PHAS5040M: MSc Research Skills

Literature Review Marking Criteria

Component:	Weight	Marker
Literature Review and Execution	33%	Supervisor
Presentation	33%	Assessor + Supervisor
Viva	34%	Assessor, with supervisor present

This Literature Review is worth 50% of the PHAS5040M module mark.

For any questions about the mark scheme, please contact:

Prof. Chris Nixon (c.j.nixon@leeds.ac.uk)

PHAS5040M Research Skills

In this module, PHAS5040M, you will undertake various components, or "mini-projects", to enhance your skills as a researcher and to prepare for the PHAS5020M Research Project. These components are:

(i) a Literature Review (50%), conducted during semester 1
(ii) two Advanced Technique mini-projects (each 25%), conducted during semester 1/2 (with timing depending on choice of which Advanced Technique)

The first Advanced Technique for Astro MSc students is a Scientific Computing unit conducted during semester 1, weeks 3-5.

For the Literature Review you will explore the literature on the topic of your research project. You will meet weekly with your supervisor during semester 1, starting in week 3. Your supervisor should give you some initial papers or review articles to read during your first meeting, and then you will follow the literature trail to gain a strong grasp of the background of the topic. You will submit your literature review as a report through Minerva. The deadline is 2pm on the Thursday of week 10 in semester 1. In week 11, you will give an oral presentation of the topic to your assessor and supervisor, followed by a viva during which your assessor will ask questions on the content of your report. **Please note that it is your responsibility to arrange the presentation and viva with your supervisor and assessor.** If you have any questions, please contact the module leader.

Note that the use of Assistance, including Generative AI, is permitted for some—**but not all**—aspects of project work. For the specific guidance relevant to this work, please read the "Key Facts" page in the Assessment and Feedback area on the Minerva module page.

Specific guidance about the use of Assistance including Gen AI

You **can** use assistance for this assessment, **except** for the limitations stated here. You **cannot** use Gen AI to fabricate data unless it is an inherent part of the project design, and any such data must be acknowledged as synthetic data. Informal and peer assistance may be used in discussing the research, for proofreading documents and for aid in preparing for presentations and vivas. Translation tools may also be used during research, but not during the assessment components such as the presentation and viva. Students remain fully responsible for any work submitted for assessment.

Generative Artificial Intelligence (Gen AI) is a technology that generates content in response to written prompts. **You can use Gen AI in an assistive role to help you perform research**. For example, you may use Gen AI for the following: idea development, literature searching, clarification of basic scientific concepts, editing code, suggesting analysis routines, analysing or plotting your own data and/or project management. You should clearly describe how you have used Gen AI if it has been a significant part of your research. You can ask your project supervisor for advice about the effective use of Gen AI for your research.

Where you use Gen AI tools to support your work, you should always save copies of the outputs that the Gen AI tool produces for you as part of your project notebook. Your supervisor will be able to advise you on keeping good research records.

If you use Gen AI to generate data, you must make clear that this is "synthetic data" and clearly describe how the data was generated. For data that you have generated by laboratory experiments or computational work, you may be asked to provide the raw data as evidence of your research. You should always save copies of the raw data from your research.

You are responsible for the academic integrity of the work you submit, and the work must be an accurate reflection of your own learning, understanding and skills. You are responsible for the process of drafting and refining the work you submit, including generating content, revising, editing and proofreading. It is important to be aware of the limitations of any assistance you use, and you are expected to engage critically with any outputs of assistance.

If used, appropriate use of Gen AI will be graded as part of the Marking Criteria provided on Minerva.

MSc Research Skills Marking Criteria **Literature Review and Execution** **marked by Supervisor and Assessor 1** **All criteria equally weighted**

Length of Literature Review: Literature Reviews should typically be about 15 pages long. This page count includes the complete submission: title page, summary, main text, figures, tables and references. **Literature Reviews must not exceed 20 pages.** Any material beyond page 20 will not be read or marked.
Reviews should normally use a minimum font size of 11 pt, minimum margins of 2 cm, and A4 pages. A standard journal-style format appropriate to the relevant sub-field may also be used; if you are unsure whether a proposed format is appropriate, discuss this with your supervisor.
Students are expected to present the literature clearly and concisely; a longer review is not necessarily a better review.

