# Physics Evening MS Program

# Policies and Rules

## *REQUIREMENTS*

Please note that it is the student's responsibility to be familiar with and to satisfy both Departmental and Graduate School requirements.

### I. PHYSICS EVENING MASTERS PROGRAM REQUIREMENTS

The Evening MS Degree Program includes the following four requirements:

- Required (or "core") courses
- Elective courses
- Independent Study Project
- Masters Final Exam

Entering students are expected to have an undergraduate background equivalent to a BS degree in a physical science, engineering, mathematics, or computer science.

The basic credit requirement for the MS degree is the completion of a total of 36 credits (including required courses and independent study) of work at the 400 level or above, with at least 18 of those credits at the 500 level or above. Of the 36 credits, at least 18 must be from numerically graded 400 or 500 level courses. A cumulative grade point of 3.0 or higher is required.

#### A. Courses

##### *1. Core Courses*

Required courses are:

- PHYS 543 (Electromagnetic Waves), usually offered Fall quarter
- PHYS 441 (Introduction to Quantum Physics), usually offered Winter quarter
- PHYS 541 (Applications of Quantum Physics), usually offered Spring quarter

The Physics Department requires students to receive a grade of 3.0 or above in the core courses, or demonstrate a level of understanding equivalent to the content of these courses through courses taken at the University of Washington or elsewhere. Equivalence must be established at the time of entry into the program. Courses must have been completed no more than 3 years prior to starting in the program. Grades of less than 3.0 will not be accepted as equivalent. The Physics Evening Masters (MS) Coordinator must approve course equivalents as well as petitions for exceptions from degree requirements. Students must also take at least 3 credits of PHYS 600 (Independent Study) as discussed in Section I-B-3.

### 2. *Elective Courses*

Elective courses offered in the evening include:

- PHYS 434
- PHYS 436
- PHYS 530
- PHYS 544
- PHYS 545
- PHYS 546
- PHYS 547
- PHYS 575

There are many additional options for elective courses offered in the daytime, not only in physics, but also in mathematics, geophysics, engineering, or other natural sciences.

For complete course descriptions, consult the General Catalog or go to: http://www.phys.washington.edu/Department/Gradweb/Eve_CoursesOffered.html

## B. Independent Research Project

Each student in the Evening Masters Program is required to complete an independent study project. Work on the project normally begins in the second or third year of graduate study and culminates in a written report and oral final examination.

### 1. *Selecting a Research Topic and Project Supervisor*

The project should involve experimental work, analysis, or development of instrumentation related to a problem of current interest in physics or applied physics. Some examples of previous students' completed Masters independent study projects and their Physics Faculty Supervisors are:

| Project Title | Physics Faculty Supervisor |
|---|---|
| • *Electrodynamics and Riemannian Gravitational Interaction* | *M. Baker* |
| • *Investigating in-service teacher, college student, and high school student conceptions of Newton's Second Law: A comparative analysis* | *L. McDermott* |
| • *A Computer Simulation of the X-ray Fluorescence Holographic Technique in Crystallography* | *L. Sorensen* |
| • *EPR Correlations in Annihilation Photon Experiments* | *L. Sorensen* |
| • *Measurement of Tip-Sample Forces in Tapping Atomic Force Microscopy* | *S. Fain* |
| • *The Effect of the Scattering Phase Shift Delta on Atomic Resolution Internal Source X-ray Holography* | *L. Sorensen* |
| • *Ultrasound Reflection from Specular Targets in Homogeneous and Inhomogeneous Media* | *R. Ingalls* |
| • *Automatic Pattern Recognition of Particle Beam Tracks using Clustering Methods and User-Interactive Mode* | *J. Wilkes* |
| • *Neural Networks: A Back-propagation Network for Particle Identification in a Neutrino Detector* | *J. Wilkes* |
| • *Chirp Sonar System Development and Testing* | *J. Wilkes* |

The research project may be carried out with one of the research groups in the Physics Department under the direction of a Physics Faculty Supervisor. However, it is not uncommon for a student to pursue a research project within another department on campus, or at the student's place of employment. If the Physics Faculty Supervisor is not the person directly supervising the research, a Research Advisor must be named who will assume this responsibility. The Research Advisor serves on the Supervisory Committee chaired by the Physics Faculty Supervisor. The Supervisory Committee is responsible for administering the Final Exam. For more information about forming a Supervisory Committee, see the "Masters Final Exam Procedures".

The Evening MS Coordinator, Graduate Program Assistant, MS instructors or other faculty may be able to help the student locate prospective Physics Faculty Supervisors and Research Advisors whose research interests are closest to the student's and/or who have suitable projects available.

## 2. *Before Beginning the Project*

Before commencing work on the project, the student must submit to the Graduate Advisor a project title and brief written statement describing the proposed project, approved by the Physics Faculty Supervisor and, if one, the Research Advisor.

