

Master of Science in Physics

Informational Session
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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
 - engineering (45%)
 - 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

Professional Skills Training

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

<p style="text-align: center;">Research Physics Option (RPO)</p> <p style="text-align: center;">Typically 2-Years to Complete</p>	<p style="text-align: center;">Professional Physics Option (PPO)</p> <p style="text-align: center;">Typically 1.5-Years to Complete</p>
<p style="text-align: center;"><i>Graduate Physics Seminar I & II</i> (2 SCHs)</p>	<p style="text-align: center;"><i>Graduate Physics Seminar I & II</i> (2 SCHs)</p>
<p style="text-align: center;">Core Physics Courses (12 SCHs)</p>	<p style="text-align: center;">Core Physics Courses (9 SCHs)</p>
<p style="text-align: center;"><i>Individual Academic Plan</i> Physics (or closely-related) Electives (6-9 SCHs)</p>	<p style="text-align: center;"><i>Individual Academic Plan</i> Physics (or closely-related) Electives (6 SCHs)</p>
<p style="text-align: center;"><i>Physics Research & Thesis</i> (7-10 SCHs)</p>	<p style="text-align: center;"><i>Individual Academic Plan</i> Professional Electives (9 SCHs)</p>
	<p style="text-align: center;"><i>Graduate Physics Project</i> (4 SCHs minimum)</p>
<p style="text-align: center;"><u>30</u> Total Semester Credit Hours (minimum)</p>	<p style="text-align: center;"><u>30</u> Total Semester Credit Hours (minimum)</p>

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

MS Physics Program Director:

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