The following are two pass/fail criteria:
Use of English: If the following criteria are not evident, you will fail the Literature Review assessment. (i) Paragraphs are used. (ii) There are links between and within paragraphs although these may be ineffective at times. (iii) There are attempts at referencing. (iv) Word choice and grammar are adequate (do not seriously undermine the meaning and comprehensibility of the argument). (v) Word choice and grammar are generally appropriate to an academic text.
Use of Journal Articles: In your literature review you must refer to journal articles published in the scientific literature appropriate for your topic. You must include a bibliography that is in keeping with the style used in your field with each reference provided with adequate information to uniquely identify the text. Where necessary, additional reference materials may be used such as websites or presentations; but these should be the exception not the norm. You will fail the Literature Review assessment if you do not refer to any journal articles in your report.

Descriptor	**No evidence 0**	**Unsatisfactory 30**	**Almost 45**	**Acceptable 55**	**Good 65**	**Excellent 75**	**Exceptional 85**
1. Came prepared to all meetings (including summaries of papers read and suggestions of papers to read).	No evidence of any preparation for any meetings.	Only occasionally prepared a little for meetings.	Sometimes came with some level of preparation.	Sometimes came with a good level of preparation.	Typically came with a good level of preparation.	Typically came comprehensively prepared. Evidence of leading in the weekly meetings.	Always came fully prepared beyond expectations. Leading the weekly meetings.
2. Engage with relevant literature and incorporate into text professionally.	No engagement with literature.	Very few references, of questionable relevance	Limited engagement with literature. Low quantity of references. Not very relevant.	Acceptable engagement with literature but low quality or quantity. Not all references particularly relevant to the topic.	Good engagement with relevant literature. Good quality and/or quantity of publications identified.	Excellent engagement with relevant and up to date literature. High quality and quantity of published work cited.	Outstanding engagement with literature. All references highly relevant. Extensive coverage of the topic across the years.

3. Consistent formatting of references	No references	No attempt at correct reference formatting.	References are cited, but formatting is poor.	References are cited in the text, but citation and/or formatting is mixed or inconsistent.	Most references consistently cited and formatted.	All references consistently cited and formatted.	All references professionally and consistently cited and formatted to publishing standard.
4. Present a clear exposition of the topic and position the project in an area of need. Identify specific research questions for future study in this area.	Report does not mention the literature.	Previous work mentioned, but not in any coherent way. No area for research presented.	Literature on the topic presented but rambling or unclear. Not really identifying an area for research.	Literature about the topic presented but not really discussed. Research question/focus presented but only tenuous link to literature.	Good exposition of the topic. Research question/focus given to address issues in the field.	Excellent exposition and evaluation of the topic, identifying a need for new research. Research question/focus positioned to meet this need.	Professional critical exposition of the topic, evidencing the need for new research. Research question/focus excellently positioned to meet this need.
5. Good formatting and structure using sub-headings. Attention to detail with figures, tables, captions, equations etc. Written in good English paragraphs.	No report submitted	Review is very untidy and difficult to follow. Lacking common elements such as page numbers or headings. Poor use of sentences and paragraph structures. Confusing to the reader.	Attempt to format the Review, but inconsistent. Largely understandable, but sentences and paragraph structures are not used consistently.	Review has acceptable formatting throughout. Good level of written English. There is a progression of ideas.	Review has good consistent formatting throughout. Good quality of written English and use of vocabulary. With a logical flow of ideas.	Review has high-quality formatting throughout. Clear attention to detail. Excellent quality of written English and use of vocabulary. Highly logical throughout.	Review is formatted to professional standards throughout. Exceptional attention to detail. Exceptional quality of written English and use of vocabulary, with no typos. Highly logical throughout.

