**MSc Bioinformatics Project (BIOL 5173p); 60 credits (Summer) 2020/21**

**Course information document**

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**Course leader: Dr Mark E. S. Bailey** [**Mark.Bailey@glasgow.ac.uk**](mailto:Mark.Bailey@glasgow.ac.uk) **Tel: x.5994**

**External examiner - Dr V. Anne Smith, Univ. of St Andrews**

**Aims of the course (from the current Course Specification)**

The project aims to equip students with a range of advanced skills in relation to the formulation, planning and practicalities of short research projects. It will give students an insight into how research is carried out in one or more of the fields of bioinformatics, omics analysis and systems biology, and practice in selected research techniques and data analysis approaches. It will give students the opportunity to develop and enhance their analytical and organizational skills through hands-on research and the opportunity to develop their ability to work independently. It will provide practice in the writing of substantial project reports.

**Intended Learning Objectives (from the current Course Specification)**

By the end of this course, students will able to:

* design, plan and undertake original research in bioinformatics and/or omics analysis and/or systems biology;
* critically appraise and select appropriate research techniques used in one or more of these fields;
* identify, synthesise, summarise and critically evaluate prior research data and conclusions in a specific area;
* discuss new research findings in their project area in the context of existing knowledge and in the context of further research;
* present research findings in the form of a high-quality written project report;
* formulate and test hypotheses and solve problems through computer analysis by defining scientific questions and addressing them critically;
* give clear, well-constructed oral and written presentations on advanced topics in their project area;
* plan and manage their time effectively by prioritising tasks and meeting deadlines;
* work co-operatively to develop interpersonal and teamwork skills
* work with a significant degree of autonomy.

**Prerequisites**

The Research Project is conducted after completion of the Diploma stage (120 credits-worth of taught courses) of the programme. In order to progress to the Research Project, a student must have a minimum G.P.A. of 12.0 (equivalent to a C3 grade) in the taught courses. Further prerequisite criteria are given in the University Regulations and Code of Assessment - to summarise the current requirements, the PGT Generic Regulations require that students must have 90 credits at a grade of D3 or above, and all credits at grade F3 or above.

**Expectations**

The Research Project is worth 60 credits. This is equivalent to 600 learning hours. These learning hours must mostly be found within the 14 week project period, so you will be expected to be working on your project full-time. A few of these hours may be spent after you have handed in your project report, as you prepare for your project viva.

**Project Assessment Summary (from the current Course Specification)**

The Research Project contributes one third towards the overall MSc assessment.

The project is assessed using three components:

* **Practical Skills Assessment (20% - Supervisor grade for performance in the project)**
* **A Project Report - Dissertation (55% - made up of 20% Supervisor grade and 35% Assessors’ grade)**
* **A Project Viva - Oral Assessment (25% - Assessors’ grade).**

**Progress in the Project**

Students should inform the course leader, Dr Bailey, about any problems they are having in carrying out the project (problems with the student/supervisor relationship or problems in accessing necessary resources). This is especially important where the project is carried out outside Univ. of Glasgow.

**Mechanism for choosing a project**

A menu of projects available or potentially available within Glasgow University will be circulated during Semester 2. Students may select a supervisor and project from the list, or may find their own choice of supervisor. In both cases, students should approach one or more supervisors by email/phone and ask to meet to discuss possible projects. If two or more supervisors are being considered, courtesy dictates that the student should a) tell each supervisor that this is the case, and b) inform any supervisors not being chosen as soon as a final decision has been made.

Once a decision has been made, the student should inform the Project Course Coordinator (Dr Bailey) who their supervisor is. It is essential that both supervisor and student confirm to each other, in writing (by email), their offer and acceptance, so that misunderstandings do not occur.

***College of Medical and Veterinary Life Sciences (CMVLS)*** - Many of the research-active members of Academic Staff in MVLS are potential project supervisors – they are located within the MVLS Institutes/Schools, as follows:

* Institute of Biodiversity, Animal Health and Comparative Medicine
* Institute of Cancer Sciences
* Institute of Cardiovascular and Medical Sciences
* Institute of Infection, Immunity and Inflammation
* Institute of Molecular, Cell and Systems Biology
* Institute of Neuroscience and Psychology
* School of Life Sciences
* School of Medicine
* School of Veterinary Medicine

***College of Science and Engineering (CoSE)*** - Academic Staff in CoSE with interests coinciding with Bioinformatics research topics work in the schools listed below:

* School of Computing Science
* School of Chemistry
* School of Engineering

You should meet with your supervisor before the project start date to discuss the aims of the project and how you will achieve them. Make sure you thoroughly understand the rationale for the project and the research question(s) that your project will be addressing. Your supervisor is likely to provide you with a small number of starter references; you will need to read and ensure that you understand these and then you will need to read more widely by searching the scientific literature.

**Carrying out research ‘Furth of Glasgow’**

Students may also negotiate to undertake a project elsewhere (e.g. within a bioinformatics research lab or pharmaceutical/biotechnology company) subject to the agreement of the course leader that the project is suitable and the host Institution being approved by the University. Approval must be sought well in advance if the Institution has not hosted one of our students before. Approval will be based on whether facilities, safety considerations and supervision are all acceptable, and that the proposed work is suitable for an MSc project. Any student who wishes to carry out their project ‘furth of Glasgow’ must seek permission well in advance from the Graduate School. You and your proposed supervisor should complete and send to the Graduate School a “Research Furth” application. The application form and further details can be obtained by visiting <http://www.gla.ac.uk/services/postgraduateresearch/researchfurthofglasgow/>. The form also may be downloaded from the MVLS Graduate School web site.

The project is expected to entail full-time research over a 14-week period, no matter whether the host lab is in Glasgow or elsewhere. Students studying furth of Glasgow may not be able to meet their supervisor before the start date, but are expected to have been in touch with them to discuss the project, as above.

**Doing the project and project timeline**

* **Monday 5th July** – this is the official start of the research project period; you work on the project full time for 14 weeks from this date. (The first week is expected to be mostly preparation / background reading / intro writing). Students should have met their supervisor already before this date to discuss the research questions and likely objectives.
* **Friday 16th July** – send a brief (1 page max.; an extended para is probably sufficient) summary of the project background/remit/aims/objectives/ and major methodological approaches to Dr Bailey, the Course Coordinator. This is NOT expected to contain a summary of results thus far.
* **Friday 10th Sept. (approx.)** – send a brief (1 page max.) summary of the project aims/objectives/major methodological approaches/progress to date to your assessors, if they have been set by then - do this as soon as you know who your assessors are.
* **Monday 20th Sept. (approx.)** – submit a draft of the project report to your supervisor (ensure a date is agreed in advance to suit your supervisor’s availability around their Semester 1 commitments).
* **Monday 11th October 2pm** – submission deadline for written project report.  
  **Only under *exceptional circumstances* beyond the student’s control will an extension be allowed – this must be discussed with the Course leader, Dr Bailey, in advance of the hand-in date.**
* **Friday 15th October to Tues. 26th October** – your project viva with your assessors should take place within this period.

The project is a very important part of the Programme. Use of time during the project will be flexible, but you will be expected to do some initial reading, spend the bulk of your time carrying out full-time computer work, and spend approximately the last 2-3 weeks writing the project report. Your supervisor will read a first draft of the report and make comments on it if you submit it a reasonable length of time in advance of the hand-in deadline.

It is expected that either the supervisor or a member of their research group (collaborating academic, postdoctoral scientist, bioinformatician, PhD student) will be available to provide assistance while you are with their team. This does not mean that someone will be standing over you the whole time, but that you will always know that there is someone around who is able to help. You can expect to have approx. 1 hour per week contact time with the person looking after you (primary supervisor, or supervisory team, or day-to-day supervisor). If your primary supervisor is not your day-to-day supervisor, please ensure that you have at least several meetings with your primary supervisor over the course of the project. Your primary supervisor should also be the person who makes sure that your project report draft is read and that comments and feedback are given to you in timely fashion (they may delegate a good portion of this task).  
Ensure that you keep accurate, up-to-date and complete records of all methods and data/code - including backups! Even if things go wrong and you don’t meet all your objectives, it is still possible to generate a good project report by analysing what went wrong or caused slower progress than expected, and by recommending and discussing alternative approaches to the central research question that might be used in future work.

