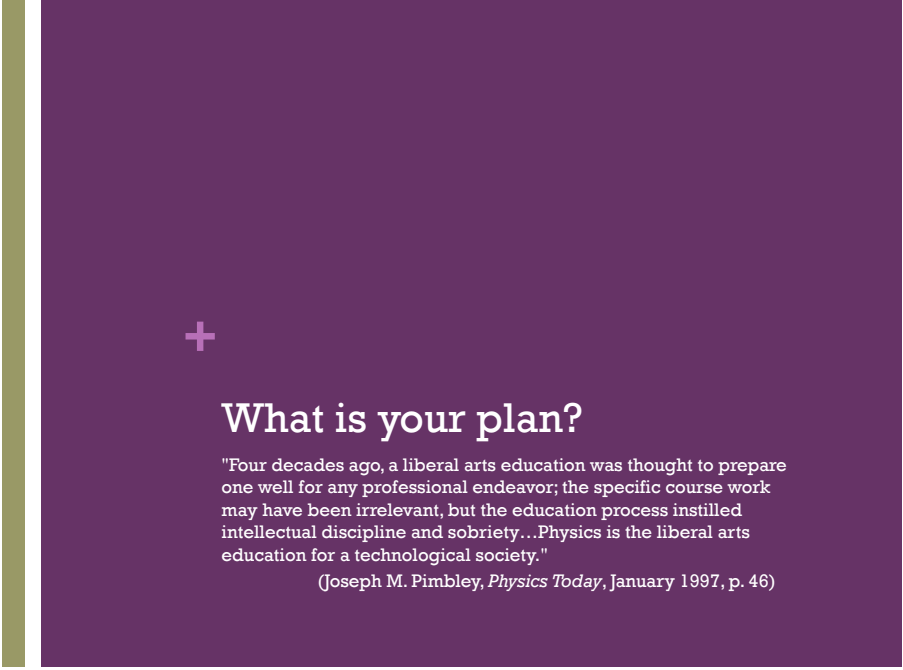




Physics Advising
Planning your Academic Path



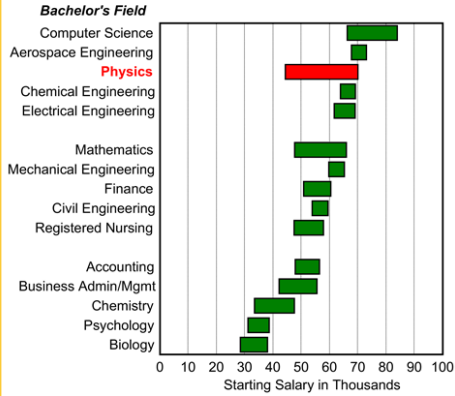
What is your plan?

"Four decades ago, a liberal arts education was thought to prepare one well for any professional endeavor; the specific course work may have been irrelevant, but the education process instilled intellectual discipline and sobriety...Physics is the liberal arts education for a technological society."

(Joseph M. Pimbley, *Physics Today*, January 1997, p. 46)

+ The value of a Physics Degree

What's a Bachelor's Degree Worth?
 Typical Salaries for Bachelor's Degree Recipients, Class of 2015



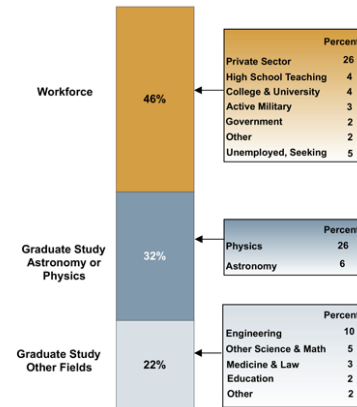
Note: Typical salaries are the middle 50%, i.e. between the 25th and the 75th percentiles.
 Reprinted from the Spring 2016 Salary Survey, with permission of the National Association of Colleges and Employers, copyright holder.

