------|
| Additional approved elective coursework may need to be taken to complete the 36 s.h. required for the MS. At least 6 s.h. of elective coursework chosen from the following: | | |

| | | |
|-----------|-----------------------------------------------------------------------------|---|
| EDTL:4066 | Curriculum Concepts in Gifted Education | 3 |
| EDTL:4093 | Teaching and Learning for a Global Perspective | 3 |
| EDTL:4199 | Program Models in Gifted Education | 3 |
| EDTL:4392 | Voice, Drama, and Debate in the Secondary Schools | 3 |
| EDTL:4393 | Critical Media Studies and Production in Secondary Schools | 3 |
| EDTL:4467 | Methods: ESL and Bilingual Education | 4 |
| EDTL:4498 | Language Structure for Teaching English Language Learners | 4 |
| EDTL:5081 | Facilitating Student-Centered Discussions | 3 |
| EDTL:5085 | Generation Innovation: Technology Integration in 21st-Century K-12 Schools | 3 |
| EDTL:5087 | Anti-Oppressive Literature Instruction | 3 |
| EDTL:5090 | Diversity and Identity in K-12 Schools | 3 |
| EDTL:5091 | LGBTQ Topics in Education | 3 |
| EDTL:6483 | Multilingual Education and Applied Linguistics | 3 |
| CSED:4137 | Introduction to Educating Gifted Students | 3 |
| CSED:5300 | Culturally Relevant Social and Emotional Learning | 3 |
| EPLS:5090 | Instructional Coaching for Teaching Excellence | 3 |
| EPLS:6381 | Analysis and Appraisal of Curriculum | 3 |
| PSQF:4121 | Identification of Students for Gifted Programs | 3 |
| PSQF:4143 | Introduction to Statistical Methods | 3 |
| PSQF:4740 | Issues in K-12 Assessment | 3 |
| PSQF:4750 | Learning Environments: Design, Context, and Activity | 3 |
| PSQF:4760 | Participatory Learning and Media: Creating, Remixing, Making, and Education | 3 |

Other courses in consultation with an advisor

K-12 STEM Specialist Endorsement

The University of Iowa does not offer a state-approved program for the K-12 STEM Specialist endorsement. In addition to the master's degree, teachers must have met the requirements for a standard Iowa teaching license with endorsement in mathematics, science, engineering, industrial technology, or agriculture. They must demonstrate completion of 12 s.h. of science and 12 s.h. of mathematics content coursework (including computer science), which may include content coursework completed as part of this subprogram as well as other college-level courses. In addition, they must have completed 3 s.h. of engineering or technological design

coursework not included in this subprogram; ENGR:1100 Introduction to Engineering Problem Solving and ENGR:1300 Introduction to Engineering Computing may be options for the requirement. Once the courses are completed, teachers may apply to the Board of Educational Examiners for transcript analysis and to add the endorsement. Students interested in pursuing the K-12 STEM Specialist Endorsement should notify their advisor upon admission to the program.

Admission

Applicants must meet the admission requirements of the Graduate College. These include:

- a bachelor's degree from a regionally accredited American college or university or an equivalent degree from another country as determined by the Office of Graduate Admissions with an undergraduate major in a given science or mathematics area (or combination of science areas), science education, math education, or in elementary education with a science or math emphasis;
- a minimum GPA of 3.00 or the international equivalent as determined by the Office of Graduate Admissions; and
- international applicants whose first language is not English must score at least 81 (internet-based) with a minimum score of 600 on the Test of English as a Foreign Language (TOEFL) or a minimum International English Language Testing System (IELTS) score of 7.0 (with no subscore lower than 6.0).

Teaching licensure/certification is recommended for the MS and required if the candidate seeks the K-12 STEM specialist endorsement from the Board of Educational Examiners (BOEE).