

## CV Builder in Physics

Students who have completed the courses listed below may be able to add the related skills to their CV. instruction varies from quarter to quarter, so your course may have covered other topics. Interviewers will ask you about the skills you list on your resume, so list only the things that you are familiar with and comfortable talking about.

### **Introductory Theory** (PHYS 141, 132, 133, 211, 212)

- Analytical modeling and problem solving.

### **Advanced Theory** (PHYS 301, 302, 303, 318, 320, 321, 322, 401, 403 405, 406, 408, 409, 418, 424)

- Complex problem solving based on fundamental principles
- Application of mathematical techniques (differential equations, statistics, Fourier analysis)

### **Computational** (PHYS 202)

- Programming in XXX
- Computational modeling of linear and nonlinear systems
- Numerical methods (Parameter optimization, ODE, Monte-Carlo).

### **Teaching Physics** (PHYS 330, SCM 230, SCM 300, Learn-by-Doing Lab (LBDL), Teaching Assistants in Math and Science (TEAMS), Mentors Out of School Time (MOST)

(PHYS 330)

- Knowledge of how people learn science and effective practices of teaching
- Knowledge of the Next Generation Science Standards
- Knowledge of observation protocols for teaching

(SCM 230)

- Questioning strategies to help groups of peers make progress in difficult technical tasks

### **Electronics** (PHYS 206, 357)

(PHYS 206)

- Familiarity with electronics test and measurement equipment (multimeters, oscilloscopes)
- Constructing, testing and troubleshooting simple discrete component electronic circuits

(PHYS 357)

- LabView programming
- Arduino/sensors for autonomous data logging

### **Quantum Lab** (PHYS 340, 341, 342)

- Designing data collection and analysis including uncertainty and parameter estimation.
- Computer programming related to data analysis.
- Technical report writing
- Technical oral presentation
- Exposure to vacuum techniques, X-ray fluorescence, and optical spectroscopy

**Earth Science (PHYS 314)**

- Application of fundamental physics to environmental systems and processes
- Applied physics to other fields of science and technology

**Optics and Lasers (PHYS 315, 323, 423)**

(PHYS 315)

- Principles of laser operations, beam properties and propagation techniques.
- Knowledge of common laser applications including interferometers and fiber communication

(PHYS 323)

- Build and align experimental optical measurements (fibers, wave plates, polarizing beamsplitter cubes, hot mirrors)
- Build and use optical devices (telescope, microscope, Michelson interferometer)
- Use scientific equipment found in optics labs (fibers, photodetectors, CCD cameras, oscilloscopes)
- Obtain, graph and analyze data and write a scientific report

(PHYS 423)

- Work with gas lasers and diode lasers (including laser safety)
- Use scientific equipment found in optics labs (fibers, photodetectors, CCD cameras, oscilloscopes, acousto-optical modulators)
- Holography, Optical tweezers
- Independent literature search and oral presentation to peers

**Solid State and Polymer Electronics (PHYS 412, 413, 422, 452)**

(PHYS 422)

- Design, build and test thin film photovoltaics

(PHYS 452)

- Use of liquid nitrogen cryogen
- X-ray powder diffraction
- Spectroscopy

**Nonlinear Dynamics (PHYS 417)**

- Analysis of nonlinear dynamical systems (including phase space)
- Numerical solution of nonlinear differential equations
- Mathematical modeling of diverse range of systems, including physical, biological and social
- Big picture predictive understanding of complex nonlinear models

**Astronomy and Astrophysics (ASTR 444)**

- Analyze and organize astronomical data
- Research and gather information
- Perform calculations
- Present complex information to peers and non-peers
- Prepare technical reports and present research posters

**Research and Independent Study (PHYS 200, 220, 270, 400, 404, 461, 462, 470, 471, 485, 495)**

- The specifics of your research will strengthen your resume
- Poster and report writing