

## Explore Physics @ IUPUI School of Science

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### Transcript

[J. Ross] It helps you think. It teaches you how to apply your skills, your mathematical skills, and your experimental and hands on skills, in order to solve problems, challenging problems.

[Y. Joglekar] Physics provides you a way to sort of approach any problem in a scientific manner.

[C. Flack] If you like math a lot, but you still want to work in the sciences, it kind of goes along with both.

It's very math oriented but you get to learn a lot about how things work. It's more of an application based math thing than just plain math.

[D. Scott] That's what we do in physics, and that's sort of unique from other fields of science, is that we specialize in critical thinking and we go for, try to tackle problems for which there are no solutions, in which have never been worked out before.

[R. Decca] If you want to come and do physics in particular, you will be able to do a lot of undergraduate research if you prefer to do so. There are a lot of opportunities for students to come here and do research with faculty, with graduate students, with both those. That also really, as we're talking about teaching in the classroom is only part of the equation.

Most of the learning happens when you do something, and those students will have the opportunity to come to the lab and do undergrad research. The nice thing is that undergrad research does not mean just a more sophisticated science project, undergrad research is you come here to the lab and you have to learn what is going on in this experiment because that is what you will be doing. So it really requires learning material that you will not learn otherwise than the classroom.

[N. Stenzoski] The faculty we have here have already made a name for themselves and have participated in years of research and know a lot about their specific field.

[Y. Joglekar] Across the board, the students can start getting undergraduate research experience for example right from the time they join IUPUI, and it goes beyond just research, I think, you will find professors available to answer your questions anytime you drop by, and these sort of things are very unique, I feel, to the IUPUI physics department.

[H. Petrache] I work with graduate students and undergraduate students as well. I have two undergraduate students, at this point, who know how to operate this complicated machine, but definitely here, I can see there is clearly a focus on involving undergrad students, including the fact that IUPUI and School of Science, in particular, they have this formal program for undergraduate research, in

which the school and the university works with a mentors to make sure that the students who participate in research, they are really learning from it, and they get rewarded.

[C. Flack] Research kind of brings it back to “oh yeah this is why we’re knowing all this”, not just to memorize a whole bunch of stuff but to figure out things, to give us a basis to kind of build on that knowledge.

[D. Scott] Mostly I would say our department is very unique in that it has the right ratio of faculty size to student body in our department. I think there’s plenty of opportunity to interact one-on-one with your professor which, in my opinion, is where most of your learning insights are going to come from, outside of the classroom. Because those questions you think about during the lecture, you can go to the professors office, and then you can get sort of a personalized explanation of what is going on in this particular phenomenon.

[J. Ross] Well, IUPUI is a good place to study physics, number one, because we have a relatively small department. Now, in some ways you would say “well, a small department uh...I don’t know”, well this is a good thing because when you have a relatively small department you’re not just a number here.

[N. Stenzoski] The students around here are very willing to work with each other and have study groups and kind of have like a teamwork mindset as far as getting through it together.

[Y. Joglekar] The greatest strength, I think, in this physics department is the openness, the access to professors. What this provides students with is a very unique way to have one-on-one interaction.

[H. Petrache] In this department, we all know each other very well, so I can safely claim that I know all students by name, and I can say the same with all of my colleagues.

[R. Decca] In some other larger institutions it is rare, particularly for undergrads to be able to talk with the faculty outside the lecture house, and here it is not the case.

[C. Flack] The opportunities for getting to know the teachers on a one-on-one basis, the opportunities for research, and the opportunities for employment are huge right now because there’s not a lot of competition.

[J. Ross] So, we talk about all these different options for what they can take here on campus, get into all these variations, go off into graduate school, go into other fields, maybe they want to take this track into law school or medical school, or maybe they want to take the track into the engineering. The sky’s the limit.