

# Intro Physics Lab Experience Survey

This survey is designed to collect information about students' learning results from the Introductory Physics Lab sequence, specifically in regard to basic data science/programming skill acquisition. Completion of the survey should take no longer than 10-15 minutes. Participation in this survey is completely voluntary and anonymous by default, although participants have the option of identifying themselves - if they choose to do so, all personal information will be kept confidential. Demographic information will be used to identify trends across years, backgrounds, and majors. Names (if given) will be used only for interview scheduling purposes. This survey was created as part of an MQP. All data collected for the project, including from this survey, will be visible only to the members of the project group, and it will be used to evaluate the current state of the introductory Physics labs and suggest improvements for the future. For any questions about this survey or for more information on the project and its goals, please contact Amelia Nishimura ([anishimura@wpi.edu](mailto:anishimura@wpi.edu)). Thank you!

\* Required

## General Course Information

1. Which courses of the introductory Physics sequence (PH1110/11, PH1120/21, PH1130, PH1140) have you taken?

*Check all that apply.*

- ☐ PH1110/PH1111 - Mechanics
- ☐ PH1120/PH1121 - Electricity and Magnetism
- ☐ PH1130 - Modern Physics
- ☐ PH1140 - Oscillations and Waves

2. For each of the listed courses that you have taken, when did you take that course? \*

Mark only one oval per row.

	Summer 2021 (currently taking)	Spring 2021	Fall 2020	Summer 2020	Spring 2020	Fall 2019	Summer 2019	Spring 2019
PH1110/PH1111 - Mechanics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PH1120/PH1121 - Electricity and Magnetism	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PH1130 - Modern Physics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PH1140 - Oscillations and Waves	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. For each of the listed courses that you have taken, what grade did you receive? If you have taken a course more than once, please list the most recent grade. \*

Mark only one oval per row.

	A	B	C	NR	Have not taken	Prefer not to say
PH1110/PH1111 - Mechanics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PH1120/PH1121 - Electricity and Magnetism	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PH1130 - Modern Physics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PH1140 - Oscillations and Waves	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. How did you take these courses? \*

*Mark only one oval.*

- ☐ Fully Online/Remote
- ☐ More Online/Remote
- ☐ More In-person
- ☐ Fully In-person

5. How would you rate your overall experience with the introductory Physics labs? \*

*Mark only one oval.*

	1	2	3	4	5	
Hated every second of them	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Absolutely loved them

6. For the last question, please explain your rating. \*

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7. What was the most important thing you learned in the introductory Physics labs? \*

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8. How well did you feel that the introductory Physics labs prepared you for upper level labs (Physics or otherwise)? \*

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### Programming Information

9. How much computer programming experience did you have before taking any of the introductory Physics labs? \*

*Mark only one oval.*

- ☐ Several dedicated computer science classes [CS major option]
- ☐ One or two dedicated computer science classes
- ☐ Self-taught for another class (math, engineering, etc.)
- ☐ Self-taught casually for fun/profit
- ☐ Very minimal experience or None
- ☐ Other: \_\_\_\_\_

10. If any, which computer programming languages were you familiar with before taking any of the introductory Physics labs? \*

*Check all that apply.*

- ☐ Python
- ☐ C/C++
- ☐ Java
- ☐ C#
- ☐ JavaScript
- ☐ Ruby
- ☐ R
- ☐ MATLAB
- ☐ None of the above

Other: ☐ \_\_\_\_\_

11. How much do you feel that your computer programming ability/knowledge improved as you progressed through the intro physics labs? \*

Mark only one oval.

	1	2	3	4	5	
Not at all - I learned next to nothing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	A great deal - I feel like a pro now

12. How would you feel about more comprehensive integration of computer programming instruction into the introductory labs? \*

Mark only one oval.

- ☐ Strongly Negative - I would prefer no programming at all
- ☐ Somewhat Negative
- ☐ Neutral/Indifferent
- ☐ Somewhat Positive
- ☐ Strongly Positive - I would prefer much more programming
- ☐ Other: \_\_\_\_\_

13. What lab skills, tools, or programming languages do you feel would have helped you be better prepared for upper level labs (Physics or otherwise)? \*

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14. Do you have any other feedback, comments, or suggestions relating to programming components of the introductory Physics labs that you would like us to consider?