Details about the structure of the project report and how to submit it are given below.

Assessment of the Project

All assessment is governed by the University Regulations and Code of Assessment. The Code of Assessment is published in full in the “University Fees and General Information for Students” section of the University Regulations. Details of the marking system used for PGT project assessments in the School of Life Sciences (subject to minor changes between now and the end of the project period) are given in **Appendix 1** of this document.

The basic principles underlying the code are that:

* Each item of assessment (end-of-course exam question, project report, class test, laboratory reports, essays etc.) will be judged against the “Primary verbal descriptors” listed in Schedule A to determine the primary grade to be awarded; these descriptors define the grade in terms of how well the candidate has demonstrated attainment of the Intended Learning Outcomes (ILOs).
* The primary verbal descriptors described in Schedule A are generic and are intended to cover every course and degree programme in the University. Additional guidance is provided by the marking criteria for specific types and levels of assessment.
* Each item of assessment will also be given a secondary band within the primary grade (see Schedule A); the secondary band is equivalent to a numerical score (known as a ‘grade point’) that can be used in the aggregation process.
* The overall published result for a course will be calculated from the numerical grade points equivalent to the secondary bands for the individual items of assessment.
* The secondary band for each item of work is first converted to the equivalent grade point indicated in Schedule A (e.g. A2 = 21, C2 = 13). In calculating the Course grade, items are first aggregated to assessment components, and components are then aggregated to calculate the overall course grade. In each of these two aggregation stages, each grade point is multiplied by the appropriate relative weighting for that assessment (see **Relative Weighting of Assessment** section) and summed to give an overall weighted average grade point. This is rounded to give an integer weighted average grade point (e.g. 16.50 rounds up to 17, 16.45 rounds down to 16. Rounding is from the second decimal place directly to the integer value). The integer grade point is then converted to the equivalent grade indicated in Schedule A for reporting.

Your performance in the research project will be assessed by your project supervisor and by a team of two assessors, according to a number of different criteria. There are three assessment components - performance, report and project viva. The supervisor will give an assessment based on your performance in the project, assessing initiative, sticking to objectives and agreed deadlines/milestones, general competence, attendance etc., as well as the progress you made towards the objectives of the project. The supervisor will also give an assessment based on the project report. The assessors will, separately, give an assessment based on the project report, and will also give an assessment based on your performance in a short oral (‘viva’) exam (approx. 30-40 mins). If the supervisor and assessors disagree on the grade for the report, a third assessor may mark it as part of a ‘moderation’ process and a final report grade will be approved by the course coordinator after this process. The 3 assessment components will be aggregated with the following weightings:

- Supervisor Performance component 20%

- Supervisor Report (item) 20%

- Assessors (joint) Report (item) 35% Report component total = 55%

- Assessors (joint) Viva component 25%

Role of the assessors - at least one of the assessors will usually have research or technical expertise of direct relevance to the student’s project (although this cannot be guaranteed when we have big year classes). It is perfectly acceptable for the assessors to give objective advice during the project on matters relevant to the project, routes to solving problems etc. so long as a) any explicit advice from an assessor that was implemented in the project is acknowledged in the project report, and b) the assessor never at any time has an overtly supervisory role in the project - they must be seen to be independent of the supervisor and able to be objective in their marking.

Re-assessment - if your overall project grade is D1 or lower, you will be offered re-assessment in the re-assessable components - these are the report and the project viva. The performance grade is not re-assessable.

Feedback - you can expect to get formative feedback all the way through your project, through discussions with your supervisory team and colleagues in the research team. If you give presentations as part of lab meetings, the discussion/questions provoked by your presentation constitute feedback. You will be given some feedback on your report and project viva.

Project viva

**Students are expected to make themselves available for the project viva up to 3 weeks after the project report hand-in deadline**. The student should contact both assessors approx. 1-2 days after the hand-in deadline and ask them, politely, to arrange the viva meeting in timely fashion. Students should endeavour to make themselves available at a time the assessors can do. It is appropriate, however, for a student to bring to their attention any restrictions due to employment-related, illness- or disability-related or timezone issues (if the student is not in Glasgow) - they will do their best to accommodate these requests. Please do NOT propose a date&time to your assessors, they will propose these and inform you. For 2020/21 it is quite OK to hold the viva over Zoom/TEAMS.

The student will sit down with both assessors and chat about the project for somewhere between 20 and 40 mins. Although part of the formal assessment, a degree of informality should be expected, to avoid an ‘inquisition’-type atmosphere. That said, the assessors’ role is to get underneath what the project report contains and test the student’s understanding.

It is good practice to prepare well for the project viva by being very familiar with what is written in the report and with what happened during the project, as well as by preparing a (brief) verbal explanation of what the project was about and its implications/context. Students should note that in a viva it is not expected that a student (even to be awarded an ‘A’ grade) will be able to answer every question asked, so it is important not to be worried that you are performing badly because you failed to answer some questions. Take a moment to consider your response before rushing in with your answer, and make your answer as concise and focussed as possible (though obviously in most cases a little more than simply “yes” or “no” will be required!). If you don’t understand a question, ask for clarification, or for the question to be rephrased, don’t just waffle on and hope that the right answer will be somewhere in the waffle. Similarly, if you don’t know the answer, say so (although there is nothing to stop you admitting that you don’t know for sure but giving a hypothesis of what you might predict from your other knowledge).

Degree viva with the external examiner

**THIS SECTION DOES NOT APPLY IN 2020/21 - THERE WILL BE NO DEGREE VIVAS.**

**Students are expected to make themselves available for the degree viva up to the date of the Board of Examiners’ meeting, which may be as late as the first week of XXXXX, but is more likely to be in mid-XXXXX**. **You will be told approx. 2 months in advance of the Board of Examiners’ meeting if it is possible that you might be called for a degree viva. Students who are not told they may be called can assume that they will NOT be called.**

Students may be asked to attend a viva with the external examiner and one internal examiner - these vivas will only be conducted for a) students whose taught programme GPA satisfied the criteria for promotion if they were to end up on a discretionary borderline (for Merit or Distinction) after the project, and b) students who have additionally satisfied the criteria for consideration for promotion on the basis of their project grade and their degree programme GPA, but have not been automatically promoted under the other discretionary criteria\*. Questions during the viva may relate to your project/dissertation or to general bioinformatics and omics/systems biology issues; these general questions are likely to relate to things that you have covered in the courses you took.

Remember that the viva may help to move some students upwards across a boundary (students who have averaged 14.1 to 14.9 but without a predominance of B grades may be awarded Merit as a result of a good degree viva performance, for example) but it is not possible for a student to be awarded a result in a category below that dictated by their programme GPA as a result of a poor viva - **the degree viva can only help your grade and cannot hurt it**. If you cannot attend the degree viva because you are no longer in Glasgow, you may lose out on promotion to Merit or Distinction, but it cannot hurt your final result. We shall endeavour to hold degree vivas electronically for students that have had to leave Glasgow for good reasons before the viva date, but it cannot absolutely be guaranteed.\*\*

\*in addition, this year, we shall also have applied any additional calculations and criteria under the ‘no detriment’ policy, before making decisions about which students qualify for consideration for promotion.

\*\*this will partly be determined by lockdown or other COVID-19-related measures in force at the time of the Board of Examiners’ meeting.

Format of Research Project Reports & Marking Sheets

***Instructions to Students***

Project Report Submission

You are required to submit your report and all appendices online via Moodle assignment. No hard copies are required, but you may like to make one for yourself (to bring to your project viva) and your Supervisor(s) might appreciate having one each. The online submission (across two different files - see below) must contain:

* The report itself as a pdf file
* Any appendices you see fit to include containing code or raw data/long lists etc.
* Compiled program executables if there are any (only if you wrote significant amounts of code and one objective of the project was to create a working app or prototype)
* A README file explaining what is contained in the appendices and how to run any executables (only if you wrote significant amounts of code)
* A manual for any program executables included (only if you wrote significant amounts of code)

You should submit TWO files (maximum - if you have no appendices, just submit the report file):

* ONE file containing ONLY the report pdf (max. size 230MB)
* ONE compressed/zipped file containing ALL the appendices and other material (max. size 230MB)
* **Remember - in submitting, you MUST have declared that the work is yours - we shall set up the Moodle assignment to require to submit the online declaration).**

You should retain a copy of the report and the other submitted materials for your own records.

