Should I major in physics? If so, what do I do next?
Every one of you has the capability to graduate with a bachelor of science in physics.

Every one of you is welcome, regardless of other identities you hold in addition to that of physics student.

Every one of you may access campus resources to smooth your path through UW and help you transition to life beyond UW.
Did you ever seriously consider majoring in engineering?

- Yes, I was accepted by engineering, but switched to (or double majored in) physics: 29%
- Yes, I applied multiple times to engineering but did not get in: 9%
- Yes, but I was not accepted into the engineering major of my choice: 20%
- Yes, but I never applied to engineering - I decided I liked physics better (or I got in and then switched): 37%
- No: 12%

Since 2011:
- 49% PreSci
- 37% PreEngr
- 12% Other

Cohort: Physics majors who applied to graduate in 2017-18
Why major in physics?

- Reasons that tend not to work out well ...
  - Because you decided to do so in middle school
  - Because engineering turned you down
  - Because mom and dad said to

- GOOD reasons
  - Because you REALLY want to WHY the world works
  - Because the list of courses you REALLY want to take at UW gets you a physics degree (or at least close to one)
  - Because you checked out a number of other options, and you like physics the best

*UW offers 606 degree options across 314 programs*
Physics is a terrific foundational major

I am a physics major. I solve problems you don't know you have in ways you can't understand.
Annual Salary Distribution
2016 – Bureau of Labor Statistics

Fraction of Incomes

Annual Income (k$)

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Fraction of Incomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petroleum Engr.</td>
<td>10</td>
</tr>
<tr>
<td>Lawyer</td>
<td>25</td>
</tr>
<tr>
<td>Physicist</td>
<td>50</td>
</tr>
<tr>
<td>Comp Hardware</td>
<td>75</td>
</tr>
<tr>
<td>Astronomer</td>
<td>90</td>
</tr>
<tr>
<td>Economist</td>
<td>10</td>
</tr>
<tr>
<td>Mat'l Sci.</td>
<td>25</td>
</tr>
<tr>
<td>Chem Engr.</td>
<td>50</td>
</tr>
<tr>
<td>Elect Engr.</td>
<td>75</td>
</tr>
<tr>
<td>Mat'l Engr.</td>
<td>90</td>
</tr>
<tr>
<td>Database Admin.</td>
<td></td>
</tr>
<tr>
<td>Physics Prof.</td>
<td></td>
</tr>
<tr>
<td>Mech Engr.</td>
<td></td>
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<tr>
<td>Biochem/phys.</td>
<td></td>
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<tr>
<td>Programmer</td>
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<tr>
<td>Medical Sci.</td>
<td></td>
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<tr>
<td>CS Prof.</td>
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<tr>
<td>Chemist</td>
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<tr>
<td>Environ. Sci.</td>
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<tr>
<td>Accountant</td>
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<tr>
<td>Web Developer</td>
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<tr>
<td>EE Tech.</td>
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<tr>
<td>Conservation Sci.</td>
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<tr>
<td>HS Teacher</td>
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<tr>
<td>Librarian</td>
<td></td>
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<tr>
<td>Computer Support</td>
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<tr>
<td>Paralegal</td>
<td></td>
</tr>
<tr>
<td>Chem Tech.</td>
<td></td>
</tr>
</tbody>
</table>

What do physics majors do after graduation?

UW Physics 2016-17 Grads
[On Grad Application (N=169)]

National Data 2013-14 Grads
(aip.org/statistics)
What do Physicists Do?

Job Skills Used by Physics B.S.

Field of Employment
One year post-BS

RESEARCH EXPERIENCE GETS YOU ALL OF THESE SKILLS!!
## Common Job Titles for Physics B.S.

These job titles were obtained from surveys of physics bachelor’s recipients from the classes of 2009 and 2010, conducted by the American Institute of Physics Statistical Research Center. They are not exhaustive or exclusive.

<table>
<thead>
<tr>
<th>Computer Hardware &amp; Software</th>
<th>Engineering</th>
<th>Research &amp; Technical</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Analyst</td>
<td>- Application Engineer</td>
<td>- Accelerator Operator</td>
</tr>
<tr>
<td>- IT Consultant</td>
<td>- Associate Engineer</td>
<td>- Lab Assistant</td>
</tr>
<tr>
<td>- Programmer</td>
<td>- Design Engineer</td>
<td>- Lab Technician</td>
</tr>
<tr>
<td>- Software Engineer</td>
<td>- Development Engineer</td>
<td>- Physical Sciences Technician</td>
</tr>
<tr>
<td>- Systems Analyst</td>
<td>- Electrical Engineer</td>
<td>- Research Assistant</td>
</tr>
<tr>
<td>- Technical Support Staff</td>
<td>- Engineering Technician</td>
<td>- Research Associate</td>
</tr>
<tr>
<td>- Web Developer</td>
<td>- Field Engineer</td>
<td>- Research Technician</td>
</tr>
<tr>
<td></td>
<td>- General Engineer</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Laser Engineer</td>
<td></td>
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<tr>
<td></td>
<td>- Manufacturing Engineer</td>
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<tr>
<td></td>
<td>- Manufacturing Technician</td>
<td></td>
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<tr>
<td></td>
<td>- Mechanical Engineer</td>
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<td></td>
<td>- Optical Engineer</td>
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<tr>
<td></td>
<td>- Process Engineer</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Process Technician</td>
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</tbody>
</table>

[https://www.spsnational.org/career](https://www.spsnational.org/career)
Who hires physics bachelor’s?

