



University
of Glasgow | School of Physics
& Astronomy

PHYS4021P: Physics Group Project Guide

Class Information Guide 2024-25

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1 Welcome statement from Head of School

As the Head of School of Physics and Astronomy, I would like to welcome you to your new class. The School prides itself in providing an excellent and supportive learning and teaching environment that is fully integrated with our research; you will have the opportunity to interact with world-leading researchers working at the cutting edge of a wide range of fields of physics and astronomy, who are tackling some of the biggest contemporary challenges in science and technology.

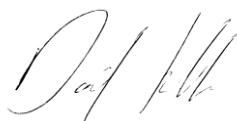
Our staff are always looking to develop new ways of delivering high quality teaching. We have been taking some of the new ways of learning and teaching that were developed during the pandemic and combining this with the best of our traditional approaches. This is a constantly developing process, and I encourage you to engage with us through any of the available communication channels in letting us know what works and what does not.

One thing that will not change is the School's firm commitment to supporting equally the careers and development of all its students and staff, as exemplified by our submission for renewal of IoP Juno Champion and receipt of Athena Swan Silver awards. We value the diversity of our student body and recognise that this diversity improves the quality of our work by bringing a wide range of skills and viewpoints. We therefore expect that all staff and students will work productively and professionally together in an atmosphere of mutual respect.

To support this, all our staff and graduate students undertake equality and diversity training, our lab guides include a code of conduct for students, supplementing the University code, and we support the University's Dignity at Work and Study policy. You can be assured that any instances of bullying, harassment, or offensive language or behaviour will be both taken seriously by the School and treated with sensitivity. Points of support for students are your adviser of studies, your Class Head and Lab Head, and in addition the School has a Student Support Officer and two Equality and Diversity officers, to whom students may speak in confidence.

I wish you success with your current and future studies.

Best wishes

A handwritten signature in black ink, appearing to read 'David Ireland', written in a cursive style.

Professor David Ireland
Head of School

2 General Information and contacts

This guide is intended for students enrolled on the PHYS4021P Physics Group Project Courses.

The course begins on the Tuesday of Week 1 at 1100 with an Induction lecture. The projects themselves then begin at 1200 that day. The class then runs 1100-1700 on Tuesdays and Thursdays through to the end of Week 9.

2.1 Communication

All information about the course will be communicated via the PHYS4021P Moodle site.

Provided you have enrolled on the course in MyCampus, you will automatically be registered for access to the relevant Moodle site. As with all other Moodle sites, the login ID and password are those you use to access all University computers, including your student email account. You must regularly check the Moodle site for new information.

2.2 Contacts

PHYS4021P Course Head:	Dr Stephen A. Webster Room 252a Tel 0141 330 5884 Email: stephen.webster@glasgow.ac.uk
PHYS4021P Deputy:	Dr Ian MacLaren Room 315b, Tel 0141 330 4700 Email: ian.maclaren@glasgow.ac.uk
PHYS4021P Technician:	Mr Matthew Trainer Room 419 Tel 0141 330 6437 Email: matthew.trainer@glasgow.ac.uk

3 Code of Professional Conduct in the Laboratory

Our aim is to provide a safe and enjoyable learning experience for all students in the laboratory, whether that is face-to-face or remotely. Whilst we, as staff, will do everything we can to help with this, students also have an important role to play in ensuring that this is achieved. We would specifically like to highlight the following points:

1. The laboratory is a professional working and studying environment. We therefore expect you to behave in a professional manner towards one another and towards the lab demonstrators and staff at all times.
2. Follow all safety instructions, in terms of both general good practice and with regard to experiment-specific points. This is critical both for your own health and for that of your fellow students. Specifically, safety instructions given by technicians, or the lab demonstrators, must be adhered to.
3. We value the diversity of our student body and recognise that this diversity improves the quality of our work by allowing students to bring a range of skills and viewpoints to inform and enhance their collective achievements. We therefore expect that students will work productively and professionally together in an atmosphere of mutual respect.
 - a. With this in mind, any form of bullying and harassment – such as on the basis of any personal characteristic (including, but not limited to, nationality, race, disability, gender or gender identity, religion [or proxies for this, e.g. football team allegiance], sexuality, appearance, or age) – is unacceptable.
 - b. Please avoid, at all times, potentially offensive "banter" with your fellow students, which may be hurtful and problematic for some, including those who witness it. Please note that claiming something was "banter" is in no way an excuse for bullying or harassing behaviour.