If you are doing a project furth of Glasgow and can’t get access to the Moodle at the relevant time, you MUST contact Dr Bailey in advance of the deadline to discuss the situation.

**Late submission will lead to a deduction in marks in proportion to the amount of time the work has been handed in late (according to the published scheme: 2 sub-grades per whole or part day late), unless mitigating circumstances can be established.** No extensions will be granted to students who do not make contact in advance of the deadline. It is possible to apply for Good Cause AFTER the deadline in the usual way - all Good Cause-related contingencies will be handled according to the policy in place for 2020/21, as applied to the project course - further details on that will be available in due course.

Project Report Format

A report of approx. 5,000 words, excluding Figure/Table legends, Table text, references etc., would be appropriate; fewer words can be used if concise reporting allows, but 13-14 weeks-worth of work is unlikely to fit into fewer than approx. 3,500 words. The report should be prepared by word-processing, with page numbers throughout, using at least 1.5 line spacing (double-spacing is preferable), with a 3.5cm left margin and 2.5cm margins around the other 3 sides. Fonts used should be of appropriate size and easy to read (serif fonts such as Times New Roman are fine; many people now use Calibri or Verdana or similar; appropriate font size varies with font, from 9pt to 12pt; this CID is written in Calibri 10pt; do not use fancy fonts as used on posters/flyers/invitations).

If you are producing a hard copy of the report for yourself or your supervisor, print it single sided on 75g or 80g A4 paper, with thicker card used for the first and last pages if possible, and bound firmly into an appropriate folder that can be opened flat easily (i.e. it must not have an inflexible spine: Duraclip is not acceptable; good quality spiral binding is acceptable; hard cover binding is allowed, but is obviously a bit more expensive).

Please Note: It is important that you should use the conventions, nomenclature, style and abbreviations appropriate to publications in the research area. Please ask your supervisor for a suitable source of guidance. A comprehensive source (with embedded links to other sources) is the Biochemical Journal Instructions to Authors (http://www.portlandpresspublishing.com.ezproxy.lib.gla.ac.uk/content/submission-guidelines; you may need to go in via the library>ejournals gateway system to see this page)

There is a range of possible project report styles, based on the type of project students have carried out. These fall largely into two main types – i) those mainly involving analysis of biological data, and ii) those largely involving coding / computing science methodologies. You should choose a report format appropriate to the type of project you have done. It is possible to use a format that mixes elements of both types of report, as long as clarity is preserved. To keep it simple for these instructions, however, typical layouts for the two types of project are given below:

*Biological project - projects focussing more on analysis of data*

**Overall:**Reports are accounts of work undertaken, written in a certain style - the style is quite like a research paper, but without the ‘shorthand’ that paper authors often indulge in to save space. Reports should be written in the past tense and it’s usual to use the passive voice to avoid problems with use of the personal ‘...and then I did this...’ etc.  
i.e. ‘A pipeline was constructed to automate the analysis of....’, rather than ‘Pipelines can be constructed....’, or ‘A pipeline is constructed....’ or ‘I construct a pipeline...’ or ‘A pipeline will be /was to be constructed...’

**Title Page:**Give the title of the project, your name and student number, the name of the MSc programme you are on, the name of your supervisor(s), and at the bottom the statement: “A report submitted in partial fulfilment of the requirements for the MSc Bioinformatics Degree at The University of Glasgow”, followed by the month/year of submission.

**[Dedication:**Some students include a dedication to one or more individuals - this is perfectly acceptable, but by no means required.]

**Summary:**Give a clear, concise summary of the project work completed (450 words maximum); this should be completely independent of the rest of the report (very much like the abstract of a paper) and contain no references or undefined abbreviations.

**Acknowledgements and TOC:**You may want to include an acknowledgements section, and perhaps a Table of Contents if the report structure is complicated. Neither of these is obligatory.

**Abbreviations:**List non-standard abbreviations and their meanings. Abbreviations are best kept to a minimum — “If in doubt, spell it out!”. They should also be defined in full on the first occasion on which they occur in the text. In the abbreviations list, do not include official gene symbols/names or SI units. If no abbreviations are used, this section may be omitted.

**Introduction and Aims:**In no more than approx. 800 words, give the background to the project and state the research question(s) and/or aims and/or objectives. This is *not* intended to be an *extensive* literature survey. Rather it should provide the background information needed so that a bioinformatician unfamiliar with the particular field can understand the project. It should explain the motivation for the study and research questions to be tackled, and should culminate in the Aims statements. The ‘aims’ should be a short, precise statement (often best framed as a ‘research question’, as an alternative to stating ‘aims’) of what the project set out to do (even if this was not completely achieved); the ‘objectives’ should list the main ways in which that overall goal was to be met.

**Materials and Methods:**In this section give sufficient detail in order that the work could be repeated, but without writing it as a series of ‘instructions’. You must make it clear in your report that you know how the methods work – this is best done by   
a) giving sufficient detail and b) writing in a way that *demonstrates* (rather than preaches/teaches) your understanding i.e. you should not write as if copying from a textbook/website/manual. You should also be prepared to talk in your viva about the principles on which each method works.

**Results:***This is the most important section of the report.* **The results should be presented in the text as a narrative, and the main result of each investigation/chunk of work should be clearly and explicitly stated in that narrative** - it is important that it be written like this so that the reader can follow the logic of the work (do include a brief re-statement of the rationale/intention for each bit) and see what was achieved. Figures and Tables etc. are deployed to illustrate those results and must be clear and well-annotated, where appropriate. Thus, under no circumstances should the Results section consist solely of a set of Figures and Tables.  
**Each figure/table should come as soon as possible after the text that first refers to it**. Do not repeat data from Figs&Tables in the text, but **do clearly describe the rationale for the experiment/analysis and state its overall or key result in the text**. If the flow of the report dictates, you can have a ‘Results and Discussion’ section, in which results are discussed as you go along because decisions about what experiments/analysis to do next required it. This format should only be used where non-obvious choices had to be made. Each Figure or Table should have a title. Tables *may* require legends. Figures must *always* have a legend. You can present negative/failed/non-enlightening results as well as positive results.

Students often worry about how to fit all their results into a report of limited length. There are two solutions:

* Don’t put in all your results! Pick a selection that best illustrate the story you are trying to tell in your report
* Put results you see as essential but that won’t fit into the main body of the report into an Appendix at the end of the report (if quite brief; this does NOT contribute to the word count) or supply them in the bundle you submit as a separate file containing a set of Appendices; this is NOT a dumping ground for everything you did or generated (you can provide that for your supervisor separately if you want) - be selective, only submit what’s needed for your assessment; your assessors may or may not choose to look at separately submitted files, but it would be there if they chose to

**Discussion:**You should analyse the results in the context of previous results from your supervisor’s research group and/or from other research groups. Some discussion of the results themselves is usually warranted – were the results as predicted – if not, why not? etc. – in addition to the wider context and implications. Some elements of discussion may be best positioned within the Results section, if that’s the only way to maintain flow, particularly where the subsequent analysis/action depends on interpretation of, or decision-making based on, the previous result.

**Conclusions/Further Work:**This can be a separate section or part of the Discussion. You should draw overall/general conclusions about the extent to which the aims&objectives of the project were achieved and your research questions answered. You should present some ideas about where you would have taken the project if you had had more time, and/or what additional research questions now look interesting to you.

**References:**  
References should be cited in the text either by author surname or using sequential numbering. If using the former, the citation format should be ‘(Author, year)’, or ‘(Author and Coauthor, year)’, or ‘(Author *et al*., year)’. Do not include author initials, and do not include all author names if there are more than two authors.