***3. Working on the Research Project***

To obtain credit for working on the research project, students should register for PHYS 600 (Independent Study) under the Physics Faculty Supervisor for a variable number of credits approved by the Physics Faculty Supervisor and, if one, the Research Advisor. Although a minimum of 3 credits of PHYS 600 is required for the degree, students typically need at least two quarters to complete a project and accumulate 6-9 total credits of PHYS 600. The Physics Faculty Supervisor will maintain close contact with the student's progress and will indicate when it is appropriate to submit a written report and plan a Final Exam.

***4. The Written Report***

Upon completion of the project, a written report is required. It should follow the style and format of a technical report or term paper. The Physics Faculty Supervisor and, if one, the Research Advisor will determine what is appropriate for each student.

## C. Masters Final Exam Procedures

The Final Examination for a Masters degree in Physics is an oral presentation based on the independent study project and is administered by the Supervisory Committee. For more detailed information about the following procedures, please see the form entitled "Masters Final Exam Procedures," which explains the steps necessary to prepare for the Final Exam.

1. ***Form a Supervisory Committee***
2. ***Submit Masters Degree Application to Graduate School***
3. ***Schedule the Masters Exam***
4. ***Complete and Submit Masters Examination Form to Physics Graduate Program Office***
5. ***Masters Examination***
6. ***Submit Written Report to Physics Graduate Program Assistant by the end of the quarter in which the Masters Exam is taken***

# II. GRADUATE SCHOOL REQUIREMENTS

The following minimum Graduate School requirements must be fulfilled by the final day of the quarter in which the degree is to be conferred. Students are expected to understand and meet all Graduate School requirements. To see *complete* information about the Graduate School's Masters Degree requirements, please go to the following site: http://www.grad.washington.edu/stsv/mastersinfo.htm or consult the General Catalog.

- Under a non-thesis program, a minimum of 36-quarter credits of course work is required.
- At least 18 of the minimum 36-quarter credits for the master's degree must be for courses numbered 500 or above.
- Numerical grades must be received in at least 18-quarter credits of course work. The Graduate School accepts numerical grades (a) in approved 400-level courses accepted as part of the major, and (b) in all 500-level courses.
- A minimum cumulative grade point average of 3.0 is required for a graduate degree at the University.
- A minimum of three full-time quarters (10 credits) of residence credit must be earned. Part-time quarters may be accumulated to meet this requirement.
- All work for the master's degree must be completed within six years. This includes quarters spent On-Leave or out of status and applicable work transferred from other institutions.
- The graduate student must maintain registration as a full- or part-time graduate student at the University of Washington for the quarter in which the degree is conferred.

# *SATISFACTORY PROGRESS*

Students may find it necessary to interrupt their enrollment for work-related or personal reasons. It is very important that students keep their Physics Faculty Supervisors and the Evening MS Program Coordinator informed of any such interruptions, or other circumstances that may slow their progress.

## I. TIME LIMIT

The Graduate School imposes a six-year limit on work for the master's degree, which includes absences of any kind (i.e. single quarters spent On-Leave or formal Leaves of Absence). Completion of all degree requirements is expected to occur within six calendar years of matriculation, even if the student is not registered during some portion of that time. However, it is possible to petition the Graduate School for an extension if the student has valid reasons for delay and can demonstrate satisfactory progress toward completion of program requirements.

### II. SATISFACTORY PROGRESS

If the Evening MS Program Coordinator believes that a student is unlikely to complete the work toward the degree because of low grades or slow progress, the first step will be informal contact to determine causes. If the results of this interview are unsatisfactory, the Coordinator may need to make a formal report of unsatisfactory progress to the Graduate School. This report will contain a recommendation for action at one of three different levels. The lowest level is "warning", with no long-term consequences if progress improves. The next level is "probation", which usually comes with a timetable for completion of various remaining requirements. The last level of action, which typically only comes after unsatisfactory performance under probation, is "final probation", which will lead to termination of enrollment if requirements are not met within one quarter.

### III. GRADE POINT AVERAGE

A graduate student is expected to maintain a cumulative grade point average of 3.0 in all classes at the 400 level and above. If the grade point average (cumulative or for one quarter) falls below 3.0, a report is sent from the Graduate School to the Evening MS Coordinator, who will then recommend action. Possible recommendations include No Action, Warning, Probation, and Final Probation, with the same definitions as described for satisfactory progress. Only Final Probation can lead to dismissal from the program.

## *POLICY ON ASSISTANTSHIPS*

The Physics Evening MS Degree Program is designed to be a part-time program, so EMS students do not normally qualify for teaching or research assistantships, and such support is not normally offered. In exceptional cases, the Department may offer a TA, or an individual faculty member may propose to offer an RA, but all such exceptions require the explicit prior approval of the Physics Department Chair.