4. Any reports of bullying, exclusion, or discriminatory behaviour will be taken very seriously by the School of Physics and Astronomy. If anyone wishes to report any untoward behaviour, speech or social media content from any person or group of people in the laboratory, they may do so in confidence to the course head, his/her deputy, to the School Equality and Diversity officers (currently Mrs Angela Eden and Dr Eric Yao), or (in the case of staff) to a trade union representative. All such concerns will be treated seriously and in confidence. (This includes incidents where students or staff are the targets or the perpetrators of such behaviour).
5. Some of these points are also included in the University of Glasgow *Dignity at Work and Study Policy* and the *Code of Student Conduct* and can result in disciplinary proceedings, where appropriate.


For further information see:

<https://www.gla.ac.uk/myglasgow/humanresources/equalitydiversity/policy/dignityatwork/>

<https://www.gla.ac.uk/myglasgow/apg/policies/uniregs/>).

4 The intended learning outcomes of PHYS4021P

By the end of the PHYS4021P course, you will be able to ...

- Apply skill and knowledge to complete allocated tasks;
- Learn how to contribute to team success;
- Individually present orally completed project work;
- Present your contribution to the group project in written form;
- Make a group written presentation;
-  Contribute to and deliver a group oral presentation

5 How PHYS4021P will work

5.1 Choosing your project

We are offering 7 Group Projects this year, covering a wide range of physics topics. Table 5.1 gives the details of these. Typically, groups of 7 students will tackle each project. Students must choose their Project before the end of Semester 1 as the Projects begin on Day 2 of Semester 2.

Table 5.1: Group Project choices

Title	Field
Compton Camera	Particle Physics
Holography	Optics
Interferometry	Optics
Temperature Stabilisation Simulation/Hall Effect	Materials
3-D printing of optics laboratory demonstrations	Optics
X-ray computed tomography	Particle Physics
Exploration of Learning in Undergraduate Physics Labs	Educational Physics

Students select their Project via a Moodle Choice – the link for this will be published through the course Moodle site. Summaries of what each project will be looking at can be found on the course Moodle site.

5.2 The Course timetable

PHYS4021P meets on Tuesdays and Thursdays, 1100-1700. You are expected to put in the equivalent of around 5 hours' worth of work per six-hour session. Lunch and regular breaks are essential! There is no specific timetable within each day, though, and each Project is unique. Your Project Supervisors will outline their expectations when you first meet them.

Table 5.2 outlines the key dates for the course.

Table 5.2: PHYS4021P timetable

Week	What
1: Tuesday at 1100-1200	Induction lecture
1-8	Group project work is carried out
7/8	Individual Student Presentations
9: Thursday at 1700	Group Report Deadline
10: Thursday at 1700	Individual Student Report Deadline
11: Thursday 1100-1700	Group Presentations

5.3 Role of supervisors and the groups

The supervisors are there to oversee your work and discuss with you about your direction and plans for the next steps of your work. They will not be in the lab at all times and are not there to guide you at every step or to provide technical cover. In general, Mr Trainer will be in the lab to provide technical support and oversight with regards to safety.

6 Absence and minimum requirements for the award of credit

University regulations require that students complete 75% of a course in order to receive credit for that course. In the context of PHYS4021P, “completion” is measured in terms of attendance and submission of work for assessment.

6.1 Attendance

An attendance record will be taken each day of the students who are on-site. If the attendance of an individual student falls below 75% they may not receive credit for the course.

6.2 Absence and non-submission of work

If you miss a session, or cannot submit your work on time, but have Good Cause for this, you will not be penalised provided you follow the University’s Good Cause Policy. Guidance on this Policy follows. If you do need to record a Good Cause Claim, please also send an email to the Lab Head explaining the situation. If you are uncertain whether your reason counts as “Good”, also please contact the Lab Head. He will be able to advise on its “goodness”.

6.2.1 How to submit a Good Cause Claim

Submission of a Good Cause Claim is the mechanism that allows your circumstances to be considered by the Board of Examiners. Please note all Good Cause Claims must be submitted within **one week** of the date of the affected assessment. These can be logged for missed sessions, or sessions where you were present, but believe your ability to perform was hindered. In the latter case, students should note that the University’s Code of Assessment allows grades to be awarded only on the basis of demonstrated work. So, if you feel that some piece of assessed work has been affected by adverse circumstances, and if staff agree, then the only course of action available is for the grade for that piece of work to be set aside (in the case of continuously assessed work and Class Tests) or to allow a resit (in the case of Degree Exams) – marks cannot be adjusted.

To submit a Good Cause Claim on MyCampus:

1. Go to the 'Student Centre' and select *My Good Cause* from the Academics menu.
2. Select the relevant course(s).
3. Complete the report in MyCampus (there is provision for particularly sensitive information to be provided separately, outwith the system, but a claim report must still be entered into MyCampus).
4. Add supporting evidence by uploading documents. (Scanners are available on level 3 of the University Library.) It is the responsibility of the student to keep all original documentation and submit it to the Lab Head on request.