- Washington Employers that recently hired new physics bachelor recipients

https://www.aip.org/statistics/washington

- 5celsius
- AeroTEC
- ALS Global
- Amazon
- Applied Motion Systems
- Area
- Battelle
- Boeing
- Bombsheller
- Chipton Ross
- Comfort Institute
- David Evans and Associates Inc.
- Electroimpact, Inc.
- Exotic Metals Forming Co.
- Flexasoft
- Fred Hutchinson Cancer Research Center
- Gravity Jack, Inc.
- HopeSource
- HP Inc.
- Institute for Health Metrics and Evaluation
- Jacobs
- L&S Engineering Associates, Inc.
- Lockheed Martin
- Logos Bible Software
- Microsoft
- Microvision
- Naval Sea Systems Command (NAVSEA)
- Northwest Medical Physics Center
- Ozone International
- Pacific Northwest National Laboratory
- Pellego
- Physio-Control Inc
- Procure Treatment Centers
- Radiant Vision Systems
- Raisbeck Engineering
- Red Head Steering Gears
- Rypyl
- Silicon Mechanics
- TecAce Software Ltd.
- TigerStop
- U. S. Army Corps of Engineers
- United States Navy
- University of Washington
- Visiongate, Inc.
- X2 Biosystems

UW Produces ~ 2% of US Physics BS

Data from AIP Statistics www.aip.org/statistics/undergraduate/enrollments
Why Go to Grad School?

- Deeper understanding of a subject
- Better/different job prospects
- Participate in the excitement of the intellectual frontier

DON’T
- Assume automatic faculty position
- Drift into graduate school
- Just go to get a student visa
Physics Grad School FAQ

❖ How long?
  ➢ 5 – 7 yr to PhD; 2 yr to M.S.

❖ Cost?
  ➢ You get paid (and your tuition does, too)

❖ Requirements?
  ➢ Comprehensive track PLUS more electives
  ➢ Physics GPA >~3.5
    • UW Physics PhD Admits: average = 3.85; none below 3.4
  ➢ 3 Excellent letters of recommendation
  ➢ Research experience
Most Common Activities:
- solving complex problems
- managing projects
- writing for a technical audience
Resources for More Information

https://www.spsnational.org/career-resources
https://www.aip.org/career-resources
How to choose a (physics) major

- **Goals and objectives**: Why do you want to major in physics (or anything else)?
- **Past academic performance**: What has gone well for you? What has not? What is your assessment of what makes a difference? Were you hampered by inadequate high school preparation? Did you have significant non-academic time commitments? How can you remedy this?
- **Successes not on your transcript**: What leadership, family, volunteer, or work accomplishments are you proud of? What skills can be transferred to physics?
- **Support network**: What academic and social resources will you use to support your future success in the physics major?

All of you should think about these items. If you declare a physics major by petition, we make you write about them.
UW Physics Major Options

- Comprehensive
  - Graduate school in physics or astronomy
  - Full range of physics and math

- Applied
  - Technical job at B.S. level or M.S. in engineering
  - More flexibility in electives

- Teaching
  - Communicate science to HS or general audience
  - Physics by Inquiry sequence

- Biological
  - Medical school or grad school in biophysics
  - 7 quarters of biology and chemistry in addition to physics core
UW Physics Majors are Satisfied

(-2 = very dissatisfied, +2 = very satisfied)

How satisfied are you with your choice of physics as a major?

2016: 1.19 ± 0.91
2017: 1.25 ± 0.85
2018: 1.25 ± 0.85

Please grade the Physics Dept. on the following items.
Watch your prerequisites ....

Math

Required ALL

Req for A

Req for B, C, T

Req for C&T

Req for T

Req for B

Elective

124

121

122

123

125

126

A301

Math menu

M307/A351
M308/A352
M309/A353
M324/A401

*Either
Phys 227 or
Both M307/A351 and M308/A352

* Any 2 from
Math Menu+228

MM:
Bio = 1 + 228
Comp, Teach = 2 + 228
Appl = 3 from 228 + MM

Phys GPA
> 3.3

12 phys cr
> 200

30 phys cr
> 3.3
Students finish in 4-5 Yrs even if start physics late

Cohort = 331 physics grads 2011-2015 with 227 since 2009

Cohort = 423 Physics B.S. 2011-2015
24000 UW Grads 2011-2015

Physics majors are more likely to stay extra year than overall UW
Physics Student Services: C139/C141

- **Staff Advisors**
  - Margot Nims
    - All undergraduate issues
  - Catherine Provost
    - All graduate issues
    - Grad school-related UG issues

- **Faculty Advisor**
  - Prof. Marjorie Olmstead
    - advice from a faculty member
    - petition admission to major
    - waivers and substitutions; transfer credit equivalency

- **Program Assistant**
  - Paula Newcomer
After the panel – Questions on Process

Details are on the department website:  https://phys.washington.edu/

- Physics Student Services Resources
- Declaring a Major
  - Transcript-based admission
  - Petition-based admission
- Choosing a Degree Option
  - Applied, Comprehensive, Teaching, Biological
- Degree requirements
To find these slides (in a day or two) and info about the physics major, go to www.phys.washington.edu & click on “UNDERGRADUATE”, then Forms and Presentations.

Prof. Marjorie Olmstead  
ufaphys@uw.edu  
PAT C141

So now do you think you want to major in physics ...?

**Spring Quarter Office Hours**  
Sign up at phys-calendar.phys.Washington.edu  
- Tues: 2:30 pm – 4:00 pm  
- Wed: 12:30 pm – 2:00 pm  
- Thu: 3:00 pm – 4:30 pm  
- Fri drop-in: 11:00 am – 12:30 pm