

PC131 Mechanics
Lab Evaluation Results
Wilfrid Laurier University

Terry Sturtevant

Fall 2013

This evaluation for the purpose of evaluating my teaching methods and your impressions of the labs. It is anonymous and you can omit any question(s) you don't wish to answer.

Labs in this Course

Choose the answer which best expresses your feelings about the labs.

Demographic information

1. I am taking this course because

54% it is required for my program, and I won't take any more physics than I have to.

36% it is required for my program, but I like physics.

6% it fulfills a science requirement, and is a personal interest.

3% it is not required for my program, but is a personal interest.

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2. How many of the existing lab sections per week could you have fit into your schedule?

3% 5 or 6

9% 4

21% 3

46% This one or the opposite week one at the same time.

20% The section I am in is the only one I could fit into my schedule.

Staff

3. The lab *demonstrator* was

10% helpful in the lab.

27% knowledgeable about the lab.

55% both knowledgeable and helpful.

6% neither knowledgeable nor helpful.

4. The lab marking

39% was fair.

18% included helpful feedback.

26% was both fair and helpful.

14% was neither fair nor helpful.

5. Observing the lab demonstrator in this course has made me

7% consider applying to become a demonstrator for this course

14% consider applying to become a demonstrator but not for this course

8% less likely to become a lab demonstrator for this course

3% less likely to become a lab demonstrator for this or any other course

67% It has had no effect on my attitudes about lab demonstrating

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6. The lab *supervisor* (ie. Terry) was
- 12% helpful in the lab.
 - 27% knowledgeable about the lab.
 - 59% both knowledgeable and helpful.
 - 1% neither knowledgeable nor helpful.

Organization

7. Starting many labs with a review of what was important from previous weeks was
- 70% helpful
 - 5% unnecessary
 - 14% not detailed enough to be useful
 - 10% I don't remember any of that.
8. The purpose of the labs in this course was to teach skills, (e.g. estimation, statistical analysis, use of spreadsheets, report writing, etc.), which may be useful in a variety of courses in the future, rather than just in further physics courses. Pick whichever best describes how you feel about this:
- 59% I think some of the skills I learned will be useful elsewhere.
 - 16% I've already used some of the skills I learned elsewhere.
 - 6% I don't think any of the skills I learned will be useful elsewhere.
 - 17% I'd rather have learned more physics-specific things.

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9. How clear was the lab schedule? (How clear were things like what lab you would be doing each week, when things were due to be handed in, etc.?)

30% very

51% fairly

14% not much

3% awful

2% I didn't pay much attention to the schedule.

Blended Learning

These labs used a *blended learning* approach, where you did quizzes online *in addition to* work in the lab. The following questions refer to this way of doing labs.

10. Have you heard of or experienced blended learning before?

38% Yes, I have other courses doing it (or have had them previously).

10% Yes, I've heard of it, but never done it other than this.

51% No, I've never heard of it.

11. Did the online quizzes help you remember important points from the lab?

30% Yes, almost all of the quizzes helped that way

29% Yes, one or two quizzes helped that way.

19% Not really; I would have remembered those points without the quizzes.

23% Not really; even after the quizzes I didn't get those points.

12. Do you think it would have worked better to read the material and do the quizzes *before* the lab instead?

29% Yes, that would have speeded up the lab.

30% Yes, that would have made the point of the lab more clear.

31% No, it would have been really hard to understand the material without doing the lab first.

9% The quizzes and lab seemed pretty much unrelated.

13. Did the online quiz help you understand the important points?

22% Yes; answering the questions clarified what was important.

28% Yes; correcting my mistakes in the quiz helped me remember.

16% both of the above

34% neither of the above

14. Including reading documents or watching videos and doing the online quizzes, about how long did you spend each week related to the quizzes?

52% Less than 15 minutes

33% Between 15 minutes and 1/2 hour

5% Between 1/2 hour and 1 hour

3% More than 1 hour

7% It varied greatly, from a few minutes to more than 1/2 hour.

Material

15. The lab web page was

22% a convenient way of delivering course information.

12% a convenient way of delivering the lab manual.

49% a convenient way of delivering both course information and the lab manual.

13% not a convenient way of delivering either course information or the lab manual.

3% I didn't pay much attention to the web page.

16. How clear and useful were the weekly instructions on the lab web page?

25% I always found them easy to follow.

41% I usually found them easy to follow.

20% I sometimes found them easy to follow.

14% They were usually somewhat confusing.

0% I usually asked somebody else in the lab instead of reading the instructions.