MSc Research Skills Marking Criteria **Presentation** **Marked by Supervisor and Assessor 1** **All criteria weighted equally**

Talks should be aimed at a physics audience (but not expert in your field) and last 15 minutes, followed by 5 minutes Q&A.

Criteria	No evidence 0	Unsatisfactory 30	Almost 45	Acceptable 55	Good 65	Excellent 75	Exemplary 85
1. Clarity, accessibility and effectiveness of slides	No slides or agreed alternative supporting materials are provided where these are required.	Slides are largely unreadable, inaccessible, irrelevant or so poorly organised that the important information cannot be identified.	Some relevant information is shown, but excessive text, unclear layout, small text, weak contrast, poorly labelled figures or blurred visuals frequently make the material difficult to interpret.	Slides are mostly clear and relevant. Most important information can be identified, although there are some problems with text density, layout, labelling, legibility or accessibility.	Slides are clear, consistently legible and appropriately organised. Text and visuals support the message, and figures are adequately labelled and explained.	Slides are very effectively selected and organised. Visual hierarchy, concise text and clearly explained figures direct attention to the main messages and strengthen audience understanding.	Slides communicate complex information with exceptional clarity and efficiency. They are highly accessible to the intended audience and make a substantial contribution to understanding the argument and take-home message.
2. Communicate clearly at a suitable pace	No communication (e.g. no audio, captions, or agreed alternative)	The presentation is very difficult to understand. The principal message cannot be followed consistently because of unclear explanation, organisation, or pacing.	Parts of the presentation are understandable, but inconsistent clarity, pacing, or explanation frequently makes it difficult to follow.	The presentation is mostly understandable and delivered at a generally suitable pace. Some explanations, transitions or emphases are unclear, but the main message can be followed.	Communication is clear throughout. The pace, explanations and supporting materials enable the intended audience to follow the presentation, and important information is appropriately emphasised.	Consistently clear and audience focused. Deliberate choices in explanation, emphasis, examples, and the delivery sustained attention; which resulted in strengthening the understanding of the main message.	Communication is exceptionally effective and inclusive. The presentation creates a strong intellectual connection with the audience, makes complex ideas readily understandable and sustains attention by using carefully chosen

							communication methods.
3. Convey the topic at a level appropriate to a general physics audience: context, current knowledge, frontiers and open questions	No presentation	Structure is very incoherent. Essential elements are absent, substantially incorrect or do not appropriately represent the topic.	Some structure and relevant scientific content are present, but significant omissions, inaccuracies or problems with the technical level.	Reasonable structure and broadly accurate depiction of the topic. Most elements are included and the material is understandable, although some of the content is insufficiently explained.	Scientifically accurate and logically structured account. Context, current knowledge, frontiers and implications are clearly communicated appropriate for a general physics audience.	Scientifically rigorous, very clear and coherent account of the project. Technical information is carefully selected and explained, with a clear and memorable scientific message.	Exceptionally well-constructed and scientifically rigorous account of the topic. Integrates context, knowledge, evidence, interpretation and implications into a compelling and intellectually coherent account with a clear and lasting take-home message.
4. Keep to time and use the allocated time effectively	No presentation	A presentation is attempted, but its duration is so limited or excessive that a coherent account is not delivered, a substantial part is missing, or it continues well beyond the allocated period despite clear prompts.	Much too short or too long. (< 8 mins or unable to wrap up even when prompted after the 15 mins). The timing impairs the communication of the project.	A little too short or too long. (< 12 mins or not wrapping up succinctly after 15 mins.). Most of the essential content is communicated.	+/- 2.5 mins. The main sections are completed, although some material may be slightly rushed, extended or insufficiently prioritised.	+/- 1 min. Time is very well managed, appropriate emphasis is given to each section, and the presentation reaches a clear conclusion.	+/- 30 sec. Complex material is carefully prioritised, transitions are efficient and the conclusion is concise and well supported.
5. Respond effectively to questions.	No response to questions including agreed alternative format.	Very poor responses. Incorrect or unrelated to the questions.	Reasonable attempt to respond, but the understanding of the topic is weak.	Reasonable answers that largely address the question and	Good answers that address the question, appropriate to the audience.	High-quality accurate answers, that are well supported. They demonstrate	Responses demonstrate exceptional depth of understanding and intellectual

				are appropriate to audience.	Limitations or uncertainty are acknowledged where appropriate.	strong understanding and provide appropriate interpretation or evaluation.	independence. They integrate evidence, recognise limitations, consider alternative interpretations and develop insightful implications.