The Reference section should be formatted as for papers published in the Biochemical Journal (this advice can be found at <https://paperpile.com/s/biochemical-journal-citation-style/>), except that you may use either alphabetical by first author surname, or sequential numbering. In both cases, different types of reference should be given according to the following summary:

*References to papers in journals:*

Igarashi, K. and Kashiwagi, K. (1999) Polyamine transport in bacteria and yeast. Biochem. J. **344**: 633-642

*Names and initials of all authors (or first 6 if there are more than 12 authors; followed by ‘et al.’), the paper or chapter title, the journal, the volume, first and last page numbers, should be provided for all references*. *Titles of journals should be abbreviated in accordance with* [***PubMed***](https://www.ncbi.nlm.nih.gov/pubmed/)*. Full stops should be included for each word abbreviated, e.g. Biochem. J.*

*References to chapters in books and monographs should be in accordance with the following example:*

Jackson, A. A. and Moran, B. J. (1995) Intestinal flora in the conservation of body nitrogen. In Role of Gut Bacteria in Human Toxicology and Pharmacology (Hill, M. J., ed.), pp. 39-58, Taylor and Francis, London

*References to a paper 'in press' are permissible provided that it has been accepted for publication:*

Smith, A. (2015) Another paper. Biochem. J., *in press*

*Alternatively, for papers published online, if the doi (digital object identifier) is known, then this should be cited instead:*

Flashman, E., Watkins, H. and Redwood, C. (2006) Localization of the binding site of the C-terminal domain of cardiac myosin-binding protein on the myosin rod. Biochem. J., doi:10.1042/BJ20060500

References to 'personal communication' and 'unpublished work' are permitted in the text only, not in the list of references

*URLs:*

WWW URLs are permitted in the text only, not in the reference list, and should be quoted only when a literature reference(s) will not suffice. Do include the date on which the webpage was accessed when citing it in the text (you do NOT need to add a ‘last accessed on...’ to web URL references, nor to journal articles in your reference list). DO **NOT** GIVE THE JOURNAL WEBPAGE OR GOOGLE SEARCH URL or PubMed PMID FOR REAL JOURNAL ARTICLES AND BOOKS - CITE THESE AS SPECIFIED ABOVE.

*Computing project - projects focusing more on design and implementation of new code or computing tools*

**Overall, Title Page, Summary, Acknowledgements, Abbreviations, Introduction&Aims, and all other ‘generic’ advice:**As above. Also as above - see guidance about what to do if your results won’t fit given the word limit.

*Special sections that only apply to this format:*

**Analysis:**These sections may comprise any of the following that are pertinent - problem statement, background survey, approach to be taken and work plan, requirements capture - some of these sections may be deployed instead of an introduction and aims section if appropriate.

**Product:**These sections may comprise any of the following that are pertinent - software design, implementation, program documentation.

**Evaluation:**These sections may comprise any of the following that are pertinent - testing and user evaluation, suggestions for future work.

As for biological-type projects above, the ‘results’ or ‘outcomes’ should be presented in the text under one or more of these headings. Use clear figures and tables to illustrate those results/outcomes. Do not repeat data from figs&tables in the text, but do clearly describe the rationale for the actions/decisions taken and state the outcome clearly in the text. Each figure or table should have a title. Tables *may* require legends. Figures must *always* have a legend. You can present negative/failed/non-enlightening outcomes as well as positive outcomes. For those projects that involve coding, it is often most appropriate to put all or most of the source code in a text appendix or appended computer file. In some cases, it will not be possible to include the source code or executable in the appended material - where this is the case, an explanation should be given in a text Appendix for why it proved impossible to include it.

**Discussion:**In addition to the evaluation, you should analyse your outcomes in the context of previous results/products from your supervisor’s research group and/or from other research groups. Some discussion of the outcomes/products themselves is usually warranted – were the outcomes/product functionality as predicted? if not, why not? what were the main problems that need solving and could they have been avoided, were there other workarounds etc. – in addition to the wider context and implications.

**Conclusions/Further Work:**This can be a separate section or part of the Discussion. You should draw overall/general conclusions about whether your objectives have been met and your research questions answered. You should say something about what you would like to have done next had there been more time, and/or what additional research questions now look interesting to you.

**References:**  
As above. Computing Science journals may have their own conventions about how they should be cited/formatted in the bibliography – use these.

Reports can also comprise any combination of pertinent headings given under both types of project above.

Key advice for project report writing

**Submit a draft!!!:** This sounds obvious but a few students always seem to leave everything till the last minute and their draft is no more than a few outline notes. Make sure you work on compiling your written report from early on in the project, so that you can submit a draft that is as good as you can get it, in order to get really useful feedback. Make sure you know the timescale within which your supervisor is available to read a draft (and ensure that there will be plenty of time for you to make any changes by submitting a draft early!!).

**Aim for understanding *before* you write:** You can only communicate effectively material that you have fully understood yourself. Where there are clear misunderstandings in basic aspects this will significantly lower your grade.

**Demonstrate depth of knowledge:** Don’t waste lots of words on re-iterating the basic facts that you’ve learned in your undergraduate degree or that have been covered extensively in the MSc lectures (and certainly don’t present these, even where they are necessary to the background, as if you are giving a lecture to Level 1 undergraduate students). You demonstrate your mastery of the basics in the way you deploy them in your writing. We want to see evidence that you’ve moved beyond the taught course material for your project/dissertation.

**Focus:** a common error is to lose focus and start rambling about problems that emerged or issues that are ancillary to the main questions – aim to be concise and focus on the main points.

**Logical flow is paramount:** try to make sure that every section starts with a lead-in to join it to the previous, has a main body that brings in points in good logical order, and ends with a lead-in to the following section (except your final paragraph!).

Plagiarism

We expect students to observe all the rules about plagiarism, including the need to acknowledge appropriately the source of any partial or whole Figures/diagrams, usually in the Figure legend (see below).

In Computing projects, there is potential for plagiarism in software development and in project reports. There are guidelines issued by School of Computing Science (see below for an extract) that explain the circumstances in which it is legitimate to use another person’s work and how that work should be acknowledged.

Plagiarism can easily be detected by a variety of means, including sophisticated software that is routinely used in the School.

Please remind yourself of the University regulations on plagiarism and its consequences, available via MyGlasgow.

**Plagiarism Guidelines (as they apply to projects)**

The guidelines for preparing submitted work can be summarised simply as follows:

Do your own work; do not expect anyone else to do any part of it for you.

Whenever you have good reason to include or summarise another person’s work, acknowledge it clearly.

You should of course discuss your work with your supervisor(s) and seek help when needed. You may also discuss your work with other students in order to share *ideas* (provided that you do not share or copy code, plans, or designs). Such discussions are a normal and healthy part of higher education.

**Guidelines for Software Development (Programs, Spreadsheets, Databases, etc.)**

In the context of software development, plagiarism arises if you submit code written by another person, presenting it as your own work.

Copying another student’s code, or code written by a researcher or found online, is never acceptable, whether the code is typed in from a hand-written draft, typed in from a discarded printout or copied electronically.

If you attempt to disguise copying by, for example, changing identifiers, variable names or comments, that does not change the fact of plagiarism.

If you collaborate with another student on what was meant to be an individual piece of programming work, and if you conceal the collaboration, that is plagiarism. If you clearly acknowledge the collaboration, that is not plagiarism, but you will be assessed on the basis of your share of the work only.

If you reuse program code obtained from any source (such as a colleague or website or textbook), that is plagiarism unless you clearly acknowledge the source.

*Examples*

***Acceptable:*** Students A and B (or student A and research group member B), discussing ways to implement a programming solution, decide that a particular algorithm would be a suitable choice; student A then goes away and codes that algorithm independently.

***Acceptable:*** Student A is referred by student or research group member B to a textbook, paper or web example that illustrates a programming technique relevant to student A.

***Acceptable:*** Student A is shown by student or research group member B how to use a compiler feature.

***Unacceptable:*** Students A and B work jointly on a coding solution and common lines of code written jointly appear in programs contributing to the results of the project, with or without acknowledgement of the contribution of the other student.

***Unacceptable:*** Students A and B work jointly on a coding solution and student A uses lines of code written by student B without student B’s knowledge.