17. How clear and easy to understand was the lab manual?

12% very

53% fairly

24% not much

11% awful

18. Did you find the features (like hyperlinks) available in the online PDF version of the manual helpful?

23% always

32% often

25% occasionally

11% never

9% I never used the online version; I always used the printed one.

19. Did the changes announced in the lab from what was in the manual make things confusing?

4% always

12% often

44% occasionally

27% rarely

13% never

20. What statement best describes your experience of the templates in the lab manual?

31% They were helpful for simplifying data collection.

7% They were helpful for simplifying calculations.

31% They were helpful for both simplifying data collection and calculations.

20% They were not helpful for either simplifying data collection or calculations.

12% I never used the templates.

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21. What statement best describes your experience of the spreadsheets on the web page?

18% They were helpful for simplifying data collection.

11% They were helpful for simplifying calculations.

40% They were helpful for both simplifying data collection and calculations.

7% They were not helpful for either simplifying data collection or calculations.

24% I never used the spreadsheets.

22. The marking checklist for the lab report

35% was concise and made expectations consistent

21% was concise but did not make expectations consistent

21% made expectations consistent but was not concise

11% was not concise and did not make expectations consistent

11% I didn't pay much attention to the checklist.

23. My lab partner

15% was knowledgeable about the labs.

25% did a fair share of the work.

31% was knowledgeable about the labs and did a fair share of the work.

14% was not knowledgeable about the labs and did not do a fair share of the work.

14% I worked with various people during the term.

24. Pick whichever fits.

- 43%** I only worked with my lab partner in the lab.
- 25%** My lab partner and I occasionally communicated while writing up the labs.
- 20%** My lab partner and I regularly communicated while writing up the labs.
- 7%** My lab partner and I wrote up the labs together.
- 5%** My lab partner dropped the course before the lab report.

Questions and Tasks

25. To prepare for the labs, I printed off the appropriate material and read it over before the lab

- 22%** always
- 25%** most weeks
- 20%** sometimes
- 14%** rarely
- 20%** never

26. On average, preparing the pre-lab questions and tasks took

- 20%** less than 15 minutes.
- 33%** between 15 minutes and half an hour.
- 33%** between half an hour and an hour.
- 7%** more than an hour.
- 6%** I didn't usually do the pre-lab questions or tasks.

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27. Having to prepare the pre-lab questions and tasks

35% was a better way to become familiar with the lab than simply reading the lab over beforehand.

27% was about as useful for becoming familiar with the lab as simply reading the lab over beforehand.

27% did not help me become familiar with the lab beforehand.

10% I didn't usually do the pre-lab questions or tasks.

28. Answering the in-lab questions and doing the in-lab tasks during the lab helped me to understand what I was doing and what to put in my report

11% always.

37% often.

38% occasionally.

6% never.

7% After the lab period was done, I didn't pay any more attention to the in-lab stuff.

29. Answering the post-lab questions and doing the post-lab tasks helped me to understand what results to determine and what to put in my report

12% always.

32% often.

47% occasionally.

6% never.

2% I didn't usually do the post-lab stuff.

Exercises

30. What statement best describes your experience of the *Estimation, Order of Magnitude Calculations, and Bounding* lab exercise?

- 23% It helped me become comfortable estimating in the lab.
- 25% It helped me understand about order of magnitude calculations which could be useful in the labs.
- 30% Both of the above are true.
- 20% Neither of the above are true.
- 3% I didn't do that exercise.

31. What statement best describes your experience of the *Repeated Measurements* lab exercise?

- 32% I thought it was useful to compare the different types of reaction times; i.e. random, anticipated, and synchronization.
- 22% It helped me do the calculations with average values in all experiments.
- 27% Both of the above are true.
- 18% Neither of the above are true.
- 1% I didn't do that exercise.

32. What statement best describes your experience of the *Introduction to Spreadsheets* lab exercise?

- 31% I already knew almost everything covered in that exercise, so it wasn't very useful.
- 32% I already knew some of what was covered in that exercise, but I learned some useful things.
- 25% Almost everything covered in that exercise was new to me, but now I feel more comfortable with spreadsheets.
- 9% Almost everything covered in that exercise was new to me, and the exercise didn't make me feel any more comfortable with spreadsheets.
- 2% I didn't do that exercise.

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33. What statement best describes your experience of the *Processing Uncertainties* lab exercise?

41% It taught me what I needed to know to figure out uncertainty calculations in any future labs.

16% It made me understand how to write up a *Discussion of Uncertainties*.

25% Both of the above are true.

16% Neither of the above are true.

1% I didn't do that exercise.

34. Certain lab exercises, such as the spreadsheet exercise, could be done at home so you didn't have to spend as much time in the lab. What did you think of that?

