

Professional Master of Science in Physics

Info session for Boeing Employees

UW Physics Department

UW Professional & Continuing Education

Website: emsp.phys.washington.edu

UW Professional MS in Physics Program

Boeing Information Session - Agenda

- Welcome & Introductions
- The MS-Physics (PMSP) degree program at UW
- PMSP Admission and Degree Requirements
- Partnership between UW Physics, UW Professional & Continuing Education (PCE), and Boeing
- Questions & Discussion

Today's presentation

- Professor Jeffrey Wilkes, *UW Department of Physics*

Special thanks to

- Rick Mcgann, *Senior Manager, Applied Physics;*
- and the Boeing Company

These slides will be available on our website,
<http://emsp.phys.washington.edu>

UW Physics Department

- Offers BS, MS, and PhD programs
- Faculty
 - All courses taught by full-time Physics faculty (regular and research faculty)
 - UW Physics faculty recognized internationally as leaders in theoretical and experimental research
 - Students participate in leading-edge research conducted by faculty, and learn about the latest scientific discoveries

MS-Physics Program (MSP)

- Started in 1970s
 - Boeing scientists and engineers were the main source of students
- Now a very diverse student population:
 - Employees of regional high-tech firms
 - High school and community college instructors
 - Military personnel
- Designed for working professionals
 - All evening classes
 - Majority of students enroll in one course per quarter
 - Typically 2-3 years to complete degree program

Designed as a Terminal MS Degree

- Separate from the UW PhD program
 - However, MSP alumni have gone on to PhD programs at UW and elsewhere
- Accommodates the growing demand for Professional Science Master's (PSMs)

Motivations & Results

- Student motivations
 - Professional and career advancement
 - Seek qualifications for more interesting assignments
 - Career re-direction
 - Simple intellectual interest
- Graduates succeed!
 - Promotions with current employer
 - Secure new jobs
 - Define new careers in R&D or teaching

MSP Admission Requirements

- BS degree in any physical science or field of engineering, mathematics, or computer science
 - Not limited to applicants who majored in Physics as undergraduates
 - Not limited to students who got top grades as undergrads...
 - Most PMSP students are *not* recent graduates—many of our students took their BS degree 5 ~ 20 years ago

Admission Requirements

- **Reasonable** grades in **relevant** courses
 - B (3.0) grade average in basic science courses or equivalent engineering courses
 - Must have basic intermediate-level physics (or equivalent engineering) courses
- Statement of purpose
 - Your reasons to join the MSP
 - How the MSP will connect to your career goals
 - NOT an essay contest: intended for advising only
- GRE exam is not required (or considered)

Not sure you are ready?

- Start as a Graduate Non-Matriculated (GNM) student (minimal requirements to start)
 - Take core courses to evaluate the program
 - Option to apply later for admission to the MS degree program
 - Up to 12 GNM credits can be applied to the MSP
 - Take individual courses without committing to degree
- GNM is an option to expand your knowledge without committing to the degree program

Degree Requirements

- 1 - Complete three of the four core courses (4 credits each)
 - PHYS 543: Electromagnetic Theory
 - PHYS 441: Quantum Physics
 - PHYS 544: Applications of Electromagnetic Theory
 - PHYS 541: Applications of Quantum Physics
- 2 - Complete at least 18 credits in graded courses
 - MSP offers one core and one elective course per quarter
- 3 - Complete a final independent study project
 - Submit project report (not a formal MS thesis)
 - Oral exam on your independent study topic
- 4 - Accumulate at least 36 credits (courses plus independent study)

Online classes

- All classes currently meet in person, on the UW Seattle campus
- However, *most* classes now offer optional online attendance
 - If you prefer, you can attend classes from home, work, or anywhere with an internet connection, using any common browser
 - Adobe Connect provides audio and video of the instructor, slides, chat window and other distance learning facilities
- For courses including lab or other hands-on work , we try to limit required on-campus attendance to one or two sessions per class

Electives recently offered

- Nuclear physics: sources, detectors, and safety
- Physics of Renewable Energy Sources
- Radiation and Radiation Detectors
- Electronics for Physics Research
- Contemporary Optics
- Numerical Methods for Physics & Data Analysis
- Physics of Lasers
- Application of Computers to Physical Measurement
- Condensed Matter Physics

