

Physics Senior I.S. Grading Rubric

The PHYS-452 grade— Honors (H), Good (G), Satisfactory (S), or No Credit (NC) will largely represent an evaluation of the **completed IS Monday Manuscript, oral defense and poster presentation, your level of engagement and organization throughout the thesis process.** The following rubric serves as a guideline for evaluating these items.

This rubric serves as a starting point for discussion among the physics faculty about PHYS-452 grades. Not all questions apply equally well to every project, and some are only appropriate for the first reader. Roughly speaking, a score of 4 in an area corresponds to Honors-level achievement, 3 to Good, and 2 to Satisfactory, with 1 and 0 indicating substandard performance.

However, the way in which these elements are weighted is topic-dependent, and a particular set of scores does not guarantee a certain PHYS-452 grade.

For double majors, the evaluation of the project from the perspective of the other discipline is also significant in determining the grade.

	4 – Exceptional (Exemplary)	3 – Strong (Established)	2 – Adequate (Developing)	1 – Marginal (Underdeveloped)	0 – Unsatisfactory ()
1	Extent of Investigation <i>Based on the material covered in the final written document.</i>				
	The student did a thorough investigation into a focused topic, going well beyond the minimum extent required of a two-semester project.	The student did a comprehensive investigation of a focused topic.	The student did an adequate investigation of a defined topic.	The student investigated some areas adequately, but failed to go far enough with others, and/or lacked a topical focus.	The investigation was insufficient for a two-semester project and/or the content was so widely scattered as to make the central topic unclear.
2	Use of Prior Literature/Resources <i>Allowing for differences based on subfields, the history of the project, and the overall knowledge of the topic of the student's investigation</i>				
	The student used appropriate resources, integrated them into one coherent narrative, and understands the place of their own work in the context of the wider subfield of physics.	The student successfully used appropriate resources, and some integration is apparent in the thesis.	The student successfully used appropriate resources.	The student's use of resources is somewhat inadequate.	The student's use of resources is substantially inadequate, significantly impacting the quality of the thesis.
3	Use of Computational Tools <i>This includes computational programming languages, analysis tools, etc.</i>				
	The student successfully used appropriate computational tools and fully justified them (through literature review and/or preliminary investigation)	The student successfully used appropriate computational tools and mostly justified their use.	The student successfully used appropriate computational tools, but the justification is weak.	The student used inappropriate computational tools, did not justify their selection, and/or was only partially successful in using them.	The student was unsuccessful in using computational tools.
4	Writing Quality <i>Student's writing of the thesis, including organization, readability, mathematical and physical precision, form (grammar, spelling, typesetting), and style?</i>				
	The I.S. is written in a clear, precise, well-organized manner, with excellent form. Moreover, it is written in the student's unique style and directed toward an audience of peers.	The I.S. is well-organized and very readable, with only minimal errors in any of these areas	The I.S. is well-organized and readable, despite some lack of precision and/or errors in form.	The I.S. is somewhat difficult to read, because of weak organization and/or significant issues in form or precision.	The I.S. is quite difficult to read, because of disorganization and/or pervasive issues in one or more of these areas.
5	Presentation <i>Quality of the student's final oral and I.S. Symposium presentation, considering organization, knowledge of content, audience awareness, and professionalism?</i>				
	The presentations were excellent overall, and strong in each of these aspects.	The presentations were solid, with only minimal problems in any of these aspects.	The presentations were acceptable, despite some weaknesses in one or more aspects.	The presentations were substantially hampered by a pronounced weakness in at least one aspect.	The presentations were unacceptable, with pronounced weaknesses in multiple aspects.

6	Student Understanding and Mastery of the Subject <i>Based on the written thesis, the question-and-answer portion of the oral examination, and (for first readers only) weekly meetings.</i>				
	The student has a thorough understanding of the material and was able to answer nearly all probing questions.	The student has a good understanding of the material and was able to answer questions in all areas of content, including some probing questions.	The student has a good understanding of most of the material but had difficulty answering probing questions.	The student lacks understanding of significant portions of the material and had difficulty answering most questions.	The student lacks a basic understanding of the material and was unable to answer basic questions.
7	Documentation <i>Quality of the scientific record, including documentation of data creation, collection, and analysis.</i>				
	The student documented their research process, both by documenting code and in the lab notebook, so that future researchers can easily build upon it. Resources are exceptionally clear and easy to find and have been transferred to the advisor.	The student documented their research process, both by documenting code and in the lab notebook, so that future researchers can build upon it. Documentation is clear in most cases. Resources are generally easy to find and have been transferred to the advisor.	The student documented part of their research process, so that future researchers can build upon it with some effort. Resources are not well-organized and are only partially accessible to the advisor.	Student's work is documented on a basic level. Resources (such as original data files or code) are confusingly named and are only partially accessible to the advisor.	Student's work is not documented sufficiently for future work to build upon it.
8	Independence of Learning <i>For first readers only and based on the weekly meetings with their I.S. student</i>				
	The student demonstrated strong initiative and independence, requiring only a minimal amount of guidance.	The student demonstrated good initiative and worked mostly independently, requiring an appropriate amount of guidance.	The student was self-directed for some of the thesis but required lots of guidance on other parts.	The student was unable to work without lots of guidance regarding the direction of the thesis.	The student exhibited little initiative and required disproportionate guidance from the advisor.

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