If you encounter any difficulties with this process, please contact the Lab Head immediately to let them know you have a problem with your Good Cause Claim.

What will happen to your Good Cause Claim

The Lab Head will ensure that your claim is considered, and this will be in accordance with the section of the Code of Assessment that covers incomplete assessment and good cause (paragraphs 16.45 to 16.53). The outcome of your claim will be posted into the Approval Information section on your Good Cause Claim in MyCampus. If it is accepted that your assessment was affected by good cause, the work in question will be set aside.

See also the Senate Office Absence Policy:

<https://www.gla.ac.uk/myglasgow/apg/policies/student support/studentabsencepolicy/>

7 Assessment of PHYS4021P

7.1 Assessment weightings

PHYS4021P is a 20-credit course. The overall grade for this course is split into a number of components to take account of both your individual contribution and the collective achievement of your group. The marks breakdown is listed in the table below, and the full marking criteria follow in Section 7.3. The different assessment components and their weightings are ...

Table 7.1: Course assessment components

Component	Awarded to	Weighting	Assessed by
Individual Student Oral Presentation	Individual student	25 %	Supervisors
Individual Student Written Report	Individual student	25 %	Supervisors
Group Oral Presentation	Group	25 %	Course heads
Group Written Report	Group	25 %	Course heads

Please note that the assessment is intended to be formative and not just summative, in that the feedback provided is intended to help in improving your performance in transferable skills, which are relevant to many careers for a graduate physicist, such as group working, report preparation, and oral presentation.

Each component will be graded on the University's 22-point scale, scaled by the appropriate weighting factor, and then added to give an overall course grade, also on the 22-point scale.

7.2 The 22-point scale

The University's 22-point scale grades student work from A (Excellent) through to G (Very Poor) or H (no attempt). Within each band there are subdivisions; Table 7.2 shows these broad bands, the sub-bands, and the primary verbal descriptors that explain what they mean.

Table 7.2: The 22-point scale

SCHEDULE A

All Courses				Primary verbal descriptors for attainment of Intended Learning Outcomes	Honours Class	BDS, BVMS, MBChB
Primary Grade	Gloss	Secondary Band*	Aggregation Score			
A	Excellent	A1 A2 A3 A4 A5	22 21 20 19 18	Exemplary range and depth of attainment of intended learning outcomes, secured by discriminating command of a comprehensive range of relevant materials and analyses, and by deployment of considered judgement relating to key issues, concepts and procedures	First	Honours
B	Very Good	B1 B2 B3	17 16 15	Conclusive attainment of virtually all intended learning outcomes, clearly grounded on a close familiarity with a wide range of supporting evidence, constructively utilised to reveal appreciable depth of understanding	Upper Second	Commendation
C	Good	C1 C2 C3	14 13 12	Clear attainment of most of the intended learning outcomes, some more securely grasped than others, resting on a circumscribed range of evidence and displaying a variable depth of understanding	Lower Second	Pass
D	Satisfactory [†]	D1 D2 D3	11 10 9	Acceptable attainment of intended learning outcomes, displaying a qualified familiarity with a minimally sufficient range of relevant materials, and a grasp of the analytical issues and concepts which is generally reasonable, albeit insecure	Third	
E	Weak	E1 E2 E3	8 7 6	Attainment deficient in respect of specific intended learning outcomes, with mixed evidence as to the depth of knowledge and weak deployment of arguments or deficient manipulations	Fail	Fail
F	Poor	F1 F2 F3	5 4 3	Attainment of intended learning outcomes appreciably deficient in critical respects, lacking secure basis in relevant factual and analytical dimensions		
G	Very Poor	G1 G2	2 1	Attainment of intended learning outcomes markedly deficient in respect of nearly all intended learning outcomes, with irrelevant use of materials and incomplete and flawed explanation		
H			0	No convincing evidence of attainment of intended learning outcomes, such treatment of the subject as is in evidence being directionless and fragmentary		
CR	CREDIT REFUSED	Failure to comply, in the absence of good cause, with the published requirements of the course or programme; and/or a serious breach of regulations				

* The Secondary Band indicates the degree to which the work possesses the quality of the corresponding descriptor.

[†] This gloss is used because it is the lowest grade normally associated with the attainment of an undergraduate award. Postgraduate students should be aware, however, that an average of at least Grade C in taught courses is required for progress to the dissertation at masters level, and students should consult the appropriate degree regulations and course handbooks for the grade they may require to progress to specific awards.

Each of the different pieces of assessment you will tackle have specific criteria, and those criteria have descriptors that align with the 22-point scale. The details of how follow.

7.3 Areas assessed by academic supervisors

7.3.1 Individual oral presentations

The group supervisors will, in consultation with each group, arrange a time towards the end of the group project for internal presentations from each group member. The exact details are up to each group, but it is recommended that each student in the group presents for about 10 minutes with a couple of minutes for questions from supervisors. The group supervisors will agree on a mark for each presentation.