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#### Demographic Information

15. What is your expected graduation year/class? \*

*Mark only one oval.*

- ☐ 2021
- ☐ 2022
- ☐ 2023
- ☐ 2024
- ☐ 2025
- ☐ 2026
- ☐ Other/Prefer not to say

16. What is your primary Major? \*

*Mark only one oval.*

- ☐ Actuarial Mathematics
- ☐ Aerospace Engineering
- ☐ Applied Physics
- ☐ Architectural Engineering
- ☐ Biochemistry
- ☐ Bioinformatics & Computational Biology
- ☐ Biology & Biotechnology
- ☐ Biomedical Engineering
- ☐ Business
- ☐ Chemical Engineering
- ☐ Chemistry
- ☐ Civil Engineering
- ☐ Computer Science
- ☐ Data Science
- ☐ Economics
- ☐ Electrical & Computer Engineering
- ☐ Environmental & Sustainability Studies
- ☐ Environmental Engineering
- ☐ Humanities & Arts
- ☐ Industrial Engineering
- ☐ Interactive Media & Game Design
- ☐ International & Global Studies
- ☐ Management Engineering
- ☐ Management Information Systems
- ☐ Materials Science & Engineering
- ☐ Mathematical Sciences
- ☐ Mechanical Engineering
- ☐ Physics
- ☐ Psychology
- ☐ Robotics Engineering
- ☐ Society, Technology & Policy





17. What is your secondary Major, if any?

*Mark only one oval.*

- ☐ Actuarial Mathematics
- ☐ Aerospace Engineering
- ☐ Applied Physics
- ☐ Architectural Engineering
- ☐ Biochemistry
- ☐ Bioinformatics & Computational Biology
- ☐ Biology & Biotechnology
- ☐ Biomedical Engineering
- ☐ Business
- ☐ Chemical Engineering
- ☐ Chemistry
- ☐ Civil Engineering
- ☐ Computer Science
- ☐ Data Science
- ☐ Economics
- ☐ Electrical & Computer Engineering
- ☐ Environmental & Sustainability Studies
- ☐ Environmental Engineering
- ☐ Humanities & Arts
- ☐ Industrial Engineering
- ☐ Interactive Media & Game Design
- ☐ International & Global Studies
- ☐ Management Engineering
- ☐ Management Information Systems
- ☐ Materials Science & Engineering
- ☐ Mathematical Sciences
- ☐ Mechanical Engineering
- ☐ Physics
- ☐ Psychology
- ☐ Robotics Engineering
- ☐ Society, Technology & Policy

18. What is/are your Minor(s), if any?

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19. How did you find out about this survey? \*

*Mark only one oval.*

- ☐ Email
- ☐ Slack
- ☐ Discord
- ☐ From a friend/Word of mouth
- ☐ Canvas
- ☐ Reddit
- ☐ Other: \_\_\_\_\_

20. What is your gender? \*

*Mark only one oval.*

- ☐ Female
- ☐ Male
- ☐ Non-Binary
- ☐ Prefer not to say
- ☐ Other: \_\_\_\_\_

21. What is your race? \*

*Check all that apply.*

- ☐ White
- ☐ Black/African American
- ☐ Asian or Pacific Islander
- ☐ Latino/a
- ☐ Native American
- ☐ Prefer not to say

Other: ☐ \_\_\_\_\_

### Interview Scheduling

22. Would you be interested in participating in a short Zoom interview (20-30 minutes) with our team to discuss your experiences in the introductory Physics labs in more detail? This interview will be recorded for reference purposes, but all of your personal information will be kept strictly confidential. \*

*Mark only one oval.*

- ☐ Yes
- ☐ No

23. If you answered "Yes" to the previous question, please write down your email address and preferred name, plus your availability in the next few weeks. We will contact you in the next 48 hours to schedule a time for our interview, or if you prefer you may contact me at [anishimura@wpi.edu](mailto:anishimura@wpi.edu) to schedule a meeting directly.

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# Google Forms