***Unacceptable:*** Student A finds a discarded printout or file of a program, retypes/copies it, perhaps changing identifiers and comments in an attempt to disguise the source.

***Unacceptable:*** Student A reuses code from a textbook, without acknowledgement.

***Unacceptable:*** Student A uses data extracted from a public database or mined from a web site, without explicit acknowledgement.

***Unacceptable:*** Student A pays another person (who may or may not be another student) to produce code for a project.

***Acceptable:*** In a team project (and only if so designated at the beginning of the project and accepted as such by the Course leader, Dr Bailey), the students collaboratively write software, documentation, and the report. Each student’s individual contribution is clearly identified in the report. MOST PROJECTS ARE NOT TEAM PROJECTS - THIS RULE ONLY APPLIES IN RARE CIRCUMSTANCES. IN MOST CASES, ALL THE WORK REPORTED MUST BE YOUR OWN.

**Plagiarism Guidelines (as they apply to project reports)**

Every project culminates in a report. This is a full account of the project work, and may include code and/or documentation.

In this context, plagiarism arises if you include any text, diagrams, images, data, code, documentation, or even ideas generated by another person, presenting these as your own work.

A project report is *expected* to review relevant previous work. For example, every project involving software development should be influenced by ideas from previous projects; and every research project should be informed by relevant previous research. Your report must therefore include a bibliography/reference list, which lists *all* books, articles, web sites, etc. that you consulted and then cited (or used code from) in the course of your project. In the text of your report, wherever you mention previous work, you must explicitly cite the appropriate bibliographic item(s). Failure to cite the source would amount to an attempt to present another person’s ideas as your own, which would be plagiarism.

Occasionally it may be appropriate for you to quote another person’s words verbatim, provided that you enclose the words in quotation marks and immediately acknowledge their source. For example:

“Testing can prove the presence of errors, but can never prove their absence.” (Dijkstra *et al*., 19xx)

If your report includes diagrams, images, data, etc. taken from other sources, you must cite these sources.  
Figures duplicated from sources need to be acknowledged by ‘taken from...’;  
Figures edited/cropped from sources need to be acknowledged by ‘taken from...’ or by ‘adapted from...’ or by ‘modified from...’;  
Figures you have created yourself but that are based substantially on source(s) need to be acknowledged by ‘redrawn from...’ or similar.

*Examples*

***Acceptable:*** The survey chapter/introduction of a student’s report summarises (without use of unique phrases/sentences verbatim) ideas previously published in an article, which is listed in the bibliography and explicitly cited in the survey chapter.

***Unacceptable:*** As above, but the article is not explicitly cited in the survey chapter/introduction.

***Unacceptable:*** A student reproduces or paraphrases (i.e. with minimal rephrasing) text from a published article or website or another student’s report, without explicit acknowledgement.

***Unacceptable:*** A student reproduces an image from a published article or website or another student’s report, without explicit acknowledgement.

***PROJECT ASSESSMENT MARKSHEET A: Supervisor’s Report on student’s performance in the project***

|  |  |
| --- | --- |
| **Name of Candidate:** |  |
| **Student No.:** |  |
| **Supervisor(s):** |  |
| **Project Title (brief):** |  |

Please assign a **grade** (i.e. A4, B3, C2 etc.; on the Schedule A 22 point scale) to the student **on the basis of *your evaluation of the student’s performance while carrying out the project****.*

The standard postgraduate-level criteria for the award of each grade will be sent to you separately. The grade you award should take account of the assessment headings listed below, although the relative contribution under different headings may vary at your discretion. The grade should be based on how well the student tackled the project and on your analysis of how much they have achieved relative to reasonable expectations for a PGT student. The degree outcome boundaries are tabulated overleaf. The project has a weighting of 33.33% towards the overall grade point average for the degree programme. The project grade is weighted 40% supervisor (comprising **20% for performance in the project**, 20% for the report itself), 60% joint agreed grades from the assessors (comprising 35% for the report, 25% for the project viva). All students progressing to the MSc project will have achieved an overall grade of C3 or higher in the 120 credit taught portion of the course.

**Assessment headings** (*please tick the appropriate boxes*):

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Specimen only -  not for use by markers | **Excellent**  (Distinction standard) A grade | **Very Good**  (Merit standard) B grade | **Adequate to Good**  (Degree Pass standard) C grade | **Below adequate**  (Diploma standard or below) D grade or below |
| Overall |  |  |  |  |
| Understanding of the challenges thrown up by the project |  |  |  |  |
| Initiative, ideas contributed, perseverance, acceptance of advice, organisational skills |  |  |  |  |
| Progress and practical computing skills - given realistic objectives for a PGT student, how much progress was made? |  |  |  |  |
| Attendance, timekeeping, commitment |  |  |  |  |

(*See overleaf for comment space and grading scheme summary*)

**Grade awarded (e.g. A2, B1, C3 etc):**

Supervisor’s name & signature:

|  |  |  |
| --- | --- | --- |
|  | **Print Name** | **Signature** |
| Supervisor: |  |  |
|  | Date: |  |

Please return NO LATER THAN **Friday xxth November** as Word doc or scan pdf (electronic signature is OK) by email to Jacqui Hope (Jacqueline.Hope@glasgow.ac.uk AND cc. Mark.Bailey@glasgow.ac.uk). Jacqui can be contacted on   
0141 330 3349, CMVLS Graduate School Office, Room 111, Sir James Black Building.

**Marker Comments for the Board of Examiners: the external examiner expects to see comments from markers, so we ask you to add a few lines here commenting on the student’s performance in the project – please address some or all of the following, briefly:**

|  |  |
| --- | --- |
| **Aspects of the performance of the project** | **Comments** |
| **Recognising the challenges**: did the student do sufficient background reading? Did they recognise what the project was about and its rationale and research questions, and were they able to define/understand the goals of the project and potential challenges in doing the project? |  |
| **Understanding the approach taken**: did the student understand the reasons for taking the approach that was taken in the project? |
| **Design of the software or analysis**: Did the student cotton on quickly to the principles on which, and process by which, the software tool was designed or the analysis undertaken? Was appropriate consultation with stakeholders undertaken (where appropriate)?  Specimen only -  not for use by markers |
| **Implementation/Testing/Evaluation of software**: where appropriate, did the student partake fully in the design of any software testing/evaluation procedures? Was any software the student wrote of good technical quality and was it appropriately functional? |
| **Analysis results**: where appropriate, did the student conduct analyses of the data in a sensible manner? Was their analysis fully guided, or partly independent? If the latter, was creativity displayed? |
| **Conclusions/Suggestions for future work:** Did the student come up with ideas/explanations for the ‘results’ as they appeared during the project? Was the student proactive in responding to events, or to helpful criticism/suggestions from the supervisor? |
| **General Comments:** (include reference to any particular difficulties the student may have faced that were not of their own making) |

**Grading Scheme: Grade Meaning (overall MSc result  
(Schedule A) of this grade would be equivalent to:)**

A1,A2,A3,A4,A5 Distinction (MSc)

B1,B2,B3 Merit (MSc); ; please note that a grade of B1 in the project   
 overall is sufficient to earn the student a Merit in the degree if   
 they satisfy the other requirements

C1,C2,C3 Pass (MSc); please note that a grade of C1 in the project   
 overall is sufficient to earn the student a Merit in the degree if   
 they satisfy the other requirements

D1,D2,D3 Diploma standard only; please note that a grade of D3 in this   
 course overall is required for the award of the MSc degree

E1,E2,E3 Below diploma standard

F1,F2,F3 Below diploma standard – a grade of F3 in this course overall   
 is required for the award of the Diploma

G1,G2 Below diploma standard

H No work of any merit undertaken

***PROJECT ASSESSMENT Feedback: Supervisor’s Report on student’s performance in the project***

|  |  |
| --- | --- |
| **Name of Candidate:** |  |
| **Student No.:** |  |

**Supervisor Comments for the student: we are required to give feedback - you should add a few lines here commenting on the student’s engagement with and performance in the project; this should be short and include two or three suggestions for improvement, where appropriate (i.e. for all students where you awarded a grade of A2 or less):**

