Master's In Instrumentation and Applied Physics

But why a project-based master's in physics?

We emphasize **breadth of knowledge and experience** so that you can step into leadership roles as initiators and managers of projects.

Projects, some done at the request of industry partners but guided and supervised by Illinois staff, will develop your skills in a wide variety of technical areas, including circuit design and fabrication, mechanical engineering and rapid prototyping, embedded systems design, project planning, data analysis, and proper reporting and documenting of the project's progress and outcome.

You will be confident participating in **all** aspects of a project.

Mentoring and guidance

You will get to know (and work closely with) your teachers, most of whom will be tenured UIUC professors.

TILLINOIS Physics grainger college of engineering

The Program

The Illinois professional master's in Instrumentation and Applied Physics is a two-semester project-based program. Through a mix of laboratory, classroom, and field work, we will teach you to take a collaborative project from conception and design through planning, prototyping, calibration, analysis, and documentation.

The Projects

A typical project will comprise a suite of sensors managed by a microcontroller that transmits data over a radio link to a base station. Supervised by UIUC faculty, your project group will design and build your device's circuits and printed circuit boards. You will write data acquisition, calibration, and offline analysis code. You will fabricate parts as necessary on 3D printers. Oral presentations—at mid-year, then at project completion—will be complemented by a detailed technical report upon conclusion of the project.

Physics grainger college of engineering

INSTRUMENTATION and APPLIED PHYSICS

IN THE MASTER OF ENGINEERING IN ENGINEERING DEGREE

Welcome to the community of people who build things and solve problems.

More information:

https://physics.illinois.edu/academics/masters



In our professional community we build things to solve problems. Join us and we'll teach you to do the same.

Employment, one year after degree

* 93% of exiting physics master's recipients are employed, ~65% in private sector or civilian government and/or national labs.
* 94% of the jobs are in STEM fields.

* "Those in the private sector were more likely to report greater use of a variety of skills than those in academia, including working on teams, working with clients, and performing advanced research."

* "They also often reported higher rates of using 'soft' skills, which often involve interaction with other individuals... Physics masters reported that they regularly solved technical problems and needed to use their programming skills."¹

* Median private sector starting salary is around \$70k, about \$10k higher than bachelor's-only starting salary.²

Rewarding jobs will call upon what you have learned.

1. www.aip.org/statistics/reports/physics-masters-oneyear-after-degree-161718

2. https://www.aip.org/statistics/data-graphics/startingsalaries-exiting-masters-one-year-after-degree-classes-2016-2017

Our tools

- Four Ultimaker 3D printers
- Soldering/desoldering stations
- Table, miter, band saws; hand tools
- Multimeters, oscilloscopes (of course!)
- EAGLE schematic capture and PCB layout
- TinkerCad and Cura design software
- 8-day PCB fabrication turnaround

• Thousands of sensor breakout boards, microcontrollers, discrete components, solar power managers, non-contact IR thermometers, electret microphones, FRAM memories, proximity sensors, prototyping tools.

Sample projects

• Position and frequency dependence of a symphonic hall's acoustic response

- Measuring/mapping track irregularities on the AMTRAK Illinois Central line
- Bovine methanogenesis
- Monitoring oxygen delivery to intubated patients sharing a respirator

ILLINOIS

...lots more



For more information, and to apply: https://physics.illinois.edu/academics/masters