46% I did some of them at home, and I'm glad the option was available.

40% I never did them at home, but I'm glad the option was available.

4% I never did them at home, and didn't care whether the option was available.

9% I tried to do some of them at home, but the instructions weren't clear enough to follow.

35. What do you think is the most valuable part about being able to do exercises at home?

48% Flexibility; e.g. allows me to work alone or at another time

10% Performance; e.g. I learn more, do a better job, save time

36% Both of the above are true.

3% Neither of the above are true.

2% I didn't do any of the exercises at home, and wasn't interested.

Performance

36. When writing up my lab report,

30% I found the sample lab report on the web site helpful, and I didn't need to read the sample lab.

32% I found the sample lab report on the web site helpful *after* I read the sample lab.

27% I didn't find the sample lab report on the web site very helpful, since it talked about a lab we didn't do.

6% I thought the expectations were pretty clear without having to look at the sample lab report.

4% I wasn't really clear on the expectations and I never looked at the sample report.

37. My marks in these labs have been

38% lower than I expected.

12% higher than I expected.

18% *much* lower than I expected.

1% *much* higher than I expected.

32% about what I expected.

38. Comparing my marks in the lab to my marks on tests, etc. in this course, my lab mark is

13% higher (5-15%) than my other marks in this course.

25% lower (5-15%) than my other marks in this course.

29% much lower (>15%) than my other marks in this course.

5% much higher (>15%) than my other marks in this course.

28% about the same (\pm 5%) as my other marks in this course.

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39. The amount of effort which I put into the labs was affected by external factors like midterms, assignments, etc.

4% never

23% rarely

30% sometimes

29% often

14% always

40. The bonus marks possible in the marking scheme, (such as higher weight for lab reports over 80 %), made me

5% not work as hard as otherwise.

32% work no harder than otherwise.

23% work a little harder than otherwise.

31% work a lot harder than otherwise.

8% I didn't know there were any bonus marks.

41. The amount of work required for the labs was

26% more than what was justified for the weighting of lab marks.

9% less than what was justified for the weighting of lab marks.

9% *much* more than what was justified for the weighting of lab marks.

1% *much* less than what was justified for the weighting of lab marks.

54% about what was justified for the weighting of lab marks.

Results

For the following questions, use the following scale to indicate how much you agree with the statement:

- (a) disagree strongly
- (b) disagree
- (c) neither agree nor disagree
- (d) agree
- (e) agree strongly

42. **9%** **8%** **15%** **37%** **30%** I understand *precision measure* and how to determine it for a measuring instrument.
43. **7%** **9%** **20%** **39%** **25%** I understand the difference between *precision* and *accuracy*.
44. **4%** **16%** **22%** **38%** **20%** I understand the difference between *standard deviation* and *standard deviation of the mean* and know how to calculate the *uncertainty in an average*.
45. **11%** **6%** **20%** **44%** **19%** If I needed to, I would be able to come up with a *reasonable estimate* of some quantity.

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46. What statement best describes your thoughts on taking the first several weeks with exercises, the original and the optional resubmission, etc. to produce the first lab report?

53% I was able to do a much better job on the lab than I would have done otherwise.

26% I was able to do a much better job on the lab than I would have done otherwise, but I'd be lost if I had to do another lab report.

14% I wasn't able to do a much better job on the lab than I would have done otherwise, and I'd be lost if I had to do another lab report.

5% I think I would have been able to do a good job on the lab report with or without all of that.

2% I didn't hand in a lab report.

47. After doing these labs

14% I would be more likely to choose courses with labs in the future.

29% I would be less likely to choose courses with labs in the future.

8% I would be more likely to choose physics courses in the future.

20% I would be less likely to choose physics courses in the future.

29% These labs have had no effect on my course preferences.

48. Comparing the labs to the rest of the course

42% the labs are harder to understand than the lecture material.

29% the lecture material is harder to understand than the labs.

9% neither the labs nor the lecture material is hard to understand.

20% both the labs and the lecture material are hard to understand.

49. Comparing the labs to the rest of the course

- 38%** the labs take longer to do than the assignments.
- 31%** the assignments take longer to do than the labs.
- 9%** neither the labs nor the assignments take much time to do.
- 21%** both the labs and the assignments take a long time to do.

50. The amount of potentially useful learning produced by the labs was

- 21%** more than I expected based on the amount of work.
- 25%** less than I expected based on the amount of work.
- 42%** about what I expected based on the amount of work.
- 3%** *much* more than I expected based on the amount of work.
- 9%** *much* less than I expected based on the amount of work.