Specimen only -   
not for use by markers

|  |  |
| --- | --- |
| **Aspects of project performance** | **Supervisor Comments** |
| **Overall engagement and performance in the project** |  |
| **Recognising the challenges and understanding the approach taken, research question, aims, objectives etc.** |
| **Design of the software/analysis and implementation** |
| **Analysis results or user testing** |
| **Interpretation of results, identification of problems to address** |
| **Areas for improvement in future projects:**  1.  2.  3. |
| **General Comments:** (include reference to any particular difficulties the student may have faced that were not of their own making) |

***PROJECT ASSESSMENT MARKSHEET B: Supervisor’s Report on the project report***

|  |  |
| --- | --- |
| **Name of Candidate:** |  |
| **Student No.:** |  |
| **Supervisor(s):** |  |
| **Project Title (brief):** |  |

Please assign a **grade** (i.e. A4, B3, C2 etc.; on the Schedule A 22-point scale) to the student **on the basis of *your reading of his/her project report****.*

The standard postgraduate-level criteria for the award of each grade will be sent to you separately. The grade you award should take account of the assessment headings listed below, although the relative contribution under different headings may vary at your discretion. The grade should be based on how well the student has written about the project (not how well they performed during the project). The degree outcome boundaries are tabulated overleaf. The project has a weighting of 33.33% towards the overall grade point average for the degree programme. The project mark is weighted 40% supervisor (comprising 20% for performance in the project, **20% for the report itself**), 60% joint agreed grades from the assessors (comprising 35% for the report, 25% for the project viva). All students progressing to the MSc project will have achieved an overall grade of C3 or higher in the 120 credit taught portion of the course.

**Assessment headings** (*please tick the appropriate boxes*):

Specimen only -   
not for use by markers

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Excellent**  (Distinction standard) A grade | **Very Good**  (Merit standard) B grade | **Adequate to Good**  (Degree Pass standard) C grade | **Below adequate**  (Diploma standard or below) D grade or below |
| Overall |  |  |  |  |
| General written expression, style and presentation of report |  |  |  |  |
| Introduction and rationale |  |  |  |  |
| Clarity of description of the work undertaken and discussion thereof |  |  |  |  |
| The student’s evaluation of progress made, or of software produced, incl. Summary and Conclusions / Further work |  |  |  |  |

(*See overleaf for comment space and grading scheme summary*)

**Grade awarded (e.g. A2, B1, C3 etc):**

Supervisor’s name & signature:

|  |  |  |
| --- | --- | --- |
|  | **Print Name** | **Signature** |
| Supervisor: |  |  |
|  | Date: |  |

Please return NO LATER THAN **Tuesday xxth November.** as Word doc or scan pdf (electronic signature is OK) by email to Jacqui Hope (Jacqueline.Hope@glasgow.ac.uk AND cc. Mark.Bailey@glasgow.ac.uk). Jacqui can be contacted on   
0141 330 3349, CMVLS Graduate School Office, Room 111, Sir James Black Building.

**Marker Comments for the Board of Examiners: the external examiner expects to see comments from markers, so we ask you to add a few lines here commenting on the project report – please address some or all of the following, briefly:**

|  |  |
| --- | --- |
| **Aspects of the report** | **Comments** |
| **Defining the problem**: has the student understood and explained simply and clearly what the project was actually about – i.e. how the background led to the project idea and the rationale behind the research questions and project goals? |  |
| **Explaining the approach taken**: has the student researched different approaches that could have been taken and understood the reasons for choosing the approaches selected? Have the approaches used been described/explained clearly? |
| **Design of the software or analysis**: Has the student explained the principles on which, and process by which, the software tool was designed or the analysis undertaken? Was appropriate consultation with stakeholders undertaken and explained in the report (where appropriate)?  Specimen only -  not for use by markers |
| **Implementation/Testing/Evaluation of software**: where appropriate, was software tested and its functionality evaluated? |
| **Analysis results**: where appropriate, were sensible analyses of the data conducted, and are these analyses presented in a sensible manner? |
| **Discussion/Conclusions/Suggestions for future work:** Has the student addressed the progress they have made and identified additional work that follows on, either to complete what was intended or to take the project further? |
| **General Comments:** (include reference to any particular difficulties the student may have faced; you could also, if relevant, comment on the report structure in relation to the project, or on the use of English (this must not, of course, be taken into account in the grading where English is not the first language of the student) |

**Grading Scheme: Grade Meaning (an overall MSc result  
(Schedule A) of this grade would be equivalent to:)**

A1,A2,A3,A4,A5 Distinction (MSc)

B1,B2,B3 Merit (MSc); ; please note that a grade of B1 in the project   
 overall is sufficient to earn the student a Merit in the degree if   
 they satisfy the other requirements

C1,C2,C3 Pass (MSc); please note that a grade of C1 in the project   
 overall is sufficient to earn the student a Merit in the degree if   
 they satisfy the other requirements

D1,D2,D3 Diploma standard only; please note that a grade of D3 in this   
 course overall is required for the award of the MSc degree

E1,E2,E3 Below diploma standard

F1,F2,F3 Below diploma standard – a grade of F3 in this course overall   
 is required for the award of the Diploma

G1,G2 Below diploma standard

H Nothing of any merit submitted

***PROJECT ASSESSMENT Feedback: Supervisor’s Report on project report***

|  |  |
| --- | --- |
| **Name of Candidate:** |  |
| **Student No.:** |  |

**Supervisor Comments for the student: we are required to give feedback - you should add a few lines here commenting on the student’s report; this should be short and include two or three suggestions for improvement, where appropriate (i.e. for all students where you awarded a grade of A2 or less):**

|  |  |
| --- | --- |
| **Aspects of project report** | **Supervisor Comments** |
| **Overall quality of the report** | Specimen only -  not for use by markers |
| **Defining the problem and explaining the approach taken** |
| **Design of the software/ analysis and implementation** |
| **Analysis results or user testing** |
| **Interpretation of results, discussion, conclusions, identification of problems to address** |
| **Areas for improvement:**  1.  2.  3. |
| **General Comments:** (include reference to any particular difficulties the student may have faced that were not of their own making) |

***PROJECT ASSESSMENT MARKSHEET C: Assessors’ Report on the project report***

|  |  |
| --- | --- |
| **Name of Candidate:** |  |
| **Student No.:** |  |
| **Supervisor(s):** |  |
| **Project Title (brief):** |  |

Please assign a **grade** (i.e. A4, B3, C2 etc.; on the Schedule A 22-point scale) to the student **on the basis of *your reading of his/her project report****.*

The standard postgraduate-level criteria for the award of each grade will be sent to you separately. The grade you award should take account of the assessment headings listed below, although the relative contribution under different headings may vary at your discretion. The grade should be based on how well the student has written about the project (and to some extent your analysis of how much they have achieved), but not on how good the project idea was, as this was not necessarily influenced by the student. The degree outcome boundaries are tabulated overleaf. The project has a weighting of 33.33% towards the overall grade point average for the degree programme. The project mark is weighted 40% supervisor (comprising 20% for performance in the project, 20% for the report), 60% joint agreed grades from the assessors (comprising **35% for the report**, 25% for the project viva). All students progressing to the MSc project will have achieved an overall grade of C3 or higher in the 120 credit taught portion of the course.

**Assessment headings** (*please tick the appropriate boxes*):

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Excellent**  (Distinction standard) A grade | **Very Good**  (Merit standard) B grade | **Adequate to Good**  (Degree Pass standard) C grade | **Below adequate**  (Diploma standard or below) D grade or below |
| Overall |  |  |  |  |
| General written expression, style and presentation of report |  |  |  |  |
| Introduction and rationale |  |  |  |  |
| Clarity of description of the work undertaken and discussion thereof |  |  |  |  |
| The student’s evaluation of progress made, or of software produced, incl. Summary and Conclusions / Further work |  |  |  |  |

(*See overleaf for comment space and grading scheme summary*)

**Agreed grade awarded (e.g. A2, B1, C3 etc):**

(*Both assessors must agree this grade*)

Assessors’ names & signatures:

(*Each assessor must fill in a copy of this report themselves, but both assessors must have agreed the grade and signed both copies*)

|  |  |  |
| --- | --- | --- |
|  | **Print Name** | **Signature** |
| Assessor 1: |  | Specimen only -  not for use by markers |
| Assessor 2: |  |  |
|  | Date: |  |

Please return NO LATER THAN **Tuesday xxth Nov.** as Word doc or scan pdf (electronic signature is OK) by email to Jacqui Hope (Jacqueline.Hope@glasgow.ac.uk AND cc. Mark.Bailey@glasgow.ac.uk). Jacqui can be contacted on   
0141 330 3349, CMVLS Graduate School Office, Room 111, Sir James Black Building.