Independent Study

- Students may take exploratory independent study courses (typically 1 or 2 credits) any term
 - Mentored by a Physics faculty member
 - Choose a topic of your own, or work with faculty on their research program
- Final Independent Study Project (typically 8—18 credits)
 - Work with faculty in Physics, or professors in other departments who are adjunct Physics faculty
 - MS students typically participate in ongoing research projects with faculty and PhD students
 - Define your own project topic
 - Some do job-related research under faculty supervision

Final Project Implementation

- Select a Physics faculty member to be your supervisor/ adviser
- Schedule and enroll in independent study courses each term (typically 4 credits/term)
- Prepare written report to summarize project and findings
 - Typically 20 -- 50 pp, formatted as a technical report
 - Oral examination:
 - Presentation of project and findings (typically 30 min.)
 - Questions posed by panel of two physics faculty
 - Submit final written report

UW Physics Department Research Groups

- See MSP program website for links to Research Groups to identify faculty members who may be mentors for independent study projects:

Astrophysics & Gravitational Physics

Particle Astrophysics, Axions and Dark Matter

Atomic Physics and Quantum Computing

Biophysics

Condensed Matter Experiment

Condensed Matter Theory

Nuclear Theory

Experimental Nuclear Physics

Theoretical Particle Physics

Experimental Particle Physics

Physics Education Group

For a full list, see

<https://sharepoint.washington.edu/phys/research/Pages/default.aspx>

Physics Adjunct Faculty in other departments

- Departments represented by adjunct faculty* in Physics:

Astronomy

Aeronautics and Astronautics

Applied Mathematics

Atmospheric Sciences

Bioengineering

Center for Nanotechnology

Chemistry

Earth and Space Sciences

Electrical Engineering

Materials Sciences

Physiology and Biophysics

Radiology

*At UW, *adjunct faculty* are regular full time faculty, authorized to supervise graduate students in another department. Adjuncts in these departments may mentor Physics MS final projects.

PMSP Administered through UW Professional & Continuing Education

- Upon successful completion, you are awarded the MS in Physics by the UW Graduate School
 - **Same diploma as any full-time/daytime UW MS student**
 - All academic aspects are handled by Physics faculty
- PMSP degree program is administered by UW Professional & Continuing Education (PCE):
 - Course registration is handled by UW PCE
 - PMSP is one of more than 80 graduate degree programs managed by PCE, intended primarily for working professionals

Admissions

- For admission to the *Physics MS Degree Program*, or as *GNM*, submit your application to the UW Graduate School online:
<http://www.grad.washington.edu/admissions/faq/index.shtml>
- Applications are welcome at any time
 - *Most students start Autumn quarter but this is not required*
 - Apply for admission in the next academic quarter, or to start later
- Admission decisions are made every quarter (summer also)
 - Quarterly deadlines listed on website are the latest date we can ensure consideration in time for the following quarter, but post-deadline applications are welcome.

Course Registration

- Active PMSP degree students and approved Graduate Non-matriculated (GNM) students receive each quarter via e-mail
 - ***Course Registration Form*** from UW Professional & Continuing Education
- Students enroll by submitting the *Course Registration Form* and payment of course fees to the Registration Office of Professional & Continuing Education (via e-mail, fax, US Mail, phone, or in person)

Tuition payment for Boeing employees

- UW Professional & Continuing Education is a Preferred School Partner of Boeing's Learning Together Program
- Professional MS in Physics is an approved program
- Tuition payment for courses taken as GNM or MS student can be arranged simply by visiting the Learning Together website

Contact Information

Website: emsp.phys.washington.edu

For general information on program, requirements, applications and admissions:

- **Catherine Provost**, Graduate Student Advisor
(206) 543-2488
emsp@uw.edu

For questions about course schedule, registration and payment options:

- **Chantelle Vollmer**, Program Coordinator
(206) 685-9586
cvollmer@pce.uw.edu,

For academic issues, or questions on course offerings, prerequisites, the independent study component, and qualifications:

- **Professor Jeffrey Wilkes**, Faculty Coordinator for PMSP
(206) 543-4232
emsp@uw.edu

(Mail sent to emsp@uw.edu goes to both Provost and Wilkes – either may reply)

Questions ?

- Program Structure
- Course of Study
- Admission Requirements
- Degree Requirements
- Independent Study Project
- Registration, course and program fees
- Option to start as a Graduate Non-matriculated (GNM) student
 - For further info please visit our website, emsp.phys.washington.edu