PHYS3152 and PHYS3160 B.Sc. Projects - Assessment Criteria

Every project is different and may involve theory, simulations, experiments, or literature searches, which makes it impossible to provide an exhaustive checklist of criteria that could be used in each form of assessment. The statements in the tables below suggest some of the criteria that a supervisor or assessor might use against the corresponding headings on the mark sheets. These statements are therefore **indicative** of what characteristics a student's work may have, rather than being **prescriptive**. When "results" are referred to this is appropriate for **research projects**, whereas, the statements in brackets (referring to "literature") are more appropriate for **dissertation projects**.

* Specific guidance about the Executive Summary:

The executive summary should provide a one-page overview of the project report that emphasises the importance and applicability of the work and area and gives the key results and findings. The executive summary should be written to be accessible to an educated lay person, for example, someone who might be starting a science degree.

The executive summary should be formatted consistently with the rest of the report and may include figures where appropriate to the points being made. The executive summary should only include information and points made in the main text and is not an additional page of introduction or background.

The executive summary replaces the traditional abstract for a report or paper. It generally should not include references as all statements should relate to matters in the main text of the report (where any necessary referencing is done). Exceptionally, statements that need further support that are not referenced in the main text should be supported with footnotes on the executive summary.

The executive summary is assessed both for its content as a fair representation of the material in the report and also for the effectiveness of communicating the material at a suitable level for the intended audience.

Interim Continuous Assessment (Short Report + Continuous Assessment to date) – marked by Supervisor

Aspect	Fail: <40%	3rd: 40-49%	2.2: 50-59%	2.1: 60-69%	1st: 70-84%	1st (outstanding): 85-100%
SHORT REPORT - Quality of Introduction and understanding of context with literature	Lacking in degree level physics content or hopelessly confused. No real links to literature.	Major flaws in introductory material even at level 1-2 Physics. Very few relevant references.	Level 1-2 Physics content only. Significant number of substantial errors. Background equations may be wrongly displayed and/or with terms not defined. Poor reference to literature.	Broadly correct content that goes beyond level 1-2 physics with minor errors of fact or omissions. Reasonable attempts to place the project in good context with the literature.	Content is correct and written at a 3rd year physics level, making use of material from appropriate sources to place the project in good context.	Content is correct and draws upon a large bank of sources to introduce the research clearly demonstrating a thorough understanding of the underlying physics, at a level beyond level 3 physics lectures.
CONTINUOUS/ SHORT REPORT - Quality/relevance of the figures/data presentation	No relevant or useful figures or no data or relevant information presented	Data or information presented in report has major flaws and/ or lacks relevance, with few useful figures.	Substantial defects in data presentation in figures, e.g. illegible/un labelled axes, uninformative figure captions.	Most figures of acceptable quality but their clarity could be improved or have better figure captions.	Data presented in figures that are clear and well described by figure captions to make understanding the data easy.	Excellent presentation of early data in figures that are clear and put together in a way that highlights possible significance with informative figure captions.
CONTINUOUS/ SHORT REPORT - Overall project planning and project management so far	Student has failed to complete activities, failed to turn up for meetings, was absent without good explanation.	Student has failed to complete most activities, failed to turn up for multiple meetings and/or was absent without good explanation.	Student has wasted time and/or failed to complete key activities without good reason. Student was late for some meetings without good explanation.	Student has managed to complete most tasks (so far). Student has needed advice to set reasonable timelines.	Student has completed the tasks required for the project (so far), managing their time well. Interpretations of data obtained (or literature surveyed) so far that is coherent with the task(s). Working well as part of a team (if applicable).	Student has set realistic deadlines and timescales, prioritized activities and reached conclusions beyond expectations for the tasks undertaken thus far.
CONTINUOUS – Critical faculties so far	Student did not demonstrate critical thinking even when prompted, did not take action on own initiative or when told to do so. No effort made to address problems. Student does not engage during meetings with supervisor.	Student demonstrated little critical thinking at all. Student needed extensive, constant help from the supervisor/ others. Problems normally not recognized or unable to solve problems themselves. Student rarely engages with supervisor in meetings.	Student demonstrated limited critical thinking so far and only when prompted. Student needed much help from the supervisor/ others. Prepared to solve problems only with direct supervision, unable to diagnose problems independently. Student attempts to engage with supervisor in meetings.	Student demonstrated some evidence of ability to think critically so far. Initial results (or initial literature) are being analysed with appropriate theory/models. Independently diagnoses some problems, but requires supervision to solve these issues. Student engages in discussion with supervisor in meetings.	Student applied independent critical judgment when considering results obtained (or literature surveyed) thus far. Help needed to analyse results (literature) only while learning new techniques and with some consideration of the wider literature. Independently diagnosed and corrected problems as they arose, consulting supervisor as appropriate. Student engages in good discussions with supervisor in meetings.	Already starting to perform independent work/analysis of project work performed so far. Critical judgment shown in the interpretation of results (or literature) beyond discussions with supervisor. Problems diagnosed and solved independently, consulting supervisor as appropriate, with improvements to technique/methodology investigated. Proactive engagement in critical discussion with the supervisor during meetings.
Writing Threshold Standard	Work that fails to meet this standard **must** be referred to the module leader.	Paragraphs are used. There are links between and within paragraphs although these may be ineffective at times. There are attempts at referencing. Word choice and grammar do not seriously undermine the meaning and comprehensibility of the argument. Word choice and grammar are generally appropriate to an academic text.				