MSc Research Skills Marking Criteria **Viva** **Marked by Assessor 1, with supervisor in attendance** **All criteria equally weighted**

The viva will last about 30 minutes.

Criteria	No evidence 0	Unsatisfactory 30	Almost 45	Acceptable 55	Good 65	Excellent 75	Exemplary 85
1. Knowledge and Understanding of the Literature	No demonstrable knowledge of the relevant literature. Unable to identify key concepts, theories, studies, or authors.	Demonstrates very limited awareness of the literature. Knowledge is fragmented and restricted to a small number of sources. Significant inaccuracies or omissions are evident.	Demonstrates basic knowledge of relevant literature and some key concepts. Understanding is largely descriptive, with limited appreciation of the wider field or context.	Demonstrates satisfactory understanding of the main literature, theories, and concepts. Can explain the relevance of key sources, although coverage may lack depth or breadth.	Demonstrates good knowledge of the literature and its broader context. Shows clear understanding of major themes, debates, and influential studies within the field.	Demonstrates comprehensive and well-integrated understanding of the literature. Discusses key theories, concepts, and debates with confidence and accuracy.	Demonstrates authoritative and exceptionally detailed understanding of the literature. Exhibits mastery of the field and can situate studies within their broader theoretical and disciplinary contexts.
2. Critical Analysis and Synthesis	No evidence of critical analysis or synthesis. Unable to evaluate, compare, or interpret literature.	Predominantly descriptive discussion with little or no critical evaluation. Sources are reported individually without meaningful comparison or integration.	Some attempt at critical evaluation is evident, but analysis is superficial or inconsistent. Limited synthesis of findings across sources.	Demonstrates satisfactory critical engagement with the literature. Can identify strengths, weaknesses, and relationships between studies, although synthesis remains underdeveloped.	Demonstrates good critical analysis of sources and evidence. Integrates literature effectively to identify patterns, contrasting perspectives, and emerging themes.	Demonstrates very strong critical evaluation and synthesis. Critically interrogates evidence, reconciles competing viewpoints, and develops coherent arguments from the literature.	Demonstrates sophisticated and highly original synthesis of literature. Critically evaluates competing perspectives with insight, generating convincing and nuanced interpretations of the evidence base.
3. Understanding of Frontiers and Current Research Gaps	No awareness of current developments, emerging issues,	Demonstrates very limited awareness of contemporary	Identifies some current developments or gaps but provides	Demonstrates satisfactory awareness of current research	Demonstrates good understanding of emerging trends,	Demonstrates very good awareness of the research frontier.	Demonstrates exceptional understanding of cutting-edge

	or research gaps within the field.	research or unresolved questions. Unable to identify significant gaps or opportunities for future work.	limited explanation of their significance. Understanding of the research frontier remains superficial.	directions and unresolved issues. Can identify relevant gaps, though discussion may lack depth or critical insight.	current debates, and significant research gaps. Can explain their implications for future investigation.	Critically evaluates current limitations in the evidence base and articulates well-justified opportunities for future research.	developments and unresolved challenges in the field. Provides insightful and scholarly evaluation of research gaps and their wider theoretical, methodological, and practical significance.

For all assessments: Marks higher than 85% for individual criteria can be awarded in exceptional cases, where the student's work goes beyond the "Exemplary" criteria. This requires the member of staff who is assessing to make a case in writing. This will be considered holistically by the project team.