Table 7.3 outlines the criteria that supervisors will use when assessing students' individual oral presentations. Table 7.4 then sets out how the grade you will receive for each of these criteria maps to the 22-point scale.

Table 7.3: Marking criteria for individual oral presentations

Category	Criteria
Timekeeping and overall planning	<ul style="list-style-type: none">▪ Did they keep within the specified time?▪ Is there a clear, logical structure to the presentation?
Quality of slides	<ul style="list-style-type: none">▪ Are the slides well presented – is the layout clear?▪ Are the fonts in an appropriate size and colour?▪ Are figures clear?▪ Are graphs/tables/etc labelled suitably?
Clarity of oral presentation	<ul style="list-style-type: none">▪ Did they speak clearly?▪ Did they engage with the audience?
Content	<ul style="list-style-type: none">▪ Was the scientific content well described?▪ Was the level appropriate for the audience and the project?▪ Is it clear how the student's work fitted into the wider project?
Answers to questions	<ul style="list-style-type: none">▪ Were they able to answer questions?▪ If they couldn't, did they tackle that situation well?

Table 7.4: Descriptors mapped to the 22-point scale for individual presentation

	Timekeeping and overall planning	Quality of slides	Clarity of oral presentation	Content	Answers to questions
Excellent A1 22 A2 21 A3 20 A4 19 A5 18	Stuck perfectly to time. Excellent structure and totally clear.	Beautiful slides, with well laid out & clear text of appropriate sizes, in colours that promote legibility and with excellent figures.	Clear speaking, and direct to the audience in a way that engages them well.	Excellent scientific content. Clear evidence that they did some great work and that this contributed to good progress on project.	Clear, competent and well-informed answers to questions.
Very Good B1 17 B2 16 B3 15	Perhaps small deviations from time (1-2 mins) OR structure very good but with minor issues.	Very good slides with just one or two marginal issues, e.g. text slightly small on slides or figures, or colour choices slightly less than optimal.	Very good oral presentation, but perhaps with minor issues (e.g. less engaging delivery, not facing camera).	Very good scientific content. Maybe some minor questionable things, or not perfectly clear how it fitted inside the work of the group.	Very good answers to questions, although possibly with minor shortcomings.
Good C1 14 C2 13 C3 12	More than one small problem in structure and timekeeping, or one larger issue (e.g. time missed by >2 mins)	Good slides. Easy enough to read, even if there are some issues with layout, font sizes or colours/contrast.	Good oral presentation but with some issues (e.g. audibility/clarity, or not looking at the audience enough)	Good scientific work. Perhaps some things not so perfectly understood or reported. Maybe some context missing.	Good answers to questions but showing evidence of gaps in knowledge.
Satisfactory D1 11 D2 10 D3 9	Several significant issues with structure or timekeeping.	Slides that are okay, but significantly less than perfect. Maybe layout messy, or some text too small, or contrast that makes legibility harder.	OK oral performance, and understandable, but not great or really engaging.	OK work. Clear that they did do some work of some value to the group. But reporting is maybe patchy and incomplete, or errors are easily visible.	Minimally acceptable answers, at least showing understanding of the question, even if answers somewhat lacking.
Weak E1 8 E2 7 E3 6	Poor timekeeping (either way too long or way too short) or weak structure.	Somewhat messy slides with text that is too small, figures that are a bit difficult to read, and maybe odd colour choices that detract from ease of reading.	Significant deficiencies, perhaps hard to hear, or very monotonic delivery, or really doesn't look at the camera.	Less than satisfactory. Whilst work has been done for the group, the usefulness or correctness is unclear or questionable.	Weak answers to questions, and at a level below expectations at this point in student career.
Poor F1 5 F2 4 F3 3	Poor structure, and/or poor timekeeping showing little indication of any planning,	Messy slides that are difficult to read and do not present the information well at all, for whatever reason (layout, planning, text sizes, colours/contrast).	Bad delivery. Maybe mumbling and difficult to understand, and not really engaging in any way at all.	Limited scientific content of any value, and far less than would be expected at this point.	Poor answers, demonstrating little understanding of either the question nor of the work performed in the project.
Very Poor (G) No attainment (H) G1 2 G2 1 H 0	Little structure or planning of any sort in evidence resulting also in a poor use of the time.	Few slides, or very messy ones with little relevant content.	Little or nothing that makes any sense in anything said.	Little or no correct and relevant content to the work of the group. Questionable as to whether the student is doing anything useful.	Little or nothing in the way of a useful answer to any question.

