• What is Physics? The most basic of the physical sciences, Physics is defined as:

   *The science of matter and energy and their interactions*

• What do Physicists do?

Materials science, semiconductor industry, energy control/production, laser/light technology, optics, medicine, traffic control, computer science, electronics, space physics, defense, finance, patent law, geophysics, oil exploration, communications research/development, ...

• What do you learn/study as a physics major?

How things work! Why things behave the way they do! Most importantly you develop **critical thinking skills**

Learn how to solve problems. Any problem!
• What is the difference between physics and other sciences?
  The difference is in training, but not in applications. We all do applicable science. However, physics training is broader.

• What is the difference between physics and chemistry?
  In Chemistry, you memorize blobs and the shapes that correspond to s,p,d,f, ...
  In Physics, you learn where those come from.

• What is the difference between physics and engineering? What is applied physics?
  In Engineering, you take statics and dynamics (\(\Sigma F=0\), and \(\Sigma F=ma\)).
  In Physics, you learn about how these equations are obtained using energy arguments.
What is the unemployment rate for physicists?

We’ll show this in a moment, however...

Note the supply and demand:

*Few physicists, fewer in the future since the major is being eliminated in many states.*

If you are a science major, but undecided, Physics is likely the best choice since it can lead to jobs or graduate school in many fields.
Who does Physics?

• Physics Specializations
  • Traditional physics
    • $$$ any job
  • Biomedical physics/biophysics
    • $$$ work in a hospital
  • Materials/nanophysics
    • $$$ semi-conductor industry
  • Computational physics
    • $$$ program design

• SPS—not just for physics majors! (darcy.stone@ymail.com)

SPS--Society of Physics Students. Join and find out why others major in physics, or just have fun.
• Scholarships for physics students
  • Scholarships for incoming students – up to $2000 in your first semester
  • Internal scholarships for upper-level undergraduates

• Paid Work Experience in Physics
  • Earn up to $6600/year on undergraduate assistantship
  • Gain valuable experience working with faculty advisor
  • Publish papers with your advisor

• College of Science scholarships
  • Forms available from COS website

• University Wide Competitions
  • Saluki Research Rookies – pair up with faculty advisor in freshman/sophomore year
  • REACH Awards – Receive recognition for your research work
  • REU positions – Summer research internships for undergraduates
What do I do now that I have a Physics BSc?

• Physics majors go to graduate school for free! Or are PAID to do so!
  • At SIU Physics graduate students earn $20k+/year just for going to grad school

OR

• Choose your career
  • Physics majors experience low unemployment (<4%) and great salary prospects in a wide range of fields: academia, finance, government laboratories, industry, information technology, management consultancy, medical physics, military, teaching
Seriously! How much did you say?

What's a Bachelor's Degree Worth? Typical Salary Offers by Campus Recruiters, AY 2008-09

Bachelor's Field
- Chemical Engineering
- Computer Science
- Electrical Engineering
- Physics
- Mechanical Engineering
- Mathematics
- Civil Engineering
- Finance
- Nursing
- Accounting
- Marketing
- Chemistry
- Secondary Education
- Psychology
- Biology / Lifescience

Starting Salary in Thousands

Typical starting salaries for physics bachelor's, classes of 2006 & 2007.

Employer
- Private Sector STEM
- Private Sector non-STEM
- Civilian Govt. incl. Natl. Labs
- Active Military
- High School Teachers
- College or University

Typical Salaries (in thousands of dollars)

Note: Typical salaries are the middle 50%, i.e., between the 25th and 75th percentiles. STEM refers to positions in Natural Science, Technology, Engineering and Math.

http://www.aip.org/statistics
What will I be doing with such a great salary?

Field of employment for physics bachelor’s in the private sector, classes of 2006 & 2007.

- Engineering: 32%
- Engineering: 29%
- Computer Science or Information Technology: 16%
- Other Natural Sciences: 9%
- Other Technology: 7%
- Physics or Astronomy: 5%
- Math: 1%
- Science Education: 1%

STEM: Natural Science, Technology, Engineering and Math

http://www.aip.org/statistics
How much could I earn with a Physics graduate degree?