Follow us @AIPStatistics

Fall 2016

+ Physics Career Paths

Physics Bachelors 1 Year Later
 7,430 Recent Degree Recipients



Note: Data in this figure are from the AIP Statistical Research Center's annual Bachelors Follow-up Survey, classes of 2013 & 2014 combined. The 7,430 degree recipients represent the average of these two classes. Four percent of respondents to the survey indicated that they had left the US to pursue employment or graduate study and were not included in the figure.

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Fall 2016

+ Physics Graduate School

■ **BS Physics**

- Take E&M II, Quantum II, Physics Research
- Summer REU Programs
- Advanced Math courses beyond ODE (e.g. PDE)
- Additional CS courses [as Gen Ed Science Sequence]
- Physics LA / tutor to reinforce intro material [Restricted Elective]

■ **BS Biophysics (Biophysics Grad School)**

- Summer REU Programs
- Physics LA / tutor to reinforce intro material [Restricted Elective]

+ Applied Physics/Related Field

■ Biomedical Physics or Medical Physics

- **BS Biophysics**
- **BA Physics**
 - Bio and Chem courses

■ Bioinformatics

- **BS Biophysics**
- **BA Physics**
 - Bio and Chem courses; Stats courses; CS courses

■ Astronomy/Astrophysics

- **BS Physics**
 - CS courses; Astronomy Minor; Summer REU

■ Meteorology

- **BS or BA Physics**
 - Advanced Math and CS courses, Geology courses

■ Geology

- **BS or BA Physics**
 - Advanced Math and Chem courses; Geology courses

KNOW THE GRAD SCHOOL ADMISSION REQUIREMENTS!!!!

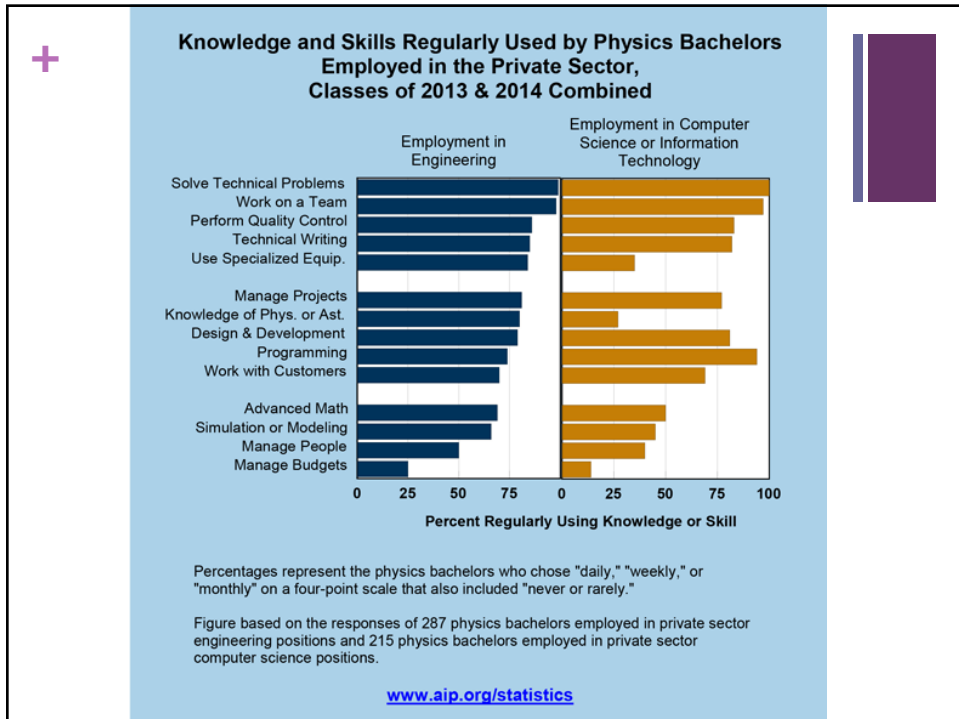
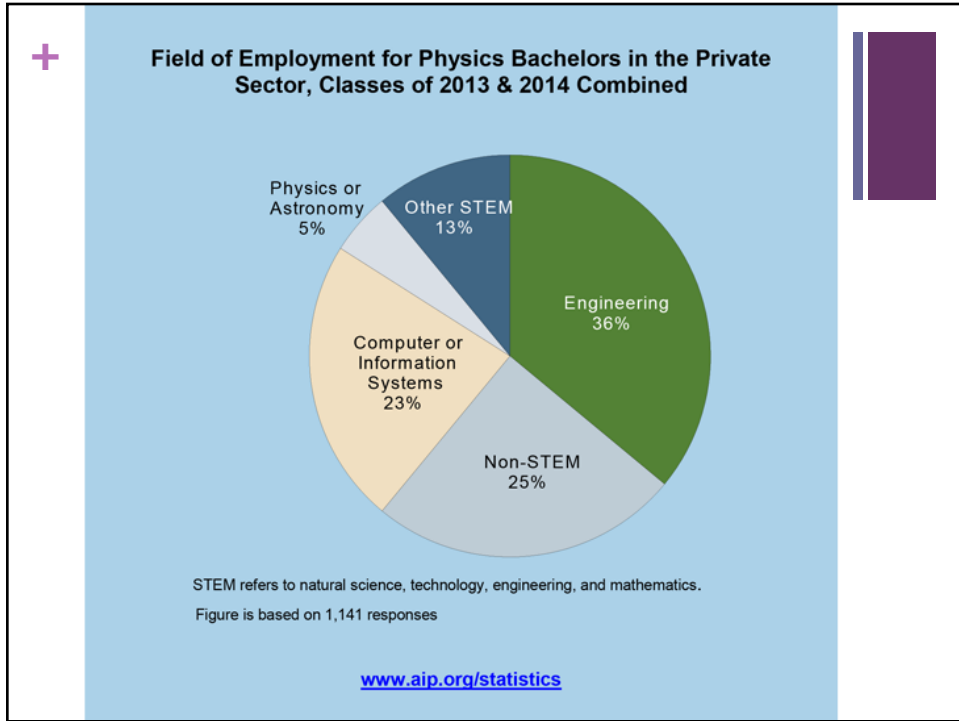
+ High School Teaching