**Marker Comments for the Board of Examiners: the external examiner expects to see comments from markers, so we ask you to add a few lines here commenting on the project report – please address some or all of the following, briefly:**

|  |  |
| --- | --- |
| **Aspects of the report** | **Individual Assessor Comments (these do NOT have to be agreed)** |
| **Defining the problem**: has the student understood and explained simply and clearly what the project was actually about – i.e. how the background led to the project idea and the rationale behind the research questions and project goals? | Specimen only -  not for use by markers |
| **Explaining the approach taken**: has the student researched different approaches that could have been taken and understood the reasons for choosing the approaches selected? Have the approaches used been described/explained clearly? |
| **Design of the software or analysis**: Has the student explained the principles on which, and process by which, the software tool was designed or the analysis undertaken? Was appropriate consultation with stakeholders undertaken and explained in the report (where appropriate)? |
| **Implementation/Testing/Evaluation of software**: where appropriate, was software tested and its functionality evaluated? |
| **Analysis results**: where appropriate, were sensible analyses of the data conducted, and are these analyses presented in a sensible manner? |
| **Discussion/Conclusions/Suggestions for future work:** Has the student addressed the progress they have made and identified additional work that follows on, either to complete what was intended or to take the project further? |
| **General Comments:** (include reference to any particular difficulties the student may have faced; you could also, if relevant, comment on the report structure in relation to the project, the suitability of the project, or the use of English (this must not, of course, be taken into account in the grading where English is not the first language of the student) |

**Grading Scheme: Grade Meaning (an overall MSc result  
(Schedule A) of this grade would be equivalent to:)**

A1,A2,A3,A4,A5 Distinction (MSc)

B1,B2,B3 Merit (MSc); ; please note that a grade of B1 in the project   
 overall is sufficient to earn the student a Merit in the degree if   
 they satisfy the other requirements

C1,C2,C3 Pass (MSc); please note that a grade of C1 in the project   
 overall is sufficient to earn the student a Merit in the degree if   
 they satisfy the other requirements

D1,D2,D3 Diploma standard only; please note that a grade of D3 in this   
 course overall is required for the award of the MSc degree

E1,E2,E3 Below diploma standard

F1,F2,F3 Below diploma standard – a grade of F3 in this course overall   
 is required for the award of the Diploma

G1,G2 Below diploma standard

H Nothing of any merit submitted

***PROJECT ASSESSMENT Feedback: Assessors’ Report on project report***

|  |  |
| --- | --- |
| **Name of Candidate:** |  |
| **Student No.:** |  |

**Joint Assessor Comments for the student: we are required to give feedback - both assessors should agree on a few lines of feedback to add here, commenting on the student’s project report; this should be short and include two or three suggestions for improvement, where appropriate (i.e. for all students where you awarded a grade of A2 or less); only one copy of this form should be returned, jointly prepared by both assessors:**

|  |  |
| --- | --- |
| **Aspects of project report** | **Joint Assessor Comments** |
| **Overall quality of the report** | Specimen only -  not for use by markers |
| **Defining the problem and explaining the approach taken** |
| **Design of the software/ analysis and implementation** |
| **Analysis results or user testing** |
| **Interpretation of results, discussion, conclusions, identification of problems to address** |
| **Areas for improvement:**  1.  2.  3. |
| **General Comments:** (include reference to any particular difficulties the student may have faced that were not of their own making) |

***PROJECT ASSESSMENT MARKSHEET D: Assessors’ Joint Report on the project viva***

|  |  |
| --- | --- |
| **Name of Candidate:** |  |
| **Student No.:** |  |
| **Supervisor(s):** |  |
| **Project Title (brief):** |  |

Please assign a **grade** (i.e. A4, B3, C2 etc.; on the Schedule A 22-point scale) to the student **on the basis of *the student’s performance in the project viva****.*

The standard postgraduate-level criteria for the award of each grade will be sent to you separately. The grade you award should take account of the assessment headings listed below, although the relative contribution under different headings may vary at your discretion. The grade should be based on how well the student performed during the project *viva*. *The student should NOT have to answer questions/hear comments about the nature of the project idea or inherent limitations to what could have been achieved in the project, where the student did not have input into its inception*. The degree outcome boundaries are tabulated overleaf. The project has a weighting of 33.33% towards the overall grade point average for the degree programme. The project mark is weighted 40% supervisor (comprising 20% for performance in the project, 20% for the report), 60% joint agreed grades from the assessors (comprising 35% for the report, **25% for the project viva**). All students progressing to the MSc project will have achieved an overall grade of C3 or higher in the 120 credit taught portion of the course.

**Assessment headings** (*please tick the appropriate boxes*):

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Excellent**  (Distinction standard) A grade | **Very Good**  (Merit standard) B grade | **Adequate to Good**  (Degree Pass standard) C grade | **Below adequate**  (Diploma standard or below) D grade or below |
| Overall |  |  |  |  |
| General ability to explain simply the project idea, background, rationale and research questions/aims |  |  |  |  |
| Clarity of description of the work |  |  |  |  |
| The student’s insight into the degree of progress made, or the quality/functionality of software produced, and their ability to explain the implications of the work and suggest avenues for further exploration |  |  |  |  |

(*See overleaf for comment space and grading scheme summary*)

**Agreed grade awarded (e.g. A2, B1, C3 etc):**

(*Both assessors must agree this grade*)

Assessors’ names & signatures:

(*Both assessors must fill in this single form together, with an agreed wording overleaf, and hand in a single copy*)

|  |  |  |
| --- | --- | --- |
|  | **Print Name** | **Signature** |
| Assessor 1: |  | Specimen only -  not for use by markers |
| Assessor 2: |  |  |
|  | Date: |  |

Please return NO LATER THAN **Tuesday xxth Nov.** as Word doc or scan pdf (electronic signature is OK) by email to Jacqui Hope (Jacqueline.Hope@glasgow.ac.uk AND cc. Mark.Bailey@glasgow.ac.uk). Jacqui can be contacted on   
0141 330 3349, CMVLS Graduate School Office, Room 111, Sir James Black Building.

**Marker Comments for the Board of Examiners: the external examiner expects to see comments from markers, so we ask you to add a few lines here commenting on the project *viva* – please address some or all of the following, briefly:**

|  |  |
| --- | --- |
| **Aspects of the viva performance** | **Jointly Agreed Assessor Comments** |
| **Overall** performance in the *viva* | Specimen only -  not for use by markers |
| **Defining the problem**: was the student able to demonstrate their understanding of what the project was actually about – i.e. how the background led to the project idea and the rationale behind the project goals? |
| **Explaining the approach taken**: had the student clearly researched different approaches that could have been taken and understood the reasons for choosing the approaches selected? Were the approaches used described/explained clearly? |
| **Design of the software or analysis**: Did the student explain the principles on which, and process by which, the software tool was designed or the analysis undertaken? Did they describe appropriately any consultation with stakeholders that they undertook (where appropriate)? |
| **Implementation/Testing/Evaluation of software/Analysis of data**: Did the student adequately describe testing and functional evaluation of any software produced, or the results of the analysis they undertook? |
| **Conclusions/Suggestions for future work:** Did the student address the progress they have made and identify additional work that follows on, either to complete what was intended or to take the project further? |
| **General Comments:** (include reference to any particular difficulties the student may have faced; you could also, if relevant, comment on the suitability of the project, or the use of English (this must not, of course, be taken into account in the grading where English is not the first language of the student) |

**Grading Scheme: Grade Meaning (an overall MSc result  
(Schedule A) of this grade would be equivalent to:)**

A1,A2,A3,A4,A5 Distinction (MSc)

