

# MASTER OF SCIENCE TEACHING (MST) DEGREE

## Program Learning Outcomes for the MST Degree

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

1. Demonstrate solving 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. Demonstrate use of 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](https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-non-thesis-masters-degrees/) (<https://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](https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-all-degrees/) (<https://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 (graduate semester credit hours, coursework at the 500-level or above).
- A minimum of 24 graduate semester credit hours must be taken at Rice University.
- A minimum of 24 graduate semester credit hours must be taken in standard or traditional courses (with a course type of lecture, seminar, laboratory, lecture/laboratory).
- A minimum residency enrollment of one fall or spring semester of part-time graduate study at Rice University.
- A maximum of 2 courses (6 graduate semester credit hours) from transfer credit. For additional departmental guidelines regarding transfer credit, see the [Policies](#) (p. 2) tab.
- 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<sup>1</sup>:
  - 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 or higher in all Rice coursework.
- A minimum program GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the non-thesis master's degree.

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/>). Additionally, these course substitutions must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

## Summary

Code	Title	Credit Hours
Total Credit Hours Required for the MST Degree		30

## Degree Requirements

Code	Title	Credit Hours
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### Core Requirements

Select a minimum of 15 credit hours of Content or Content/Skills courses at the 500-level or above:<sup>2</sup>

ASTR 502	TEACHING EARTH AND SPACE SCIENCE	
ASTR 503	ASTRONOMY FOR TEACHERS	
ASTR 530	TEACHING ASTRONOMY LABORATORY	
NSCI 586	CONTEMPORARY TOPICS IN K-12 SCIENCE AND MATHEMATICS	
PHYS 501	PHYSICS OF HAM RADIO FOR TEACHERS	

### Additional Content/Skills or Education Courses

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

EDUC 520	TEACHING DIVERSE LEARNERS	
EDUC 521	CURRICULUM DEVELOPMENT	
EDUC 565	THEORY AND METHODS: SCIENCE	

### Research or Practicum

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

PHYS 800	GRADUATE RESEARCH	
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**Total Credit Hours** 30

**Footnotes and Additional Information**

- <sup>1</sup> Astronomy, Computer Science, Earth Science, Engineering, Informal Science, Integrated Physics and Chemistry (IPC), Mathematics, Middle School Science, and Physics are example areas of specialization.
- <sup>2</sup> Courses listed as Core Requirements are examples. Students may select other coursework in consultation with the advisor. 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 course requirement, but students should be aware that if they take courses at the 400-level, they will likely need to take additional courses at the 500-level or above to satisfy overall graduate-level master's degree requirements. Students may also satisfy the requirement, upon approval of their graduate committee, by completing courses from departmental (ASTR, BIOS, CHEM, EDUC, EEPS, ENGI, MATH, NSCI, or PHYS) course offerings at the 500-level or above.
- <sup>3</sup> Courses listed as Additional Content/Skills or Education Courses are examples. Students may select other coursework in consultation with the advisor. Students may also satisfy the requirement, upon approval of their graduate committee, by completing courses from departmental (ASTR, BIOS, CHEM, EDUC, EEPS, ENGI, MATH, NSCI, or PHYS) course offerings.
- <sup>4</sup> The course listed as Research or Practicum is an example. Students may select other coursework in consultation with the advisor. Students must complete, at a minimum, 3 credit hours from graduate research or teaching practicum (including, but not limited to PHYS 800), developing a research project in conjunction with a science or educational advisor.

**Opportunities for the MST Degree Additional Information**

For additional information, please see the Science Teaching website: <https://mst.rice.edu> (<https://mst.rice.edu/>).

**Policies for the MST Degree****Transfer Credit**

For Rice University's policy regarding transfer credit, see [Transfer Credit](https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-all-degrees/#transfer) (<https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-all-degrees/#transfer>). Some departments and programs have additional restrictions on transfer credit. Requests for transfer credit must be approved for Rice equivalency by the appropriate academic department offering the Rice equivalent course (corresponding to the subject code of the course content) and by the Office of Graduate and Postdoctoral Studies (GPS). Students are encouraged to meet with their academic program's advisor when considering transfer credit possibilities.

**Program Transfer Credit Guidelines**

Students pursuing the MST degree should be aware of the following program-specific transfer credit guideline:

- No more than 2 courses (6 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards the degree.

**Additional Information**

For additional information, please see the Science Teaching website: <https://mst.rice.edu> (<https://mst.rice.edu/>).