- **BA Physics** followed by MA STEM Education
 - Can complete Physics BA in three years and move into the MA early
- Attend Workshop for HS Teaching
- Know your certification options
- Substitute teach
- Work in Physics Lab rooms or as Physics LA
 - Taking the LA for credit twice = 1 upper-level Physics Elective
- Volunteer in schools—outreach with Physics Club
- **Map** out your courses carefully with **both** Physics and Education advisors

+ Job in Industry

You will have very keen and highly developed problem solving skills.

- **BA or BS in Physics**
- Might need a “skill” to get that first job
 - Computer science programming or network talent
 - Background in business
 - Rich experience using advanced equipment
 - Take lab, ‘hands-on’ courses: Optics, Electric Circuits, Physics Research
- Consider a Minor or CUGS to document “skill”
- Network!
 - Apply for Industrial Internships at area companies
 - Look for a “Rowan connection” (attend Alumni Day in Spring)
 - Attend Rowan Career Fairs
- Consider semester abroad for international experience



+ Engineering Graduate Study



- **BS Physics or a rigorous BA**
 - With additional related Engineering, Math, CS courses.
- Know the admission requirements!
- Minor in Mechanical Engineering or Electrical and Computer Engineering

+ Medical School



- **Go to Pre-med advisor (varela@rowan.edu)**
- **BA Physics or BS Biophysics**
- Basic requirements on top of BA
 - 1 year Biology, 1 year Chemistry, 1 year Organic Chemistry, 1 year Physics, advanced Biology course
- **Need more**
- Continued service or activity showing your promise and commitment
- Research in medical field during academic year and Summer REU
- Join Rowan's Pre-professional club

