# Physics MS

## Master of Science in Physics - Option I Thesis

The Master of Science in Physics with a research thesis is ordinarily chosen by those students preparing for industrial employment, college teaching, or for further graduate study leading to the PhD degree. The degree program requires a minimum of 30 semester hours, including 2 courses allotted to the thesis.

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| **Thesis (6 semester hours)** | | |
| PHYS 518 | Thesis (6 semester hours required) | 3-6 |
| Only 6 semester hours of credit for 518 per degree will be given upon satisfactory completion of the requirement | | |
| **Required Core Courses (12 semester hours)** | | |
| PHYS 511 | Advanced Classical Mechanics | 3 |
| PHYS 512 | Classical Electromagnetic Theory | 3 |
| PHYS 517 | Mathematical Methods in Physics | 3 |
| PHYS 520 | Quantum Mechanics | 3 |
| **Approved Courses (9 semester hours)** | | |
| 9 semester hours (3 courses) on approval of graduate advisor | | 9 |
| **Graduate Seminar (1-3 semester hours)** | | |
| PHYS 501 | Graduate Seminar (1 semester hour, for a total of 3 semester hours.) | 1 |
| All physics graduate students must register for 501 each semester in residence | | |
| **Total Hours** | | **30** |

## Master of Science in Physics - Option II Non-Thesis

## Physics Teaching Emphasis

This emphasis is designed for physics educators who may not have an undergraduate degree in physics but that wish to earn a MS degree in physics to allow them to teach at the community college level or dual enrollment courses. The suggested minimum undergraduate courses include a year of calculus-based physics, modern physics, and mathematics through differential equations.

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| **Research (3 semester hours)** | | |
| PHYS 595 | Research Literature and Techniques (3 semester hours required) | 3 |
| **Required Courses (18 semester hours)** | | |
| PHYS 526 | The Quantum Universe for Educators | 3 |
| PHYS 530 | Physics Mathematical Methods for Educators | 3 |
| PHYS 531 | Classical Mechanics for Educators | 3 |
| PHYS 532 | Electricity and Magnetism for Educators | 3 |
| PHYS 535 | Thermodynamics for Educators | 3 |
| PHYS 561 | Astronomy & Astrophysics for Educators | 3 |
| **Teaching Field courses (15 semester hours)** | | |
| Plus (15 semester hours) that support the major teaching field, on approval of the graduate advisor. | | 15 |
| **Total Hours** | | **36** |

## Applied Physics Emphasis

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|---|---|---|
| **Research (3 semester hours)** | | |
| PHYS 595 | Research Literature and Techniques (3 semester hours required) | 3 |
| **Required Courses (9 semester hours)** | | |
| PHYS 511 | Advanced Classical Mechanics | 3 |
| PHYS 512 | Classical Electromagnetic Theory | 3 |
| PHYS 517 | Mathematical Methods in Physics | 3 |
| **Physics Component (12 semester hours)** | | |
| Students must complete four of the following courses: | | |
| PHYS 520 | Quantum Mechanics | 3 |
| PHYS 521 | Solid State Physics | 3 |

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|---|---|---|
| PHYS 523 | Advanced Atomic Physics | 3 |
| PHYS 524 | Surface Physics | 3 |
| PHYS 514 | Statistical Physics | 3 |
| PHYS 542 | Advanced Instrumentation and Control | 3 |
| PHYS 552 | Advanced Micro-Controller Electronics | 3 |
| 3 semester hours (1 course) taken in consultation with advisor. | | 3 |
| **Electives (9 semester hours)** | | |
| (9 semester hours) selected in consultation with the advisor. | | 9 |
| **Graduate Seminar (1-3 semester hours)** | | |
| PHYS 501 | Graduate Seminar (1 semester hour, for a total of 3 semester hours) | 1 |
| All physics graduate students must register for 501 each semester in residence | | |
| **Total Hours** | | **36** |

**Note:** Successful completion of the Comprehensive Exam is required of all students.