51. Which of the following best describes your feelings after completing these labs?

- 49%** I now have a better understanding of the whole research process than I did before.
- 8%** I now have more interest in research than I did before.
- 3%** Both of the above are true.
- 38%** Neither of the above are true.

Comparison to other courses

52. What other types of *science* labs are you taking or have you taken at university?

67% I've only had labs in math or computer science.

9% I've had labs in chemistry or biology.

4% I haven't had chemistry or biology labs, but have had labs in kinesiology or psychology.

9% I've had labs in at least 3 science disciplines other than physics.

10% I haven't had any other science labs.

53. Do you think the use of laptops in this lab was more valuable than in other science labs? (Pick whichever fits best.)

24% Definitely; in other science labs laptops aren't allowed.

15% Definitely; in other science labs laptops aren't useful.

13% Not really; a laptop isn't really important in any science lab.

20% No; there are other science labs that make better use of laptops than this one.

29% I haven't had any other science labs.

54. The preparation expected for these labs is

26% similar to what is expected in other science courses with labs.

20% more than what is expected in other science courses with labs.

15% less than what is expected in other science courses with labs.

6% much more than what is expected in other science courses with labs.

33% I haven't had any other science labs.

55. What statement best describes your experience of the interest inspired by the labs?

13% These labs were more interesting than labs in other science courses.

23% These labs were less interesting than labs in other science courses.

12% These labs were *much* less interesting than labs in other science courses.

18% These labs were about as interesting as labs in other science courses.

34% I haven't had any other science labs.

56. The reports required for these labs are

23% more complex than those in other science courses, but they seem more worthwhile.

11% fairly similar to those in other science courses.

19% more complex than those in other science courses, but no more valuable.

3% less complex than those in other science courses.

44% I haven't had any other science courses with lab reports.

57. What statement best describes your experience of the amount of work required for the labs?

25% It was more than what was required in other science courses with labs.

11% It was less than what was required in other science courses with labs.

9% It was *much* more than what was required in other science courses with labs.

21% It was about the same as what was required in other science courses with labs.

34% I haven't had any other science courses with labs.

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58. Overall I would rate these labs

9% better than other science labs.

33% about the same as other science labs.

14% worse than other science labs.

6% *much* worse than other science labs.

37% I haven't had any other science courses with labs.

59. What statement best describes the relevance of the labs to your career in science?

15% These labs were more relevant than labs in other science courses.

22% These labs were less relevant than labs in other science courses.

26% These labs were neither more nor less relevant than labs in other science courses.

2% I don't intend to do any more science courses with labs.

35% I haven't had any other science courses with labs.

Resources

60. How did you like the javascript *reaction time tester* on the website?

3% I tried to use it but found it confusing and gave up.

18% I found it confusing but eventually got it to work.

4% It didn't work in my browser.

72% I found it pretty easy to use.

3% I didn't try to use it.

61. How did you like the javascript *statistical calculator* on the website?

6% I tried to use it but found it confusing and gave up.

24% I found it confusing but eventually got it to work.

4% It didn't work in my browser.

61% I found it pretty easy to use.

5% I didn't try to use it.

62. How did you like the javascript *uncertainty calculator* on the website?

15% I tried to use it but found it confusing and gave up.

30% I found it confusing but eventually got it to work.

5% It didn't work in my browser.

47% I found it pretty easy to use.

2% I didn't try to use it.

63. What do you think about using a laptop in the lab with the spreadsheets provided instead of writing on the printed templates?

49% The spreadsheets were convenient to use in the lab.

9% The instructions were easy to adapt for the spreadsheet instead of the printed templates.

18% Both of the above are true.

5% Neither of the above are true.

19% I didn't try to use any of the spreadsheets on a laptop.

64. What do you think about using a laptop with the wireless access in the lab ? (Pick whichever fits best.)

30% I mainly used the laptop for the lab manual itself.

40% I liked having access to all of the website material including spreadsheets, etc.

16% I often used resources from elsewhere on the Internet, such as Google.

2% I used a laptop in the lab, but without being connected to the network.

11% I didn't use a laptop in the lab.

65. What statement best describes the mark you received on the *Measuring 'g'* lab report?

9% It was higher than I expected.

60% It was lower than I expected.

24% It was about what I expected.

7% I didn't hand in a *Measuring 'g'* report.

66. What statement best describes the feedback you got from your IA on the lab report to help you resubmit it ?

51% I found it pretty useful.

38% I didn't find it very useful.

5% I didn't resubmit the report; I only handed in the original.

6% I didn't hand in a *Measuring 'g'* report.