Continuous Assessment – marked by Supervisor

Aspect	Fail: <40%	3rd: 40-49%	2.2: 50-59%	2.1: 60-69%	1st: 70-84%	1st (outstanding): 85-100%
Quality of the work carried out	No results obtained (literature surveyed) or meaningless due to failure to apply the scientific method; student seriously damaged equipment or worked in an unsafe manner. Note book contains little or no information relating to work carried out.	Some results obtained (or literature surveyed) but of little value due to failure to apply the scientific method or poor use of equipment/technique /method. Notes are included as loose pages, without dates and/or data not recorded in a safe environment.	Results obtained (or literature surveyed) are of some limited value due to imperfect use of equipment/technique /method. Project Notebook (lab-book) includes only some of the most critical points to reproduce work, but it would not be easy to follow from this alone.	Results obtained (or literature surveyed) are reasonable for the given facilities (equipment/ code/ data/ background) but not necessarily optimising what was available. Project Notebook (lab-book) contains most parameters and evidence of key analysis with dates but is not fully comprehensive.	Results (or literature surveyed) are of high quality and most aspects were performed at the optimum level (consistent with the facilities provided). Project Notebook (lab-book) contains details of all parameters used, dates, data taken, computer code, information collected, methodology and results analysed (as appropriate).	Results (or literature surveyed) are of a quality that would be expected from a highly skilled operator with the same facilities (e.g. a student capable of starting a PhD). Project Notebook (lab-book) provides rigorous trail of parameters, methodology, and data/code/information acquired. It contains some critical interpretation of observations and further ideas or theories to investigate.
Critical Faculties and Independence	Student did not demonstrate critical thinking even when prompted, did not take action on own initiative or when told to do so. No effort made to address problems. Student does not engage during meetings with supervisor.	Student demonstrated little critical thinking at all. Student needed extensive, constant help from the supervisor/ others. Problems normally not recognized or unable to solve problems themselves. Student rarely engages with supervisor in meetings.	Student demonstrated limited critical thinking and only when prompted. Student needed much help from supervisor/ others. Prepared to solve problems only with direct supervision, unable to diagnose problems independently. Student attempts to engage with supervisor in meetings.	Student demonstrated some evidence of ability to think critically. Main results (or literature) are analysed with appropriate theory/models with uncertainties. Independently diagnoses some problems, but requires supervision to solve these issues. Student engages in discussion with supervisor in meetings.	Student applied independent critical judgment when considering results (or literature). Help needed to analyse results (or literature) only while learning new techniques and with some consideration of the wider literature. Uncertainty/ error is analyzed. Independently diagnosed and corrected problems as they arose, consulting supervisor as appropriate. Student engages in good discussions with supervisor in meetings.	Added knowledge by independent work/analysis applied to the project. Critical judgment shown in the interpretation of results (or literature surveyed) beyond discussions with supervisor and considering a wide range of literature. Uncertainty/ error is thoughtfully analysed. Problems were diagnosed and solved independently, consulting supervisor as appropriate, with improvements to technique/methodology investigated. Proactive engagement in critical discussion with the supervisor during meetings.

Aspect	Fail: <40%	3rd: 40-49%	2.2: 50-59%	2.1: 60-69%	1st: 70-84%	1st (outstanding): 85-100%
Overall project planning and management	Student has failed to complete activities, failed to turn up for meetings, was absent without good explanation.	Student has failed to complete most activities, failed to turn up for multiple meetings and/or was absent without good explanation.	Student has wasted time and/or failed to complete key activities without good reason. Student was late for some meetings without good explanation.	Student has managed to complete most tasks. Student has needed advice to set reasonable timelines.	Student has completed the tasks required for the project, managing their time well. A project conclusion has been obtained that is coherent with the task(s) engaged. The student has worked well as part of a team (if applicable).	Student has set realistic deadlines and timescales, prioritized activities and reached a project conclusion beyond expectations.