+ Law School

- **BA or BS Physics**
- Unique, and needed, background for law (e.g. patent law)
- Need critical thinking skills and writing skills
- Consider double majoring or minor with a field that interests you that will help you gain these skills (History, English, Philosophy, Sociology, Law/Justice...)
- Join Pre-Law club—go to the Law School Fair in the fall (and don't wait until your senior year!)
- LSAT prep



Planning the Major

+ Fr/So Math & Science Courses

- Calculus I, II, III
- Intro Mechanics, Intro TFWO, Intro E&M, Modern
- Science Sequence
 - Chemistry I (CHEM06.100), Chemistry II (CHEM06.101)
 - Any two of Object-Oriented Programming (CS04.113), Data Abstraction (CS04.114), Computer Organization (CS06.205)
- Intro to Scientific Programming*
- Get a jump on upper level: Analytical Mech in So Spring

+ Sequence

Fall Freshman	Spring Freshman	Fall Sophomore	Spring Sophomore
Calc I	Calc II	Calc III	Ord Diff Eqn
Intro Mech	Intro TFWO	Intro E&M	Modern Phys
Intro Sci Prog	Sci Seq 1	Sci Seq 2	Phil Sci (WI,M/G)
Comp I	Comp II	Lin Alg	ACE
Fall Freshman	Spring Freshman	Fall Sophomore	Spring Sophomore
Pre Calc	Calc I	Calc II	Calc III
Intro Sci Prog	Intro Mech	Intro E&M	Modern Phys
Sci Seq 1	Sci Seq 2	Intro TFWO	Phil Sci (WI,M/G)
Comp I	Comp II	ACE	Lin Alg

*If you are “behind” consider taking Calc II in summer between Fr and So years

+ Why Modern Physics Sophomore Spring ?

To get ready to begin the upper level sequence in the Fall of your junior year

Fall Junior	Spring Junior	Fall Senior	Spring Senior
Any 2 of: Analyt Mech	Other 2 of Analyt Mech	Advanced Lab	Stat Physics
E&M I QM I	E&M I QM I	Res/Phys Elective (e.g. PDE or QM II)	Phys/Res Elective (e.g. E&M II or PDE)
Phys Elective	Phys Elective		

+ BS or BA?

Courses beyond the "Core"

BS Physics	BA Physics
Calculus III	Calculus III
Linear Algebra	Physics Elective 300+
Ordinary Differential Equations	Physics Elective 300+
Analytical Mechanics	Physics Elective 300+
E&M I	Approved Physics or Astronomy*
Quantum Mechanics I	Career Track
Statistical Physics	Career Track
Advanced Lab	
Physics Elective 300+	
Physics Elective 300+	
Restricted Elective	

*If going for teaching cert, physics or astrophysics only

+ TMI and still not sure?

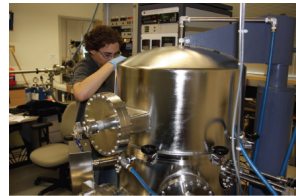
- <http://www.aps.org/careers/index.cfm>
- <http://www.bls.gov/bls/occupation.htm>
- <http://www.spsnational.org/cup/>

Most people don't know what they want to do,
but there are ways to find out

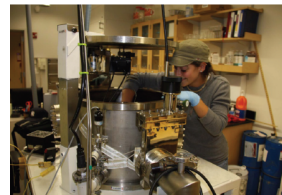
+ Physics at Rowan: Learn by Doing

Through performing research,
you can:

- Integrate the abstract knowledge from the classroom with real-world experiences
- Co-author publications in international journals (while at Rowan)
- Gain marketable evidence that you have developed high level analytical skills
- Secure excellent recommendation letters from faculty based on performed in these one-on-one projects



"Luck is what happens when preparation meets opportunity" -Seneca



+ Hands-on Experience Use Advanced Instrumentation

Rowan's Physics program houses advanced research equipment that students routinely use including:

- Scanning Electron Microscope
 - See features down to a few nanometers
 - (1/1000th of the diameter of a hair)
- Atomic Force Microscope
 - See with atomic resolution
- X-ray Diffraction
 - Measure the spacing between atoms in your sample

