

PHYS300X Advanced Techniques: Assessment Criteria

Summary

The nature of the advanced techniques modules, in which every project is different and open to extension in various ways, makes it impossible to provide an exhaustive checklist of the criteria and possible factors that could be used for each form of assessment. The statements in the tables below attempt to indicate the typical comments that an examiner might put against the various headings on the mark sheets. These statements are therefore *indicative* of what characteristics students' work will have rather than *prescriptive*.

The criteria shaded in red are assessed only on your performance during the project – as evidenced by your lab book or other records kept as directed by the supervisor and from interactions with the supervisor and demonstrator during the project.

The criteria shaded in blue are assessed only on the basis of the presentation that you give as part of the end of cycle assessment.

The criteria shaded in green are assessed during a combination of the performance during the project, the presentation and the viva parts of the end of cycle assessment. During the viva, the supervisor may focus on some of these aspects more than others to ensure that they can reach a sound judgement of your achievement across all the criteria.

PHYS300x Advanced Techniques Cycle Assessment

Aspect	Fail	3 rd	2.2 to 2.1	2.1 to 1 st	1 st to Outstanding
Quality of work carried out, quality of notebook and record keeping – completeness and evidence of contemporaneous note taking	No results obtained or results meaningless due to failure to use equipment/technique; student seriously damaged equipment or worked in an unsafe manner, Notebook contains little or no information relating to experimental work carried out	Some results obtained but limited due to poor/incorrect use of equipment/technique, notebook lacks details of experimental parameters or details of data taken/analysis carried out	Results are obtained that are reasonable given condition of equipment but not necessarily using optimal settings, notebook contains most parameters and evidence of key analysis	Results are consistent with condition of equipment. Notebook contains full details of experimental/analysis parameters, data taken and results analysed	Results are consistent with what a skilled operator could obtain on the same technique. Notebook provides rigorous trail of parameters and data and also of critical view of data with observations and theories to investigate
Evidence of independent working, time keeping, setting and meeting interim goals, solving problems	Student has failed to complete activities, failed to turn up for meetings, was absent without good explanation, did not take action on own initiative or when told to do so. No effort made to solve problems even with assistance	Student has wasted time and/or failed to complete key activities without good reason. Did not work independently of demonstrator. Prepared to solve problems only with direct supervision, unable to diagnose problems independently	Student has managed to complete most tasks. Student has needed demonstrator to set deadlines, Independently diagnose problems, but requires supervision to solve problems	Student has completed the required tasks for the lab, managing their time well. Independently diagnose and identify corrective actions to fix problems	Student has set realistic deadlines and timescales, prioritized activities. Problems are diagnosed and solved independently, possible improvements to technique or equipment are investigated
Appropriate level of scientific content	Lacking in degree level physics content or entirely unintelligible to a non-specialist member of staff.	Lacking physics content beyond what would be taught at level 2 or some substantial parts too advanced for non-specialist staff to follow	Scientific content includes some material that goes beyond level 2 physics but without clear connections	Scientific content leads the audience from 2 nd year level to higher levels in a clearly connected narrative	Scientific content leads the audience from 2 nd year level to higher levels in a clearly connected narrative with evidence of independent study/development of appropriate concepts and analogies
Structure, organization and use/quality/relevance of visual aids	No discernible structure or organisation to talk, slides unreadable and/or irrelevant	Poor structure or organisation, some slides unreadable	Reasonable structure and organisation most with visual aids mainly well designed	Clear demonstration of good structure to the talk with all the slides clear and well put together to convey key information.	