7.3.2 Individual written reports

Each student is required to submit an individual report with a deadline of 1700 on the Thursday of Week 10. This report, whilst giving a background to the whole project and summarising the achievements of the whole group, *should concentrate on your own individual contribution to the project*. This should be a maximum of **8 pages in length**.

Table 7.5 outlines the criteria that supervisors will use when assessing students' individual reports. Table 7.6 then sets out how the grade you will receive for each of these criteria maps to the 22-point scale.

Table 7.5: Marking criteria for individual reports

Category	Criteria
Presentation, grammar, style and structure	<ul style="list-style-type: none">▪ Is the report neatly word processed with clear labelled diagrams and appropriate figure captions?▪ Is the English correct?▪ Is the report structured and are all the parts tied into the whole?
Abstract, introductory sections	<ul style="list-style-type: none">▪ Is there an appropriate abstract?▪ Does the introduction explain what is being done and why?▪ Are the relevant theoretical results quoted?▪ Are the important features of the measurements described and irrelevant detail left out?
Main part of report	<ul style="list-style-type: none">▪ Are the results presented clearly and in a suitable manner?▪ Is the principle of calculations presented?▪ Is there a discussion of the meaning, significance and interpretation of the results?▪ Has an attempt been made to compare the results with accepted values?▪ Have the possible sources of error been considered?
Individual contribution	<ul style="list-style-type: none">▪ Is it clear what the individual student did themselves?▪ Is it clear how the work of the individual fits into the broader work of the project?
Summary and conclusions	<ul style="list-style-type: none">▪ Are the results of the project summarised?▪ Are sensible conclusions drawn?▪ Are the conclusions supported by the results obtained?▪ Has the student commented on whether the objectives have been achieved?▪ Is there a reasonable attempt to pull all the parts together?

Table 7.6: Descriptors mapped to the 22-point scale for individual reports

	Presentation, grammar, style and structure	Abstract, introductory sections	Main part of report	Individual contribution	Summary and conclusions
Excellent A1 22 A2 21 A3 20 A4 19 A5 18	Great presentation. Clear structure. Excellent English, both technically (grammar etc.) and stylistically.	Great abstract. The Introduction introduces the topic very well. And the theory and methods sections are comprehensive.	Excellent description of the work, including properly describing and discussion any figures and all analysis and calculations.	Totally clear about personal contribution and how this added to the group work.	Great summary, reiterating all key points of results and discussion, including on errors and their origins.
Very Good B1 17 B2 16 B3 15	Very good presentation, structure and English. Perhaps one or two minor deficiencies (e.g. typos, layout, text too small on graphs, figure captions).	Very good start. Just one or two smaller problems, perhaps abstract too long or missing key points. Or introductory sections missing key information.	Very good results and discussion. Perhaps one or two minor shortcomings (e.g. too brief descriptions, missing analysis, discussion missing key points).	Very clear about personal contribution to the group, perhaps just minor deficiencies.	Very good summary. Perhaps one or two identifiable weaknesses (e.g. slightly longwinded, missing a key point).
Good C1 14 C2 13 C3 12	Good presentation. Several smaller deficiencies as noted previously or one larger problem (e.g. graphs, structure or layout).	A good start to the report. A few smaller problems or one larger one, which makes these sections a little harder to follow than ideal.	Good results and analysis. But several smaller weaknesses or one larger problem (e.g. insufficient discussion or description).	Good description of work, but maybe less clear about how this fits in the group as a whole.	Good summary. Most key stuff present. Perhaps several smaller things or one larger thing missing or faulty.
Satisfactory D1 11 D2 10 D3 9	Presentation just about okay. But a lot of things that could be improved. The report is less attractive and less easy to follow as a result.	A minimally okay start, but several shortcomings and not the clearest start to a report, nor the most informative to the group supervisor.	The sections are present, and the content is described there. Some analysis and discussion are present. But only the bare minimum.	Okay description of own contribution, but the larger context or reason for it is not so clear.	Summary is present and mostly does sum the report up. But not so clearly written and may miss significant points.
Weak E1 8 E2 7 E3 6	Big problems in presentation, structure or language. Does not look good to the reader and is not easy to read.	The start misses enough information or doesn't build a logical sequence of steps so that it fails to really introduce the topic in a clear way.	Large omissions (e.g. important details missing, no text describing a result, no mathematical working or similar). This makes them hard to follow.	Content that is okay on its own but with little link to anything beyond this document.	A weak summary that misses major points and is poorly structured, perhaps too short or rather too long.
Poor F1 5 F2 4 F3 3	Presentation is seriously messy, language is full of errors, structure is poor, and the layout is not well planned.	The start is poorly written and doesn't really prepare the reader for the content at the core of the report.	Lacking in any good quality presentation of results or discussion thereof. Some content, but not presented in any way that makes it easy for the reader to learn from.	Almost no sense of how this work was part of a group project.	A poor summary that does not make a large amount of sense.
Very Poor (G) No attainment (H) G1 2 G2 1 H 0	Little or no sign of any plan in the content and very difficult to make sense of the report because of the poor presentation	Little or no content whatsoever, or little or none of any relevance to the topic.	Little or no content or relevant content in the results and discussion sections.	No sense whatsoever that this was part of a team effort.	Little or no summary, or one that contains little or no relevant content.

