Master of Science in Physics

Informational Session
October 29, 2020

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MS Physics Program Director
Program Goals

• The MS Physics program provides flexible options that can be tailored to the specific career goals and disciplinary interests of students seeking graduate training in fundamental and/or applied areas of Physics.

• The program is suitable as either a means to further career development or to enhance preparation for entering a PhD program.
Placement Outlook

Nationally, MS Physics graduates are highly employable

➢ Industry & private sector, especially within fields of
  o engineering (45%)
  o computer/information technology (24%)

➢ Government laboratories and agencies

➢ University and secondary education

> 92% of MS physics graduates secure employment (2/3) or enter PhD programs (1/3)
A Unique Program

Features the choice between 2 distinct trajectories:

➢ **Research Physics Option (RPO)**—2 years
  • Advanced physics and research training culminating in MS thesis

➢ **Professional Physics Option (PPO)**—1.5 years
  • Supplements advanced physics training with “professional skills” electives tailored to career goals
  • Meets criteria for national registry of *Professional Science Masters* (PSM)
Advanced Physics Training

Focus areas include:

• Modern optics and photonics
• Radiation physics and spectroscopy
• Quantum realm of detection, sensing, and computing
• Astrophysics and “multi-messenger” astronomy
• Nanoscale physics and devices
• Physics of solid-state, soft matter, and biological materials/systems
Some examples include:

• Organization, leadership, managing research teams

• Promoting innovation or sustainable technologies

• Entrepreneurship and intellectual property

• Data science and visualization

• STEM pedagogy and education research

• Public policy
## Curriculum Overview

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<tr>
<th>Research Physics Option (RPO)</th>
<th>Professional Physics Option (PPO)</th>
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<tbody>
<tr>
<td>Typically 2-Years to Complete</td>
<td>Typically 1.5-Years to Complete</td>
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<tr>
<td><strong>Graduate Physics Seminar I &amp; II</strong> (2 SCHs)</td>
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<tr>
<td><strong>Core Physics Courses</strong> (12 SCHs)</td>
<td><strong>Core Physics Courses</strong> (9 SCHs)</td>
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<tr>
<td><strong>Individual Academic Plan</strong> Physics (or closely-related) Electives (6-9 SCHs)</td>
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<tr>
<td><strong>Physics Research &amp; Thesis</strong> (7-10 SCHs)</td>
<td><strong>Individual Academic Plan</strong> Professional Electives (9 SCHs)</td>
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<th><strong>Graduate Physics Project</strong> (4 SCHs minimum)</th>
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| **30 Total Semester Credit Hours** (minimum) | **30 Total Semester Credit Hours** (minimum) |


Core Physics Courses
(RPO requires 4, PPO requires 3)

- PHYS-610: Mathematical Methods for Physics
- PHYS-611: Classical Electrodynamics I
- PHYS-614: Quantum Theory
- PHYS-630: Classical Mechanics
- PHYS-640: Statistical Physics
A Few Examples of Physics-Related Electives

(student chooses 2-3)

• PHYS-667: Quantum Optics
• PHYS-720: Computational Methods for Physics
• PHYS-752: Biological Physics
• ASTP-760: Introduction to Relativity & Gravitation
• MATH-831: Mathematical Fluid Dynamics
• MCEE-620: Photovoltaic Science & Engineering
• MCSE-713: Lasers
A Few Examples of Professional Electives
(PPO chooses 3)

• FINC-605: Financing New Ventures
• MGMT-740: Organizational Behavior & Leadership
• ITDS-611: STEM Education: Concepts & Practice
• EEEE-620: Design of Digital Systems
• PUBL-630: Energy Policy
• CSCI-620: Introduction to Big Data
Financial Support

Partial tuition scholarships and teaching assistantships provided

Applications and Further Information

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https://www.rit.edu/study/physics-ms