Aspect	Fail	3rd	2.2 to 2.1	2.1 to 1st	1st to Outstanding
Timekeeping	Overran past 15 minutes or took less than 5 minutes	Took between 5 and 14 minutes	Took between 6 and 12 minutes	Took between 8 and 11 minutes or had to noticeably rush or fill for time	Finished on time without having to rush or obviously fill time
Critical evaluation of results, evidence of testing interim hypotheses, comparing results to literature	Student did not demonstrate any degree of critical thinking even when prompted. Student seemed unaware that literature might exist.	Student demonstrated limited critical thinking even when prompted and had not read literature beyond lab manual	Student demonstrated some evidence of ability to think critically. Main results are analysed with appropriate theory/models with uncertainties. Student used literature from lab manual to compare results	Students applied independent critical judgment when considering results. Results are analysed with appropriate theory/models and main results are placed in context of literature with uncertainties.	Knowledge gained from independent study applied cogently to the experiment or analysis and independent critical judgment shown in the interpretation of results and placed in context of literature, uncertainties are always correctly stated.
Understanding of underlying physics/theory, placing in context	Unable to explain relevant physics	Able to explain some of the relevant physics but limited in understanding to level 2	Able to explain background physics to a level at or beyond level 2.	Able to explain background physics demonstrating some knowledge gained by independent study	Able to explain background physics demonstrating substantial knowledge gained from independent study.
Justification of results obtained and/or methods used and conclusions reached. Ability to answer questions relating to work done.	Unable to explain what was done or why it was done. Unable to answer even questions of basic physics	Able to explain some aspects of what was done but without coherent explanation of why. Attempt answer to questions but limited in understanding to level 2 Physics	Able to give coherent account of what was done with some ability to explain why it was done justifying conclusions. Able to answer straight forward questions and attempts answer to more complex questions with some prompting	Able to give a coherent account of what was done and why, justifying conclusions on the basis of results. Able to answer more complex questions often with little or no prompting	
Ideas for further work or improvements to experiment, technique or data or actual extension work carried out.	Demonstrated little or no understanding of the work that was supposed to have been done, so unable to provide any suggestions for extension beyond the very trivial or Student failed to complete set tasks let alone extend the work.	Able to present some ideas that would extend or improve the study or students completed set tasks but did not extend project significantly	Ideas for future and related work clear and justified by reference to results or weaknesses in experimental technique or Students managed some degree of extension beyond set tasks	Ideas for future work and extension clear, justified by reference to own work or work in literature and showing evidence of critical evaluation of possible improvement. Student independently devised extension to project	

PHYS300x Advanced Techniques: Formal Report

Aspect	Fail	3 rd	2.2 to 2.1	2.1 to 1 st	1 st to Outstanding
Appropriate sections to report and overall structure	Poor structure missing sections that would be expected of a scientific report or with substantial material out of place		A standard sectioning and organisation that whilst not missing anything out is not optimal	Well-structured and well organised, appropriate to topic.	
Understanding of underlying physics/theory, placing in context	Lacking in degree level physics content or hopelessly confused	Level 2 Physics content only or significant numbers of substantial and important errors	Broadly correct content that goes beyond level 2 physics with minor errors of fact or omissions	Content is correct and written at a level substantially beyond level 2, making use of material from appropriate sources to introduce the experiment.	Content is correct and draws upon a variety of sources to introduce the experiment clearly demonstrating a thorough understanding of the underlying physics
Presentation of data in appropriate format, use and relevance of figures, description of figures and/pr tables	No relevant or useful figures or no data presented in report	Substantial defects in many figures – e.g. illegible/un labelled axes, uninformative figure captions	Most figures of acceptable quality but could be improved or have better figure captions	Figures clear and well described by figure captions to make understanding the data easy	Figures clear and put together in a way that highlights significant data with informative figure captions
Discussion of results, critical evaluation and placing in context of known results from literature. Conclusions and outlook.	Provides little or no discussion or attempt to analyse data critically or synthesise conclusions. Little or no evidence of thought beyond the basic experimental data.		Some discussion and evaluation of results, overall conclusion limited to restating of findings.	Discussion of results and key findings placed in context of expected results, reasonable attempt to synthesise an overall conclusion.	Discussion involves critical analysis and placing in context. Synthesis of findings and independent study leading to a strong conclusion.
Standard of English, spelling, grammar, correctness of referencing, overall presentation of report	Poor use of English making it difficult or impossible to understand. Referencing non-existent or misleading.	Errors in English obscure meaning of some passages. Referencing weak (e.g. incorrectly cited webpage, use of Wikipedia)	Occasional flaws in English hinder understanding in places. Referencing largely correct and full with minor deficiencies	English largely correct with only minor typographical errors that do not impede understanding. Referencing correct and full	Superbly written English which communicates clearly and with few or no errors. Referencing at a standard that would be found in good publications.