### Starting Salaries in the Private Sector
Physics Degree Recipients, Classes of 2007 & 2008

<table>
<thead>
<tr>
<th>Physics PhDs</th>
<th>Physics Master's</th>
<th>Physics Bachelor's in STEM Jobs</th>
<th>Physics Bachelor's in non-STEM Jobs</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10</td>
<td>20</td>
<td>30</td>
<td>40</td>
</tr>
<tr>
<td>20</td>
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<td>40</td>
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<tr>
<td>30</td>
<td>40</td>
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</tr>
<tr>
<td>60</td>
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<td>80</td>
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</tr>
<tr>
<td>70</td>
<td>80</td>
<td>90</td>
<td>100</td>
</tr>
</tbody>
</table>

**Typical Salaries in Thousands of Dollars**

Note: Typical salaries are the middle 50%, i.e., between the 25th and 75th percentiles. STEM refers to positions in Science, Technology, Engineering, and Math.


### PhD Salaries 10 Years Later

**Place of Employment**
- Hospital, Medical Services
- Government
- Industry or Self-Employed
- Federally-Funded R&D Center
- University Research Institute
- University, 11-12 month
- University, 9-10 month
- 4-Year College, 9-10 month

**Typical Salaries in Thousands**

Typical salaries are the middle 50%, i.e., between the 25th and 75th percentiles, reported by US resident members of the 10 AIP Member Societies who earned their PhDs 10 to 14 years ago.

Wow! But I really want to work in medicine or government...

**Table 1**

<table>
<thead>
<tr>
<th>Biomedical Engineering</th>
<th>Physical Sciences</th>
<th>Biological Sciences</th>
<th>Verbal reasoning</th>
<th>Number of applicants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biomedical Engineering</td>
<td>10.9</td>
<td>10.7</td>
<td>9.6</td>
<td>1,005</td>
</tr>
<tr>
<td>Physics</td>
<td>11.1</td>
<td>10.3</td>
<td>9.6</td>
<td>207</td>
</tr>
<tr>
<td>Electrical Engineering</td>
<td>10.9</td>
<td>10.5</td>
<td>9.4</td>
<td>195</td>
</tr>
<tr>
<td>Economics</td>
<td>10.4</td>
<td>10.5</td>
<td>9.7</td>
<td>566</td>
</tr>
<tr>
<td>Neuroscience</td>
<td>9.9</td>
<td>10.8</td>
<td>9.5</td>
<td>1,066</td>
</tr>
<tr>
<td>Mathematics</td>
<td>10.3</td>
<td>10.1</td>
<td>9.6</td>
<td>374</td>
</tr>
<tr>
<td>English</td>
<td>9.4</td>
<td>9.9</td>
<td>10.3</td>
<td>434</td>
</tr>
<tr>
<td>Biochemistry</td>
<td>9.9</td>
<td>10.3</td>
<td>9.1</td>
<td>2,594</td>
</tr>
<tr>
<td>Chemistry</td>
<td>9.8</td>
<td>9.9</td>
<td>9.0</td>
<td>2,091</td>
</tr>
<tr>
<td>Microbiology (or Bacteriology)</td>
<td>9.0</td>
<td>9.9</td>
<td>8.7</td>
<td>775</td>
</tr>
<tr>
<td>Psychology</td>
<td>8.8</td>
<td>9.4</td>
<td>9.1</td>
<td>2,421</td>
</tr>
<tr>
<td>Biology</td>
<td>8.7</td>
<td>9.5</td>
<td>8.7</td>
<td>12,705</td>
</tr>
<tr>
<td>Premedical</td>
<td>8.3</td>
<td>9.0</td>
<td>8.4</td>
<td>653</td>
</tr>
<tr>
<td>All Majors</td>
<td>9.2</td>
<td>9.8</td>
<td>9.0</td>
<td>41,487</td>
</tr>
</tbody>
</table>

A physics bachelor’s is an excellent entry degree for medical school.