7.4 Areas assessed by the course heads

The following areas are assessed by the course heads.

7.4.1 Group written report

Each group needs to coordinate a group report summarising the achievements of the whole group. This should be written so that it is understandable to a general physics audience (i.e. the course heads) and not just to specialists. This should have a maximum length of **15 pages**. The deadline for this is 1700 on the Thursday of Week 9.

Table 7.7 outlines the criteria that demonstrators will use when assessing your submitted work and interview. Table 7.8 then sets out how the grade you will receive for each of these criteria maps to the 22-point scale

Table 7.7: Marking criteria for group report

Category	Criteria
Presentation and written style	<ul style="list-style-type: none">▪ Is the report neatly word processed with clear labelled diagrams and appropriate figure captions?▪ Is the English correct?▪ Is the report structured and are all the parts tied into the whole?
Abstract, introductory section(s)	<ul style="list-style-type: none">▪ Is there an appropriate abstract?▪ Does the introduction explain what is being done and why?▪ Are the relevant theoretical results quoted?▪ Are the important features of the measurements described and irrelevant detail left out?
Body of the report	<ul style="list-style-type: none">▪ Are the results presented clearly and in a suitable manner?▪ Is the principle of calculations presented?▪ Is there a discussion of the meaning, significance and interpretation of the results?▪ Has an attempt been made to compare the results with accepted values?▪ Have the possible sources of error been considered?
Summary and conclusions	<ul style="list-style-type: none">▪ Are the results of the project summarised?▪ Are sensible conclusions drawn?▪ Are the conclusions supported by the results obtained?▪ Has the student commented on whether the objectives have been achieved?▪ Is there a reasonable attempt to pull all the parts together?
Integration/structure	<ul style="list-style-type: none">▪ Does the document read as a cohesive piece?▪ Is it clear how the work of individuals linked together to create the whole?

Table 7.8: Descriptors mapped to the 22-point scale for group report

	Presentation and written style	Abstract, introductory section(s)	Body of the report	Summary and conclusions	Integration/ Structure
Excellent A1 22 A2 21 A3 20 A4 19 A5 18	Great presentation. Excellent English, both technically (grammar etc.) and stylistically. Uses template very well.	Great summary in the abstract. Introduction introduces the topic very well with an excellent critical review of the key literature.	Excellent description of the work with good use of figures, high quality narrative and strong discussion.	Great summary, reiterating all key points of the report succinctly and informatively.	The report integrates the work of different subgroups well.
Very Good B1 17 B2 16 B3 15	Very good presentation and English. Perhaps one or two minor deficiencies (e.g. typos, layout, text too small on graphs, imperfect figure captions).	Very good start to the report. Just one or two smaller problems, perhaps missing key points, or literature survey not comprehensive.	Very good contents and discussion. Perhaps one or two minor shortcomings (e.g. too brief descriptions, missing analysis, errors not fully detailed, discussion missing key points).	Very good summary but with one or two identifiable weaknesses (e.g. slightly longwinded, missing a key point).	Slight jumps between the work of different contributors.
Good C1 14 C2 13 C3 12	Good presentation. Several smaller deficiencies as noted previously or one larger problem (e.g. illegible graph or bad layout).	A good start to the report. Enough issues to make these introductory sections a little harder to follow than would be ideal.	Good results and analysis. But several smaller weaknesses or one larger problem (e.g. missing discussion of figures or missing content on a key point).	Good summary. Most key content present. Perhaps several smaller things or one larger thing missing or faulty.	Noticeable deficiencies in integrating the work of all in the group.
Satisfactory D1 11 D2 10 D3 9	Presentation just about okay. But a lot of things that could be improved. The report is less attractive and less easy to follow as a result.	A minimally okay start, but with several shortcomings so this is not the clearest start to a report, especially someone coming to the topic afresh.	The sections are present, and results are there. Some analysis and discussion are present. But only the bare minimum, and the group really ought to have done more.	Summary is present and mostly does sum the report up. But not so clearly written and may miss significant points.	A jumpy effect where the sections or paragraphs are not well linked.
Weak E1 8 E2 7 E3 6	Big problems in presentation or language. Does not look good to the reader and is not easy to read.	Not enough information, or does not build a logical sequence of steps in the argument, so hard to really understand what the report is all about.	Large omissions or weakly written (e.g. important information or working missing, no text describing a result, as appropriate to that project). This makes it hard to follow.	A weak summary that misses major points and is poorly structured, perhaps too short or rather too long.	Big problems such that the report looks like several stitched together.
Poor F1 5 F2 4 F3 3	Presentation is seriously messy; language is full of errors and the layout is not well planned.	The start is poorly written and does not help a reader to go from a general knowledge of physics to understanding enough to appreciate the rest of the report.	Lacking in any good quality presentation of the work or discussion thereof. Perhaps some content, but not presented in any way that makes it easy for the reader to learn from .	A poor summary that does not make a large amount of sense.	Major structural problems and quite difficult to follow from one section to the next.
Very Poor (G) No attainment (H) G1 2 G2 1 H 0	Very poor presentation and quality writing making it difficult to understand or follow.	Little or no content whatsoever, or little or none of any relevance to the topic in the heart of the report.	Little or no content or relevant content in these sections.	Little or no summary, or one that contains little or no relevant content.	Little coherence at all in the sections within.

