

# RADIATION HEALTH PHYSICS GRADUATE MAJOR (MHP, MS, PHD)

## Graduate Areas of Concentration

*Application of nuclear techniques, boron neutron capture therapy, emergency response planning, environmental monitoring, environmental pathways assessment, nuclear medicine, radiation detection and instrumentation, radiation dosimetry, radiation shielding, radioactive material transport, radioactive waste management, research reactor health physics, risk assessment*

### Also available via Ecampus.

The School of Nuclear Science and Engineering offers graduate work leading toward the Master of Health Physics, Master of Science, and Doctor of Philosophy degrees in Radiation Health Physics.

The Radiation Health Physics program is designed to prepare students for careers involved with the many beneficial applications of nuclear energy, radiation, and radioactive materials. The Radiation Health Physics profession is essential to society's well-being since they enable significant public benefits through energy security, national defense, medical health, and industrial competitiveness.

This graduate curricula and research programs are designed for students with professional interests in the field of radiation protection. This specialized field involves an integrated study of the physical aspects of ionizing and nonionizing radiation, their biological effects, and the methods used to protect people and their environment from radiation hazards while still enabling the beneficial uses of radiation and radioactive materials.

Competitive fellowships and research and teaching assistantships are available to incoming graduate students. The U.S. Department of Energy and National Academy for Nuclear Training support a number of fellowship programs each year. Oregon State University is one of eight participating universities in the U.S. where students may attend graduate school on the Nuclear Engineering, Health Physics, and Applied Health Physics fellowships sponsored by the U.S. Department of Energy. Each year the National Academy for Nuclear Training also supports fellowships for students entering nuclear engineering and radiation health physics at OSU. Research and teaching assistant opportunities are also available for students to support the educational and research programs conducted by the department.

World-class facilities are available for the instructional and research programs of the school. These are housed in the OSU Radiation Center and include a TRIGA Mark II nuclear reactor, the Advanced Thermal Hydraulic Research Laboratory, the APEX nuclear safety scaled testing facility, and laboratories specially designed to accommodate radiation and the use of radioactive materials.

For more information, contact the School of Nuclear Science & Engineering, NSE.Office@oregonstate.edu, 541-737-2343.

**Major Code: 3750**

## MS

| Code  | Title  | Credits   |
|---|--|-----------|
| <b>Core Coursework</b>                            |  |           |
| NSE 515   | NUCLEAR RULES AND REGULATIONS                | 2         |
| NSE 516   | RADIOCHEMISTRY                               | 4         |
| or NSE 519  | RADIOCHEMICAL ANALYSIS                       |           |
| NSE 531   | RADIOPHYSICS                                 | 3         |
| NSE 535   | RADIATION SHIELDING AND EXTERNAL DOSIMETRY   | 4         |
| NSE 536   | ADVANCED RADIATION DETECTION AND MEASUREMENT | 4         |
| NSE 582   | APPLIED RADIATION SAFETY                     | 4         |
| NSE 583   | RADIATION BIOLOGY                            | 3         |
| NSE 588   | RADIOECOLOGY                                 | 3         |
| NSE 590   | INTERNAL DOSIMETRY                           | 3         |
| <b>Seminar</b>                                    |  |           |
| NSE 507   | SEMINAR                                      | maximum 3 |
| <b>Thesis</b>                                     |  |           |
| NSE 503   | THESIS                                       | maximum 6 |
| <b>Electives</b>                                  |  |           |
| Chosen by student, as approved by major professor |  | minimum 6 |
| <b>Total Hours</b>                                |  | <b>45</b> |

## MHP

| Code  | Title  | Credits    |
|---|--|------------|
| <b>Core Coursework <sup>1</sup></b>               |  |            |
| NSE 515   | NUCLEAR RULES AND REGULATIONS                | 2          |
| NSE 516   | RADIOCHEMISTRY                               | 4          |
| or NSE 519  | RADIOCHEMICAL ANALYSIS                       |            |
| NSE 531   | RADIOPHYSICS                                 | 3          |
| NSE 535   | RADIATION SHIELDING AND EXTERNAL DOSIMETRY   | 4          |
| NSE 536   | ADVANCED RADIATION DETECTION AND MEASUREMENT | 4          |
| NSE 582   | APPLIED RADIATION SAFETY                     | 4          |
| NSE 583   | RADIATION BIOLOGY                            | 3          |
| NSE 588   | RADIOECOLOGY                                 | 3          |
| NSE 590   | INTERNAL DOSIMETRY                           | 3          |
| <b>Seminar</b>                                    |  |            |
| NSE 507   | SEMINAR                                      | maximum 3  |
| <b>Electives</b>                                  |  |            |
| Chosen by student, as approved by major professor |  | minimum 12 |
| <b>Total Hours</b>                                |  | <b>45</b>  |

## PhD

| Code  | Title  | Credits    |
|---|--------|------------|
| <b>Core Coursework <sup>2</sup></b>               |        |            |
| Chosen by student, as approved by major professor |        | 63         |
| <b>Thesis</b>                                     |        |            |
| NSE 603   | THESIS | minimum 45 |
| <b>Total Hours</b>                                |        | <b>108</b> |

1

The MHP degree option provides students the opportunity to pursue advanced-level study without the requirement of completing thesis research. A comprehensive oral exam is taken in lieu of the thesis requirement and course requirements are the same as for the MS degree. These degrees are intended as terminal degrees, not as preparation for a doctorate, and will emphasize job-related knowledge and skills. Although not required, students wishing to pursue a PhD in the future are advised to pursue an MS degree, not the MHP

2 Radiation Health Physics Graduate Major (MHP, MS, PhD)

2

The student's principal direction in the course of study comes from the doctoral committee, in which the major professor has final approval.

In addition, the School of Nuclear Science & Engineering PhD requirements include:

1. Passing a written qualifying examination for candidacy
2. On assignment from the student's doctoral committee, taking and passing (B average or higher) such courses as judged desirable by the doctoral committee for satisfactory progress in doctoral research
3. Calling regular (every 6 months recommended, but at least annual) meetings of the Doctoral Committee so that the student's progress can be evaluated and guidance offered
4. Preparing, presenting and defending a written dissertation proposal, i.e., the Preliminary Exam.

The Preliminary Exam should be taken as soon after the qualifying exam as possible

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