**Table 2**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Mean score</th>
<th>Number of applicants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physics</td>
<td>191.5</td>
<td>180</td>
</tr>
<tr>
<td>Mathematics</td>
<td>189.7</td>
<td>336</td>
</tr>
<tr>
<td>Economics</td>
<td>157.4</td>
<td>3,047</td>
</tr>
<tr>
<td>Electrical Engineering</td>
<td>156.3</td>
<td>546</td>
</tr>
<tr>
<td>Mechanical Engineering</td>
<td>100.0</td>
<td>427</td>
</tr>
<tr>
<td>Chemistry</td>
<td>158.7</td>
<td>585</td>
</tr>
<tr>
<td>English</td>
<td>154.7</td>
<td>6,120</td>
</tr>
<tr>
<td>Biology</td>
<td>154.5</td>
<td>1,065</td>
</tr>
<tr>
<td>Computer Science</td>
<td>154.0</td>
<td>692</td>
</tr>
<tr>
<td>Political Science</td>
<td>152.0</td>
<td>14,964</td>
</tr>
<tr>
<td>Psychology</td>
<td>152.5</td>
<td>4,355</td>
</tr>
<tr>
<td>Pre Law</td>
<td>148.3</td>
<td>1,078</td>
</tr>
<tr>
<td>Criminal Justice</td>
<td>145.6</td>
<td>5,306</td>
</tr>
<tr>
<td>All Majors</td>
<td>152.6</td>
<td>81,930</td>
</tr>
</tbody>
</table>

*The scores in the table are for individuals who applied to law school for the 2007-08 academic year. All test takers are not represented. Individuals may have taken the LSAT months or possibly years earlier. Contact Patrick Maloney for more information.*

...And I also want to stay close to my family

Why Study Physics? Future of a Physicist with a BS.

Employers in Illinois that recently hired new physics bachelor recipients

Accenture
Aerotek Scientific
Aisin Electronics Illinois, LLC
Analysts, Inc.
Argonne National Lab
Army Corps of Engineers
Beckman Institute (University of Illinois)
Caterpillar, Inc.
CONTAX, Inc.
Creative Thermal Solutions
CSG Systems
Delcross Technologies, LLC
Deloitte Consulting, LLP
Exelon
Fermi National Lab
Fuji Machine America Corporation
GMS / Vedor
Greenlight Planet, Inc.
Highland Engineering, P.C.
Imaje
Leo Burnett
Lockheed Martin
Northrop Grumman
Orchid Tree Web Solutions
Quantum Design
S&C Electric Company
Sargent & Lundy
United Conveyor Corporation
Vel-Matic Valve & Manufacturing Corporation
Wellpoint, Inc.
Zurich North America

This is only a portion of the employers who hired recent physics bachelors into technical positions. Source: AIP Statistical Research Center, Initial Employment Surveys, classes 2007 thru 2009.
Flexible Degree Program
If you're interested in **traditional physics** – there's a track for that.
If you like **materials physics** – there's a track for that too.
If you want to pursue **computational physics** – there’s a track for that also.
And if you want to learn about **biophysics** – we’ve got a track for that as well.

Get Paid to go to School
Physics has several **scholarships** available to **incoming students**.
Physics faculty offer **paid work experience** positions.
Earn up to $6600/year.
Get **class credit** for working in a lab and doing world class research.

Intensive Learning Environment
**Small class** sizes for Physics majors.
**One-On-One** mentoring with faculty advisors.
**Interact** with undergraduate and graduate students in the lab.
Get involved in the **Physics Club** and visit scientific establishments.

After You Graduate
Get paid to go to graduate school in Physics @ SIU
Pursue a career of your choosing: business, education, finance, government, health, industry, IT, management, military...
Job opportunities for Physics majors are local, national, and international – it's up to you where you want to go.
Physics bachelors among highest wage bracket (upto $65k/year).
Physics bachelors among lowest unemployment rate (less than 4%).
Physics 100

• This is a one credit-hour course for everyone interested in learning more about Physics.

• Each class (with the exception of the first and last) is a presentation by a faculty member or guest who will discuss their jobs in Physics. There will be refreshments and plenty of time for questions and answers!

• The class meets once per week for one hour.

• The class is offered credit/no credit.

• If you attend 12 or more classes you will get credit!

QUESTIONS?

Email - Professor Leo Silbert, lsilbert@physics.siu.edu
or  Professor Mark Byrd, mbyrd@siu.edu