Professional Master of Science in Physics
Online Information Session
March 4, 2020

UW Physics Department
UW Professional & Continuing Education
Website: http://www.physicsmasters.uw.edu
Today’s info session

• Professor Jeffrey Wilkes, *UW Department of Physics*

• René Siegenthaler, *UW Continuum College, Professional and Continuing Education (PCE)*

• ...and you: let’s introduce ourselves

Further information is available on our website, [www.physicsmasters.uw.edu](http://www.physicsmasters.uw.edu)
UW Professional MS in Physics Program

Agenda

• The Professional MS in Physics (PMSP) degree program at UW
• PMSP Admission and Degree Requirements
• Partnership between UW Physics and UW Professional & Continuing Education (PCE)
• Questions & Discussion
• Offers BS, Professional MS, and PhD programs
  • But there is no full-time/daytime MS program

• Faculty
  – UW Physics faculty recognized internationally as leaders in theoretical and experimental research
    • Two Nobel prize winners (H. Dehmelt, D. Thouless)
  – Students can participate in leading-edge research conducted by faculty, and learn about the latest scientific discoveries
MS-Physics Program (MSP)

• Started in 1970s – program upgraded in 2009
  – Students come from many sources:
    • Employees of regional high-tech firms
    • High school teachers
    • Military personnel
    • Recent BS graduates

• Program 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 terminal MS degree

• Growing demand for Professional Science Master’s degrees in STEM fields
  – Employers (industry, R&D labs) recognize value
  – Separate from Physics PhD program
    • Not designed as preparation for PhD studies
    • However, some MSP alumni have gone on to PhD programs at UW and elsewhere
  – All courses taught by full-time UW Physics faculty (regular and research professors)
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 career paths in R&D or teaching
What is required to apply?

Not just for physics majors

• BS degree in physical science, mathematics, or engineering
  – Not limited to applicants who majored in Physics as undergraduates
  – Not limited to students who got top grades as undergrads... (tell your friends)
  – Not limited to recent graduates—some of our students took their BS degree 5 ~ 20 years ago
Admission Requirements

• **Reasonable** grades in **relevant** courses
  – B (3.0) grade average in 300-400 level undergrad physics courses or equivalent engineering courses
    • Physical science and most engineering (EE, ME, CE, ChemE, etc.) BS programs include appropriate courses

• Statement of purpose
  – Your reasons to join the MSP
    • How the MSP will connect to your career goals
    • **NOT an essay contest**: used only for better advising

• GRE score 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 try out the program
    • See if it is a good match for your needs
  – May apply later for transfer to the MS degree program
    • Up to 12 GNM credits can be applied to the MS
  – OR take individual courses without committing to degree

• GNM is an option to expand your knowledge without committing to the degree program
FAQs

• Can I apply at any time?
  – Yes, we accept applications year-round
    • However, we strongly recommend starting in Autumn or Winter quarter, when intro-level core courses are offered

• What if my undergraduate degree is not in a physical science or engineering?
  – You need physics classes beyond the intro/100 course level, with good grades (GPA 3 or higher)
    • Most engineering programs include equivalent courses (mechanics, E&M, thermodynamics, etc.)
    • You can send your transcripts (informal, personal copy) to us for advice on your preparation
FAQs

• Should I contact you before applying?
  – Definitely! Please email emsp@uw.edu briefly describing your situation (location, previous education, goals) and we can provide pre-application advising

• What if I got my BS degree years ago?
  – Many of our students start after a decade or more in the workplace
    • Our classes are designed taking into account your need for review, especially in relevant math

• What should my personal statement include?
  – The personal statement is not an essay contest, as with some colleges!
    • We use it only for advising purposes, to make sure your stated goals and expectations match our program’s capabilities
FAQs

• Can I apply now to begin in autumn?
  – Certainly! We process applications toward the end of each quarter. You should apply to start in the term when you will be ready to take classes

• What if work or family obligations come up and I need to take time off?
  – No problem! You can request on-leave status any time
    • MS students must be registered for credits OR be on-leave every term except summers, to maintain their status
    • GNM students only need to register for credits once per year – if you need more time off, apply for leave
  – However: the UW Graduate School requires you to complete your degree within 6 years of starting
FAQs

• Can I complete my degree from outside the Seattle area?
  – All lecture courses offer optional attendance via Zoom teleconferencing
    • Slides, audio and chat windows are recorded and can be viewed later
  – No lab courses are required for graduation
  – For your final independent study (capstone) project, you will need to find a topic that you can pursue remotely, and a faculty mentor willing to supervise you via email or videoconferencing