67. What statement best describes your experience with the Writing Centre for the lab report?

16% I found it pretty useful, and I would contact the Writing Centre again in the future.

4% I found it pretty useful for this lab, but I don't think I would contact the Writing Centre again in the future.

18% I didn't find it very useful for this lab, but I might contact the Writing Centre again in the future.

5% I didn't find it very useful for this lab, and I don't think I would contact the Writing Centre again in the future.

57% I didn't go to the Writing Centre.

68. Many topics in the lab had written explanations on the web page as well as videos or screencasts. Which of these did you find more useful most of the time?

17% I found the written explanations much more useful.

14% I found the videos much more useful.

29% I found them both about equally useful (or it depended on the topic).

32% I hardly ever watched the videos; I usually just read the explanations on the web page.

8% I hardly ever read the explanations on the web page; I just watched the videos.

Tutorials

69. Were you in my tutorial section for PC131?

15% Yes

71% No

14% I don't know

70. What was your experience of the tutorials in PC131?

38% I attended some and found them useful.

40% I attended some, but didn't find them useful.

6% I didn't attend any because I was doing fine without them.

8% I didn't attend any because I didn't think they would give me the help I needed.

8% I didn't attend any because I didn't have time.

71. What would you find most useful in tutorials in PC131?

35% Special help with the assignment problems

17% Special help with the suggested problems

29% A review of lecture material

3% Special help with the mathematical aspects of the course

16% Instruction in the process of problem solving

72. What is your experience of tutorials in other courses?

15% I attend only if marks are involved; e.g attendance taken or quiz given.

14% Even if there are no marks involved, whether I attend depends on the course.

17% Even if there are no marks involved, whether I attend a particular week depends on the topics covered that week.

10% I attend regularly, regardless of course or marks.

45% I haven't had any other tutorials.

Other Stuff

Here are some questions about technology used in your courses here at WLU.

73. Have you used a “clicker” for any course?

- 70% Yes, and I enjoyed it.
- 27% Yes, but I didn’t enjoy it.
- 1% No, but I’d be curious to try it.
- 2% No, and I’d rather not.
- 0% I have no idea what a “clicker” is.

74. Have you taken any course where work had to be submitted to *turnitin.com*?

- 40% Yes, and I thought it was a good idea.
- 14% Yes, but I didn’t think it was a good idea.
- 7% No, but I think it is a good idea.
- 14% No, and I don’t think it is a good idea.
- 24% I have no idea what *turnitin.com* is.

75. In most of your courses, which of the following do you find *most* useful for helping you learn?

- 15% attending lectures
- 19% reading the textbook
- 13% reading the instructor’s lecture notes if available
- 4% attending tutorials
- 48% What works best depends very much on the course and the instructor.

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76. There are four first year physics courses at WLU. They are:

- PC131; which has labs and uses calculus
- PC151; which is PC131 without the labs
- PC141; which has labs but doesn't use calculus
- PC161; which is PC141 without the labs

Why did you choose PC131 out of these four choices?

42% It was recommended; I didn't know about or consider the others.

44% It was the only one which met my program requirements.

1% I wanted to have labs.

9% I wanted the labs and calculus.

77. Some courses are starting to use social media such as Facebook and Twitter. What is your experience of this?

14% I've been in courses that used social media, and I thought it was a good idea.

9% I've been in courses that used social media, and I thought it was a bad idea.

28% I've never been in any courses that used social media, but I think it's a good idea.

28% I've never been in any courses that used social media, and I think it's a bad idea.

21% I think whether social media are a good or bad idea depends very much on the course involved.

78. The university has recently developed a policy on the use of electronic devices (phones, tablets, laptops) in classes, labs, etc. What do you think?

12% All of them are often distracting.

31% Tablets and laptops are good, but phones are often distracting.

18% All of them are good to have available, and rarely distracting.

20% I think whether mobile devices are a good or bad idea depends very much on the course involved.

20% I think as long as they're not *required* in any class, the rules don't matter much.

79. In your courses where there isn't a quiz or attendance taken in lectures, what percentage of lectures do you attend?

7% less than 25 %

12% between 25 % and 50 %

10% between 50 % and 75 %

59% more than 75 %

13% It depends very much on the course and the instructor.

80. **In order to improve teaching beyond my own courses, I'd like to be able to share the results of these evaluations with other instructors, students, etc. May I have your permission to do that?**

82% Yes, I'd be glad if any improvement could come from this.

18% Yes, this is anonymous enough that I don't mind how the results are used.

0% No, this isn't anonymous enough for me to be comfortable with the results being shared.

0% No, even though this is anonymous I don't want the results to be shared.

Have a great holiday and I hope to see you next term!