First Assessor Marking Criteria for the Formal Report (67% of Report marks)

Aspect	Fail: <40%	3rd: 40-49%	2.2: 50-59%	2.1: 60-69%	1st: 70-84%	1st (outstanding): 85-100%
Quality of Introduction and understanding of context with literature **25%**	Lacking in degree level physics content or hopelessly confused. No real links to literature.	Major flaws in introductory material even at level 1-2 Physics. Very few relevant references.	Level 1-2 Physics content only. Significant number of substantial errors. Background equations may be wrongly displayed and/or with terms not defined. Poor reference to literature.	Broadly correct content that goes beyond level 1-2 physics with minor errors of fact or omissions. Reasonable attempts to place the project in good context with the literature.	Content is correct and written at a 3rd year physics level, making use of material from appropriate sources to place the project in good context.	Content is correct and draws upon a large bank of sources to introduce the research clearly demonstrating a thorough understanding of the underlying physics, at a level beyond level 3 physics lectures.
Quality/relevance of the figures/data presentation **25%**	No relevant or useful figures or no data or relevant information presented	Data or information presented in report has major flaws and/ or lacks relevance, with few useful figures.	Substantial defects in data presentation in figures, e.g. illegible/un labelled axes, uninformative figure captions.	Most of the figures show the data with acceptable quality but their clarity could be improved or have better figure captions.	Data is presented in figures that are clear and well described by figure captions to make understanding the data easy.	Excellent presentation of data in figures that are clear and put together in a way that highlights significant data with informative figure captions.
Discussion & Conclusion **30%**	Provides little or no discussion or attempt to analyse data (information from literature) critically or synthesise conclusions. Little or no evidence of thought beyond displaying the data/information.		Poor discussion and evaluation of results (or literature), overall conclusion limited to restating of findings. Uncertainties or problems are not analyzed correctly and use of vague statements (e.g. 'results were very good'). Lack in critical analysis or work not placed in context.	Reasonable discussion and evaluation of results (or literature), overall conclusion limited to restating of findings. Uncertainties or problems are not analyzed correctly and use of vague statements (e.g. 'results were very good'). Lack in critical analysis or work not well placed in context.	Discussion of results (or literature) and key findings placed in context of expected results. Good attempts to discuss all problems or unexpected findings. A reasonable attempt to synthesise an overall conclusion discussed within the state of the art for the field.	Full, critical analysis and discussion of the results (or literature) in relation to state of the art. Cause(s) for problems or unexpected findings are comprehensively discussed. Key findings placed in clear context. Independent study beyond the original remit leading to a strong conclusion of main points.
Written English and style of the main report **10%**	Poor structure, missing sections, page numbers or important material. Poor use of English makes it difficult to understand some passages. Use of colloquial or excessively technical language (jargon). Serious formatting deficiencies (e.g. figures wrongly numbered, text out of margins).		Sections not necessarily those of standard scientific report. Some sections are overly long/detailed while others miss key points. Many flaws in English.	All standard sections and figures, correctly placed and numbered. Some sections are overly long/detailed while others miss key points. Occasional flaws in English may hinder understanding.	Well-structured and well organised report that shows and explains the main findings, conclusions and future work in the context of the current literature. English largely correct with only a few, minor typographical errors.	The report is professional in style and easy to read, highly informative and free of errors. All sections have the appropriate length and include sufficient detail to reproduce and extend the work.
Referencing **10%**	Referencing incorrectly used (e.g. use of Wikipedia; no citations in text; references missing key aspects that make im-possible to find the work).		References not placed in text properly. Sources not complete, missing or incorrectly citing journal, author etc. Number of citations significantly low.	Minor inaccuracies in referencing such as formatting inconsistencies. Missing latest research or some key papers.	A few minor inaccuracies such as some inconsistencies in style. Numerous research papers included. Websites include author and access date.	The list of references is comprehensive and in an accepted style.

Aspect	Fail: <40%	3rd: 40-49%	2.2: 50-59%	2.1: 60-69%	1st: 70-84%	1st (outstanding): 85-100%
Writing Threshold Standard	Work that fails to meet this standard **must** be referred to the module leader.	Paragraphs are used. There are links between and within paragraphs although these may be ineffective at times. There are attempts at referencing. Word choice and grammar do not seriously undermine the meaning and comprehensibility of the argument. Word choice and grammar are generally appropriate to an academic text.				

