

MASTER OF SCIENCE IN RADIOLOGICAL HEALTH SCIENCES, PLAN B, HEALTH PHYSICS SPECIALIZATION

Health physics is the discipline associated with using radiation for the benefit of society. This includes applying scientific principles and practical knowledge to ensure that these benefits are obtained without unreasonable risks to humans or the environment. The profession has evolved into a necessary part of all applications involving radiation, including radiation use in medical and industrial settings. Sources of radiation range from naturally occurring radioactivity to man-made sources of radiation, such as reactors. Successful professionals in health physics have broad backgrounds in physics, biology, and instrumentation, and understand risks and risk analysis.

The required coursework is structured to provide a sound foundation in the basic skills essential to the health physics profession. Students may concentrate on specific areas of interest through a wide selection of elective courses. Laboratory exercises, field trips, and research supplement the formal coursework.

The M.S. in Radiological Health Sciences, Plan B, Health Physics Specialization is accredited by the Applied Sciences Accreditation Commission of ABET (<https://www.abet.org/>).

[Learn more about the Health Physics Specialization on the Department of Environmental and Radiological Health Sciences website.](#)

[Students interested in graduate work should refer to the Graduate and Professional Bulletin.](#)

Learning Objectives

Upon successful completion, students will be able to:

1. Apply knowledge of health physics and related fields or specialties, including statistics, radiobiology, radiochemistry and radioecology.
2. Formulate a hypothesis, design and conduct experiments, as well as to analyze and interpret data.
3. Develop and implement a program to meet radiation safety needs of workers and protection of the general public.
4. Function independently and on multi-disciplinary teams.
5. Identify and solve health physics problems.
6. Adhere to the standards of professional and ethical responsibility of the field.
7. Communicate effectively both orally and in writing.
8. Understand the impact of solutions to contemporary public health issues in a global and societal context.
9. Use the techniques, skills, and modern scientific and technical tools necessary for professional practice of health physics.

Requirements Effective Fall 2021

Code	Title	Credits
ERHS 530	Radiological Physics and Dosimetry I	3
ERHS 531	Nuclear Instruments and Measurements	2
ERHS 550 or ERHS 450	Principles of Radiation Biology Introduction to Radiation Biology	3-5
ERHS 561	Radiation Public Health	2
ERHS 570	Radioecology	2
ERHS 630	Radiological Physics and Dosimetry II	3
ERHS 632	Techniques in Radiation Dosimetry	1
ERHS 665	Radiochemistry	3
ERHS 693D	Research Seminar: Health Physics	1
ERHS 786	Practicum	3
Select one of the following courses:		3-4
ERHS 544/ STAT 544	Biostatistical Methods for Quantitative Data	
ERHS 555	Quantitative Methods for Radiation Safety	
STAR 511	Design and Data Analysis for Researchers I	
Select at least 3 credits from the following:		3
ERHS 446	Environmental Toxicology	
ERHS 502	Fundamentals of Toxicology	
ERHS 515	Non-Ionizing Radiation Safety	
ERHS 520	Environmental and Occupational Health Issues	
ERHS 526	Industrial Hygiene	
ERHS 527	Industrial Hygiene Laboratory	
ERHS 555	Quantitative Methods for Radiation Safety ¹	
ERHS 565	Chemical and Biological Warfare Agents	
ERHS 570	Radioecology ¹	
ERHS 698	Research	
STAR 512	Design and Data Analysis for Researchers II	
STAT 547/ CIVE 547	Statistics for Environmental Monitoring	
Elective		
500-level or greater elective ²		3
Program Total Credits:		32-35

A well-written, comprehensive, and scholarly professional paper prepared on a topic approved by the student's graduate committee that is successfully defended in an oral examination.

¹ ERHS 555 and ERHS 570 may only be used from the list if they have NOT been previously selected for the preceding requirements.

² Elective course must be approved by the student's graduate committee.

Requirements for All Graduate Degrees

For more information, please visit Requirements for All Graduate Degrees (<https://catalog.colostate.edu/general-catalog/graduate-bulletin/graduate-study/procedures-requirements-all-degrees/>) in the Graduate

and Professional Bulletin (<https://catalog.colostate.edu/general-catalog/graduate-bulletin/>).

Summary of Procedures for the Master's and Doctoral Degrees

NOTE: Each semester the Graduate School publishes a schedule of deadlines. Deadlines are available on the Graduate School website (<https://graduateschool.colostate.edu/deadline-dates/>). Students should consult this schedule whenever they approach important steps in their careers.

Forms (<https://graduateschool.colostate.edu/forms/>) are available online.

Step	Due Date
1. Application for admission (online)	Six months before first registration
2. Diagnostic examination when required	Before first registration
3. Appointment of advisor	Before first registration
4. Selection of graduate committee	Before the time of fourth regular semester registration
5. Filing of program of study (GS Form 6)	Before the time of fourth regular semester registration
6. Preliminary examination (Ph.D. and PD)	Two terms prior to final examination
7. Report of preliminary examination (GS Form 16) - (Ph.D. and PD)	Within two working days after results are known
8. Changes in committee (GS Form 9A)	When change is made
9. Application for Graduation (GS Form 25)	Refer to published deadlines from the Graduate School Website
9a. Reapplication for Graduation (online)	Failure to graduate requires Reapplication for Graduation (online) for the next time term for which you are applying
10. Submit thesis or dissertation to committee	At least two weeks prior to the examination or at the discretion of the graduate committee
11. Final examination	Refer to published deadlines from the Graduate School Website
12. Report of final examination (GS Form 24)	Within two working days after results are known; refer to published deadlines from the Graduate School website
13. Submit a signed Thesis/ Dissertation Submission Form (GS Form 30) to the Graduate School and Submit the Survey of Earned Doctorates (Ph.D. only) prior to submitting the electronic thesis/ dissertation	Refer to published deadlines from the Graduate School website.
14. Submit the thesis/dissertation electronically	Refer to published deadlines from the Graduate School website
15. Graduation	Ceremony information is available from the Graduate School website