7.4.2 Group oral presentation

The course heads and supervisors will assess the group talks, which will be held as a mini-conference for all group projects on the Thursday of Week 11 in Semester 2 from 1100 to 1700. The markers will not be experts in each project area, and therefore the talks should be prepared so that each project is presented in an engaging and clear way to a scientifically educated but non-specialist audience. This should be a collective presentation to which all group members contribute to the planning thereof, and which should be presented by several of the team. It is not necessary that every team member speaks in the presentation, although every team member is expected to contribute to the preparation of the presentation. Each group will be allowed 20 minutes for their presentation. The course heads will agree on a mark for each group and provide written feedback.

Table 7.9 outlines the criteria that demonstrators will use when assessing your submitted work and interview. Table 7.10 then sets out how the grade you will receive for each of these criteria maps to the 22-point scale.

Table 7.9: Marking criteria for group presentation

Category	Criteria
Timekeeping and overall planning	<ul style="list-style-type: none">▪ Did they keep within the specified time?▪ Is there a clear, logical structure to the presentation?
Quality of slides	<ul style="list-style-type: none">▪ Are the slides well presented – is the layout clear?▪ Are the fonts in an appropriate size and colour?▪ Are figures clear?▪ Are graphs/tables/etc labelled suitably?
Clarity of oral presentation	<ul style="list-style-type: none">▪ Did they speak clearly?▪ Did they engage with the audience?▪ Did the work of different speakers compliment the co-presenters?
Content	<ul style="list-style-type: none">▪ Was the scientific content well described?▪ Was the level appropriate for the audience and the project?▪ Was the work of the individual members integrated to create a cohesive/coherent presentation?
Answers to questions	<ul style="list-style-type: none">▪ Were they able to answer questions?▪ If they couldn't, did they tackle that situation well?

Table 7.10: Descriptors mapped to the 22-point scale for group presentation

	Timekeeping and overall planning	Quality of slides	Clarity of oral presentation	Content	Answers to questions
Excellent A1 22 A2 21 A3 20 A4 19 A5 18	Stuck perfectly to time. Excellent structure and totally clear	Beautiful slides, with well laid out and clear text of appropriate sizes, in colours that promote legibility and with excellent figures.	Clear speaking, and direct to the audience in a way that engages them well.	Excellent scientific content. Clear evidence of great work in the project. Good integration of all sections.	Clear, competent and well-informed answers to questions
Very Good B1 17 B2 16 B3 15	Perhaps small deviations from time (1-2 mins) OR structure very good but with minor issues	Very good slides with just one of two marginal issues, e.g. text slightly small on slides or figures, or colour choices slightly less than optimal	Very good oral presentation, but perhaps with minor issues (e.g. less engaging delivery, not facing audience)	Very good scientific content. Maybe some minor questionable things, or imperfect integration of the different parts of the project	Very good answers to questions, although possibly with minor shortcomings
Good C1 14 C2 13 C3 12	More than one problem in structure and timekeeping, or one larger issue (e.g. time missed by >2 mins)	Good slides. Easy enough to read, even if there are some issues with layout, font sizes or colours/contrast	Good oral presentation but with some issues (e.g. audibility/clarity, or not looking at the audience enough)	Good scientific work. Perhaps some things not so perfectly reported. Maybe some context missing, or parts not connected.	Good answers to questions, but showing evidence of gaps in knowledge
Satisfactory D1 11 D2 10 D3 9	Several significant issues with structure or timekeeping	Slides are okay, but significantly less than perfect. Maybe layout messy, or some text too small, or contrast that makes legibility harder.	OK oral performance and understandable, but not great or really engaging	The work is just OK. But reporting maybe patchy and incomplete, errors are easily visible, or the presentation is seriously disjointed.	Minimally acceptable answers, at least showing understanding of the question, even if answers somewhat lacking
Weak E1 8 E2 7 E3 6	Poor timekeeping (too long or too short) or weak structure	Somewhat messy slides with text that is too small, figures that are a bit difficult to read, and maybe odd colour choices that detract from ease of reading.	Significant deficiencies, perhaps hard to hear, or very monotonic delivery, or really doesn't look at the audience	The content is less than satisfactory. The usefulness of correctness of the work reported is questionable and/or the content is disconnected.	Weak answers to questions, and at a level below expectations at this point in student career.
Poor F1 5 F2 4 F3 3	Poor structure and/or poor timekeeping showing little indication of any planning	Messy slides that are difficult to read and do not present the information well at all, for whatever reason (layout, planning, text sizes, colours/contrasts)	Bad delivery. Maybe mumbling and difficult to understand, and not really engaging in any way at all.	Limited scientific content of any value, and far less than would be expected at this point, and the presentation is disjointed and messy in contents (not just style)	Poor answers, demonstrating little understanding of either the question or of the work performed in the project.
Very Poor (G) No attainment (H) G1 2 G2 1 H 0	Little structure or planning of any sort in evidence resulting also in a poor use of time.	Few slides, or very messy ones with little relevant content.	Little or nothing that makes any sense in anything said.	Little or no correct and relevant scientific content in the presentation, and any information very disconnected.	Little or nothing in the way of a useful answer to any question