B1,B2,B3 Merit (MSc); ; please note that a grade of B1 in the project   
 overall is sufficient to earn the student a Merit in the degree if   
 they satisfy the other requirements

C1,C2,C3 Pass (MSc); please note that a grade of C1 in the project   
 overall is sufficient to earn the student a Merit in the degree if   
 they satisfy the other requirements

D1,D2,D3 Diploma standard only; please note that a grade of D3 in this   
 course overall is required for the award of the MSc degree

E1,E2,E3 Below diploma standard

F1,F2,F3 Below diploma standard – a grade of F3 in this course overall   
 is required for the award of the Diploma

G1,G2 Below diploma standard

H Nothing of any merit submitted

***PROJECT ASSESSMENT Feedback: Assessors’ Report on project viva***

|  |  |
| --- | --- |
| **Name of Candidate:** |  |
| **Student No.:** |  |

**Joint Assessor Comments for the student: we are required to give feedback - both assessors should agree on a few lines of feedback to add here, commenting on the student’s project viva; this should be short and include two or three suggestions for improvement, where appropriate (i.e. for all students where you awarded a grade of A2 or less) ; only one copy of this form should be returned, jointly prepared by both assessors:**

|  |  |
| --- | --- |
| **Aspects of project viva** | **Joint Assessor Comments** |
| **Overall performance in the viva** | Specimen only -  not for use by markers |
| **Defining the problem and explaining the approach taken** |
| **Design of the software/ analysis and implementation** |
| **Analysis results or user testing** |
| **Interpretation of results, discussion, conclusions, identification of problems to address** |
| **Areas for improvement:**  1.  2.  3. |
| **General Comments:** (include reference to any particular difficulties the student may have faced that were not of their own making) |

**Marking Schedule for Masters Level Project Courses in School of Life Sciences 2020/21 (with specific modifications for the MSc Bioinformatics programme) – contains ‘Schedule A’ criteria**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Primary Grade** | **Gloss** | **Secondary Band** | **Grade Point (for aggregation)** | **Descriptor** | **Equivalent to degree Class** |
| A | Excellent | A1  A2  A3  A4  A5 | 22  21  20  19  18 | *Schedule A descriptor*: 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.  *PGT course interpretation*: Excellent work, outstanding in every way and demonstrating a high level of consistency, of grasp of the relevant theoretical and practical issues, and of integrative thinking, and with all work described/laid out in a manner consistent with good scientific practice. Project work demonstrates independence of thought and critical analysis and all aspects are completed to a thoroughly professional standard with data quality and analysis in all essentials at a level expected of refereed publications. No essential information or analysis missed, and issues are addressed directly. There is evidence of extensive critical reading and the ability to synthesise the important aspects into a comprehensive and coherent text, with good logical flow throughout the narrative and good linking between sections. Cited references cited are directly relevant and appropriately up-to-date, and are cited and listed appropriately, using a well-formatted reference list with few if any errors. Writing contains only unimportant (trivial) factual or grammatical errors. Both quantity and quality of work are excellent within the time constraints. Conclusions constitute an appropriate summary of the detail and are placed in the appropriate context. Award of an A grade indicates that the student would be an excellent candidate for progression to a research degree. | MSc DISTINCTION |
| B | Very Good | B1  B2  B3 | 17  16  15 | *Schedule A descriptor*: 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.  *PGT course interpretation*: Very good work in nearly all respects. Completely sound work in quantity and quality with a very good grasp of the relevant theoretical and practical issues throughout but with some relatively minor deficiencies in presentation, design, description of the practical work, data analysis or review of existing knowledge. Good presentation and structure of the report, but there may be some relatively minor deficiencies in presentation or content. Virtually all key aspects of the project have been addressed. Critical analysis and integration/synthesis skills are visible, though of reduced quality relative to work of A grade standard. Little irrelevant material is included. References and citations are presented well, but with minor errors here and there. Work receiving a B grade normally indicates that the student would be a good or at least appropriate candidate for progression to a research degree. | MSc MERIT |
| C | Good | C1  C2  C3 | 14  13  12 | *Schedule A descriptor*: 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.  *PGT course interpretation*: In this band, work is mostly good, but may be merely adequate or slightly below average in some respects - this grade is awarded for work that demonstrates knowledge and understanding at a level that we would expect from the vast majority of MSc students. The work shows a good grasp of the relevant theoretical and practical issues in most areas. There is some evidence of critical analysis and integration, and relevant aspects of the project are addressed almost throughout. There may be some inconsistencies or shortcomings in presentation, organisation, analysis, understanding of concepts and engagement with the literature. Reference lists and citations may contain some errors and inconsistencies, particularly of formatting. There should be evidence of adequate effort. C3 is equivalent to a grade point average of 12.0, which students need to achieve across the whole MSc degree in order to pass the degree. | MSc PASS |
| D | Satisfactory (for Diploma only) | D1  D2  D3 | 11  10  9 | *Schedule A descriptor*: 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.  *PGT course interpretation*: In this band, work is mostly adequate, some aspects may be good, but overall it will be somewhat below average in many respects. The work demonstrates an acceptable grasp of the main theoretical and practical issues and several relevant aspects of the project are described and analysed but there may be insufficient critical analysis, or some significant aspects of the project may not have been fully addressed, or use of relevant literature may be limited. There may be significant omissions, or inclusion of irrelevant material, or the writing and explanations do not demonstrate understanding at Masters level. Reference citations and list may have substantial shortcomings. Overall, a project awarded a D grade is not deemed to be of Masters standard, but may contribute to the MSc qualification if counter-balanced by higher grades in other courses. D3, equivalent to a grade point average of 9.0, is the lowest grade allowed in the project overall if a student is to qualify for an MSc degree pass. Students awarded less than a D overall in the project, or less than a GPA of 12.0 (C3) overall across the whole degree, are likely to qualify for the award of a PG Diploma. | DIPLOMA PASS |
| E | Weak | E1  E2  E3 | 8  7  6 | *Schedule A descriptor*: Attainment deficient in respect of specified intended learning outcomes, with mixed evidence as to the depth of knowledge and weak deployment of arguments or deficient manipulations.  *PGT course interpretation*: In the programme as a whole, a grade point average equivalent to an E grade would not be adequate for either Masters or Diploma level. The work shows some merit, but with a limited grasp of the main theoretical and practical issues and/or important aspects of the project are not addressed. Explanation of background, rationale, aims, approaches and findings will be substantially inadequate. Data and analyses presented will be obviously incomplete or misrepresentative of the data used/generated. Discussion and conclusion will fail to address relevant points in a coherent way or in the context of the current state of the field, and integration and synthesis will be notably lacking. Citation and listing of references may be peremptory. | FAIL |
| F | Poor | F1  F2  F3 | 5  4  3 | *Schedule A descriptor*: Attainment of intended learning outcomes appreciably deficient in critical respects, lacking secure basis in relevant factual and analytical dimensions.  *PGT course interpretation*: Mostly inadequate performance. Some effort is evident, but the work does not represent a coherent attempt to present a project conducted at an acceptable level. Very limited grasp of the main theoretical and practical issues and very limited evidence for any integration or synthesis. Substantially incomplete descriptions. F3 is equivalent to a grade point average of 3.0, which is also the lowest grade point allowed in the project if it is to count towards a PG Diploma. |
| G | Very poor | G1  G2 | 2  1 | *Schedule A descriptor*: 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.  *PGT course interpretation*: Totally inadequate in nearly every respect. No more than a token effort to present work or address any of the ILOs. Virtually no relevant aspects of the work are described and the work reflects extremely limited grasp of the main theoretical and practical issues. References may be absent. If the work delivered has some scientific words/phrases, but essentially no meaningful scientific content and there has been no attempt to meet any of the ILOs, award a G2. |
| H |  |  | 0 | *Schedule A descriptor*: No convincing evidence of attainment of intended learning outcomes, such treatment of the subject as is in evidence being directionless and fragmentary.  *PGT course interpretation*: H is only given when a student fails to submit a report entirely. |
| 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. [This outcome is awarded by the course coordinator - supervisors and assessors do not have a direct role in this decision] |  |