Second Assessor Marking Criteria for the Formal Report (33% of Report marks)

Aspect	Fail: <40%	3rd: 40-49%	2.2: 50-59%	2.1: 60-69%	1st: 70-84%	1st (outstanding): 85-100%
Style and quality of the writing of the executive summary **20%**	The executive summary is written in noticeably poor formal English or an inappropriate register for a formal lay summary. The content is not at the correct level for an educated lay person to understand.		The executive summary is written in mostly correct formal English, and mostly using the correct register. The level of content assumes a bit too little or too much knowledge of the reader.	The executive summary is written in correct formal English aside from some minor errors, using the correct register and the level of content is mostly correct for the intended audience.	The executive summary is written in correct formal English aside from occasional and minor typographical errors generally using the correct register and apart from occasional points, the level of content is correct for the intended audience.	The executive summary is written in totally correct formal English using the correct register and the level of content is consistently correct for the intended audience.
Quality of Executive Summary – Content as Summary **15%**	Executive Summary does not describe the significance and impact of the area or does not describe the key findings or outcomes.		Executive Summary indicates the area of study but with little success in demonstrating its importance. Some of the key findings and outcomes are identified and/or the descriptions are limited	Executive Summary identifies the area of study and indicates the significance and importance. The key findings are identified and mostly well described	Executive Summary fully identifies the area of study and provides a clear statement of the importance and significance. All of the key findings and outcomes are described with a good attempt to place them in the context of the research area.	Executive Summary clearly and fully describes the significance and importance of the research area, fully describes the outcomes and findings and places them in the context of the research area.
Quality of Introduction and understanding of context with literature **15%**	Lacking in degree level physics content or hopelessly confused. No real links to literature.	Major flaws in introductory material even at level 1-2 Physics. Very few relevant references.	Level 1-2 Physics content only. Significant number of substantial errors. Background equations may be wrongly displayed and/or with terms not defined. Some references to relevant literature.	Broadly correct content that goes beyond level 1-2 physics with minor errors of fact or omissions. Reasonable attempts to place the project in good context with the literature.	Content is correct and written at a 3rd year physics level, making use of material from appropriate sources to place the project in good context.	Content is correct and draws upon a large bank of sources to introduce the research clearly demonstrating a thorough understanding of the underlying physics, at a level beyond level 3 physics lectures.
Quality/relevance of the figures/data presentation **25%**	No relevant or useful figures or no data or relevant information presented	Data or information presented in report has major flaws and/ or lacks relevance, with few useful figures.	Substantial defects in data presentation in figures, e.g. illegible/un labelled axes, uninformative figure captions.	Most of the figures show the data with acceptable quality but their clarity could be improved or have better figure captions.	Data is presented in figures that are clear and well described by figure captions to make understanding the data easy.	Excellent presentation of data in figures that are clear and put together in a way that highlights significant data with informative figure captions.
Written English and style of the main report **15%**	Poor structure, missing sections, page numbers or important material. Poor use of English makes it difficult to understand some passages. Use of colloquial or excessively technical language (jargon). Serious formatting deficiencies (e.g. figures wrongly numbered, text out of margins).		Sections not necessarily those of standard scientific report. Some sections are overly long/detailed while others miss key points. Many flaws in English.	All standard sections and figures, correctly placed and numbered. Some sections are overly long/detailed while others miss key points. Occasional flaws in English may hinder understanding.	Well-structured and well organised report that shows and explains the main findings, conclusions and future work in the context of the current literature. English largely correct with only a few, minor typographical errors.	The report is professional in style and easy to read, highly informative and free of errors. All sections have the appropriate length and include sufficient detail to reproduce and extend the work.

Aspect	Fail: <40%	3rd: 40-49%	2.2: 50-59%	2.1: 60-69%	1st: 70-84%	1st (outstanding): 85-100%
Referencing 10%	Referencing incorrectly used (e.g. use of Wikipedia; no citations in text; references missing key aspects that make im-possible to find the work).		References not placed in text properly. Sources not complete, missing or incorrectly citing journal, author etc. Number of citations significantly low.	Minor inaccuracies in referencing such as formatting inconsistencies. Missing latest research or some key papers.	A few minor inaccuracies such as some inconsistencies in style. Numerous research papers included. Websites include author and access date.	The list of references is comprehensive and in an accepted style.
Writing Threshold Standard	Work that fails to meet this standard **must** be referred to the module leader.	Paragraphs are used. There are links between and within paragraphs although these may be ineffective at times. There are attempts at referencing. Word choice and grammar do not seriously undermine the meaning and comprehensibility of the argument. Word choice and grammar are generally appropriate to an academic text.				

