MASTER OF SCIENCE TEACHING (MST) DEGREE

Program Learning Outcomes for the MST Degree

Upon completing the MST degree, students will be able to:

1. Solve problems based on Kepler’s Laws and Newton’s Laws using non-calculus mathematical techniques.
2. Demonstrate best practices for teaching scientific content.
3. Present an oral report on a scientific topic using presentation software such as Powerpoint.
4. Learn how to use scientific and astronomical equipment such as telescopes, digital cameras, GPS, and electronic devices, including multimeters, and/or portable planetariums.
5. Prepare a Final Project, which will include scientific research, educational research, and/or curriculum creation or analysis.

Requirements for the MST Degree

The MST degree is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-non-thesis-masters-degrees). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-all-degrees). Students pursuing the MST degree must complete:

- A minimum of 30 credit hours to satisfy degree requirements.
- A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above).
- A minimum of 24 credit hours must be taken at Rice University.
- A minimum residency enrollment of one fall or spring semester of part-time graduate study at Rice University.
- A minimum of 15 credit hours from Content or Content/Skills Courses.
- A final project. Students will prepare a final project which will include scientific research, educational research, and/or curriculum creation or analysis.

- The requirements for one area of specialization. The MST degree program offers nine areas of specialization:
  - Astronomy, or
  - Computer Science, or
  - Earth Science, or
  - Engineering, or
  - Informal Science, or
  - Integrated Physics and Chemistry (IPC), or
  - Mathematics, or
  - Middle School Science, or
  - Physics.
- A minimum overall GPA of 2.67.
- A minimum GPA of 2.67 in required coursework.

Each student will have a 3-person committee, with at least 2 members from the tenure-track faculty, to approve the student’s proposed program, advise on which specific courses will best suit the student’s needs, and approve their final project. At least 1 of the members of the committee will be an experienced Education Professional, who will ensure the appropriateness of the courses to the educator’s program. At least 1 person of the committee will be an expert in the content area that is the student’s primary teaching interest.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program’s academic advisor, or where applicable, the department or program’s Director of Graduate Studies. (Course substitutions must be formally applied and entered into Degree Works by the department or program’s Official Certifier (https://registrar.rice.edu/facstaff/degreeworks/officialcertifier).) Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the MST Degree</td>
<td>30</td>
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</table>

Degree Requirements

Core Requirements

Select a minimum of 5 Content or Content/Skills courses at the 500-level or above: 2

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>ASTR 502</td>
<td>TEACHING EARTH AND SPACE SCIENCE</td>
<td>3</td>
</tr>
<tr>
<td>ASTR 503</td>
<td>ASTRONOMY FOR TEACHERS</td>
<td>3</td>
</tr>
<tr>
<td>ASTR 530</td>
<td>TEACHING ASTRONOMY LABORATORY</td>
<td>3</td>
</tr>
<tr>
<td>ESCI 511</td>
<td>PUTTING EARTH SCIENCE INTO ACTION</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 501</td>
<td>PHYSICS OF THE RADIO FOR TEACHERS</td>
<td>3</td>
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Additional Content/Skills or Education Courses

Students must complete a minimum of 3 additional credit hours from content, skills, or education courses: 3

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>EDUC 519</td>
<td>TEACHING AND LEARNING WITH INQUIRY</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 520</td>
<td>TEACHING DIVERSE LEARNERS</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 563</td>
<td>THEORY AND METHODS: MATHEMATICS</td>
<td>3</td>
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</table>

Research or Practicum

Select at least 3 and no more than 12 credit hours of research (educational or scientific) or practicum teaching: 4

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>ESCI 515</td>
<td>GEOPHYSICAL FIELD WORK FOR EDUCATORS</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 800</td>
<td>GRADUATE RESEARCH</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credit Hours Required for the MST Degree

University Graduation Requirements (ga.rice.edu/undergraduate-students/academic-policies-procedures/graduation-requirements)

| Total Credit Hours | 30       |

Footnotes and Additional Information

1. Astronomy, Computer Science, Earth Science, Engineering, Informal Science, Integrated Physics and Chemistry (IPC), Mathematics, Middle School Science, and Physics are example areas of specialization.

2. A total of 5 content or content/skills courses at the 500-level or above must be completed.

3. Additional credit hours must be completed from content, skills, or education courses.

4. A minimum of 3 additional credit hours of research or practicum teaching (educational or scientific) may be completed.
At least 9 credit hours should be directly related to the student's major area of specialization. There may be some courses at the 400-level that satisfy this requirement, but students should be aware that if they take courses at the 400-level, they may need to take additional courses at the 500-level or above to satisfy overall degree requirements. Students may also satisfy the requirement, upon approval of their graduate committee, by completing courses from departmental (ASTR, BIOC, CHEM, EBIO, EDUC, ENGI, ESCI, MATH, NSCI, or PHYS) course offerings at the 500-level or above.

Students may also satisfy the requirement, upon approval of their graduate committee, by completing courses from departmental (ASTR, BIOC, CHEM, EBIO, EDUC, ENGI, ESCI, MATH, NSCI, or PHYS) course offerings.

Students must complete, at a minimum, 3 credit hours from graduate research or teaching practicum (ESCI 515 or PHYS 800), developing a research project in conjunction with a science or educational advisor.

Policies for the MST Degree

Transfer Credit
For Rice University's policy regarding transfer credit, see Transfer Credit (ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-all-degrees/#transfer). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program's advisor when considering transfer credit possibilities.

Additional Information
For additional information, please see the Science Teaching website: http://space.rice.edu/MST/

Opportunities for the MST Degree

Additional Information
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