7.5 The difference between the group report and the individual report

7.5.1 Group report

Think of your group as a small research/consultancy team within a big company. Your company has been commissioned to carry out some work (e.g. finding out the alternative ways to climate control the Scottish parliament building; investigating the sewage dispersal options for an island community; producing publicity material for the nuclear industry; pinpointing the location of a gamma ray source or feasibility study of complex LG beam production using an SLM etc.) and your team has been put together and tasked to do this work. Your group report is the glossy folder you show to your client at the completion of the project.

You need to remind the client what you've been commissioned to do; lay out the background and context of your work; tell them how you went about tackling the problem; what was done; how the tasks were managed; what were your findings and finally what recommendation you are putting forward (possibly with some hints that it will be a good idea for your client to you give a little bit more money to study the things they have not thought about originally).

You should be spending a lot of time making sure that your work is presented clearly and in a positive light. Your next pay cheque depends on it. This report should not be longer than 15 pages and should be presented as a professional and scientific report. Remember: the client has spent a small fortune. They will want to know all the scientific details and will expect a scientific report.

7.5.2 Individual report

Having completed the project, the various team members go back to the department/division they normally work in. You then need to submit a personal report to your line manager to let them know what you've been up to for the past three months and why you should be given a promotion based on this work. This is your individual report. Here, you should be telling your boss what your contribution to the team project was, how well the group worked together as a team and what you think you have learnt from your experience that you can bring back to your department. You should also briefly introduce the aims and context of the group project and clearly set out your contribution toward the

project. Just to make sure that your boss is convinced of your work, you should not skimp on the science here. However, you should not copy and paste large chunks of the group report.

Most likely, you will have some spare copies of the glossy group report, which you can attach to your personal report. Your boss is super busy. Your individual report, therefore, should not be more than 8 pages long. Having a clear structure to this report will help your boss get to the information she/he wants to find quickly. She/he can then make the decision about what project you should be assigned to next and whether you deserve a pay rise.

7.6 Penalties for late submission

To quote from the policy:

“The University has agreed to introduce consistency in the penalties applied to penalties on students for late submission of coursework, and this has been warmly supported by the SRC. Following consultation, the following formula has been agreed: Work should be penalised at the rate of 2 Schedule A ‘aggregation points’ for each working day (or part day) by which it was submitted after the published deadline. This formula may be applied to a maximum of five working days; work submitted more than five days late should be awarded Grade H.”

In the context of the current course, this means that for each working day after the deadline for the submission of the work for assessment (which is defined here as either arrangement with a marker for an oral assessment on your lab record in your lab book, or the fixed deadline for the submission of laboratory reports at the end of the semester), you will receive a deduction of 2 grade points on the 22 point scale from your assessed mark.

7.7 Plagiarism

Plagiarism is defined as the submission or presentation of work, in any form, which is not one's own, without acknowledgement of the sources. The University's degrees and other academic awards are given in recognition of the candidate's personal achievement. All suspected cases of plagiarism will be handled in accordance with the University Plagiarism Statement, which can be found at <https://www.gla.ac.uk/myglasgow/sld/plagiarism/>

In the context of this course, the above policy is not intended to stop you discussing your project work with other students – that’s an essential part of group work after all. But when it comes to your individually assessed pieces of work, you must ensure that each report is written uniquely, whilst obviously referring at times to communally obtained results.