Oral presentation – marked by an independent chair + other students (peer marking)

Aspect	Fail: <40%	3rd: 40-49%	2.2: 50-59%	2.1: 60-69%	1st: 70-84%	1st (outstanding): 85-100%
Structure and organization	No discernible structure or organisation to the talk, slides unreadable and/or irrelevant.		Poor structure or organisation, some slides unreadable. No conclusions or introduction.	Reasonable structure and organisation. Some issues, e.g. too many or too few slides for introduction or conclusions.	Clear demonstration of good structure to the talk with all the slides well put together to convey an introduction to the topic, key findings and a clear set of conclusions.	
Use/ quality/ relevance of visual aids such as figures, graphs etc.	No use of graphs or schematics.	Low quality and/ or very few graphs or schematics – illegible or other flaws rendering them of little/ no value.	Graphs/ schematics are difficult to read due to small font size or colour schemes. Units are not correct or consistent. Error bars not displayed. Other figures are of no or little help.	Graphs/ schematics convey some of the main data and there are other figures to help explain the topic. Some slides contain too many or unnecessary or unused graphs.	Data is clearly displayed in graphs which use good formatting. Schematics or other figures contribute to the understanding of the project. All graphics referred to during talk.	The graphs are exceptional, free of mistakes and presented to allow easy comprehension of the data. Significant work in using visual aids to convey the physics behind the data.
Appropriate level of scientific content, including background physics, current state of the art and critical analysis.	Lacking in degree-level physics content or entirely unintelligible to a non-specialist member of staff.	Little degree level physics content or mostly unintelligible to a non-specialist member of staff.	Lacking physics content beyond what would be taught at level 1 to 2 or some substantial parts too advanced for non-specialist staff to follow.	Scientific content includes some material that goes beyond level 1 and 2 physics but without clear connections to the work done. Background physics not fully explained or not linked to state of the art.	Scientific content leads the audience from year 1 to 2 physics to higher levels in a clearly connected narrative that links the project to the state of the art in the field. Good critical analysis of scientific challenges	Scientific content leads the audience from year 1 to 2 physics to higher levels in a clearly connected narrative with evidence of independent study/development of concepts and analogies. Insightful critical analysis of challenges in relation to state of the art.
Verbal skills and interaction with the audience	Inaudible, no meaningful attempt to interact with the audience. Excessive fidgeting, hands in pockets, etc.	Hard to hear the speaker and little or no attempt to interact with the audience. Excessive fidgeting, hands in pockets, etc.	Difficult to follow due to delivery style, poor interaction with audience (e.g. blocking view), reliant on written notes/text/cue-cards. Excessive fidgeting, etc.	Presentation mainly clearly delivered with some stumbles and/or weak interaction with audience. Possible reliance on notes at times. Significant pauses or hesitation.	Clear presentation with good eye contact with audience, on the whole using an appropriate register, expressive gestures.	Clear, fluent and confident presentation, without hesitation, aimed to engage the audience and looking for cued responses. Expressive gestures.
Timekeeping	See below*					
Ability to answer questions	Unable to answer even questions of basic physics.	Little/ poor attempt answer questions of basic physics.	Attempt answer to questions but limited in understanding (level 1 or 2 physics).	Able to answer straight-forward questions and attempts answer to more complex questions with some prompting	Able to answer more complex questions often with little or no prompting	Able to answer confidently and in full all questions with no prompting – can extend to suggestions and future work.

*** TIMING – see next page…**

*** TIMING:**

Os = 14:30-15:00 covering all slides and ending nicely with *no rushing or obvious delay tactics*.
1st = 14:00-14:30 or 15:00-15:30, covering all slides nicely or closer to 15 min but with some slight rushing or slight delaying.
2.1 = 12:30-14:00 or 15:30-16:00 (Chair to cut off speaker at 16 min with a few slides left) covering all slides. Or some significant rushing or delaying.
2.2 = All slides presented in 10:00-12:30 or Chair to cut off speaker at 16 min with many slides left. Or major rushing or major delaying with completely the wrong amount of content for the time slot.
3 = Some attempt at a presentation, but less than 10 min. Or other very major flaws.
Fail = no attempt at presenting to time.