• I don’t really need an MS degree, I just want to learn more physics
  – Great! The GNM option is just what you need
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](http://www.grad.washington.edu/admissions)

• Applications are welcome at any time
  
  – *Most students start Autumn Quarter, but you may start in Winter or Spring (but not Summer) Quarter*

  – Apply for admission in the next academic quarter, or to start later

• New applications are reviewed every quarter (summer also)
  
  – Quarterly deadlines listed on website are the latest date we can *ensure* processing in time to start the following quarter, but applications are accepted until the end of the preceding quarter
MS 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
     • You may take elective courses in other departments, with prior approval

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 class attendance

• All classes meet evenings, on the UW Seattle campus
• However, all *lecture* classes offer optional online attendance
  – You can attend classes from home, work, or anywhere with an internet connection, using any common browser
    • *Zoom video conferencing* provides audio and video of the instructor, slides, chat window, and recordings of class sessions
  – Classes are not designed as online-only; we recommend in-person attendance whenever you can
• For courses with labs or other hands-on work, on-campus attendance is required for some sessions
Electives recently offered

- Acoustics
- Quantum Computing
- Nuclear physics: sources, detectors, and safety
- Physics of Renewable Energy Sources
- Radiation and Radiation Detectors
- Contemporary Optics
- Numerical Methods for Physics & Data Analysis
- Physics of Lasers
- Condensed Matter Physics
Customize your program with independent study courses

• Exploratory independent study courses (typically 1 or 2 credits)
  – Mentored by a Physics faculty member
  – Customize your studies to match your personal goals
  – Choose a topic of your own, select from a list of suggested topics, or work with faculty on their research program in preparation for a final project

• Final Independent Study Project (typically 8 - 18 credits)
  – Work with faculty in Physics, or professors in other departments
    • MS students typically participate in ongoing research projects with faculty and PhD students
  – Or, define your own project topic
    • Some do job-related research under faculty supervision
Choose a research area that fits your goals

UW Physics Department Research Groups

• Browse research group web pages to identify faculty members who may be mentors for independent study projects:
  - Astrophysics
  - Atomic Physics
  - Biological Physics
  - Collider Physics
  - Condensed Matter Experiment
  - Condensed Matter Theory
  - Energy Sciences
  - Gravitational Physics
  - Nanoscale Physics
  - Neutrino Physics
  - Nuclear Experiment
  - Nuclear Theory
  - Particle Experiment
  - Particle Theory
  - Physics Education
  - Precision Measurement
  - Quantum Information

For complete list, see https://phys.washington.edu/research
Physics Adjunct Faculty in other departments

• See the Physics Department website for list of faculty in other departments who are *adjuncts* in Physics (can supervise Physics grad students):
  
  **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*

• We also have *Affiliate Professors* outside UW, at National Labs (PNNL, Argonne, Los Alamos), and at other institutions
Your final project

• Recruit a Physics faculty member to be your supervisor/adviser/mentor
• Schedule and enroll in independent study (PHYS 600) courses each term (typically 2~8 credits/term)
• Prepare written report to summarize project and findings
  – Typically 20–50 pp, formatted as a technical report
  – Final oral examination:
    • Presentation of project and findings (typically 30 min.)
    • Questions posed by panel of two or more faculty
    • Submit final written report
Administered jointly by Physics Department and UW PCE

• 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 administered by PCE
Program costs

• PMSP is a self-sustaining (not state-supported), fee-based degree program

• Tuition is currently $739/credit
  – Tuition is intended to track UW resident graduate tuition
  – Total course fees/tuition for degree program (36 credits) is about $26.6K
  – Limited financial aid
    • Loans are available for some students
    • No scholarship funding at this time
Contact Information

Website:  www.physicsmasters.uw.edu

For questions about academics, course offerings, prerequisites, the independent study component, and qualifications:

• **Jeffrey Wilkes**, Faculty Coordinator for PMSP
  
  (206) 543-4232 (but email is best):
  
  emsp@uw.edu

To get email notices about information meetings, upcoming application deadlines, etc. :

www.physicsmasters.uw.edu/email-signup/

For questions about program requirements, applications and admissions process:

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

For questions about registration and payment options:

• **Brian Cox**, Operations Manager
  
  (206) 616-5104
  
  bc26@uw.edu
Questions?

• These slides will be available tomorrow at http://depts.washington.edu/emsp/infosessions/
• For further info please visit our website, www.physicsmasters.uw.edu
    or email emsp@uw.edu