1 Assessment of Level 4 Projects

Updated 2018/2019 JHW

1.1 Guidelines for Students, Supervisors and Readers

The project will be assessed by two examiners, who will normally be the project supervisor and a nominated reader.

The assessed work consists of:

- A **dissertation**, with a fixed page limit. 40/30 pages for 40/20 credit projects **85%**
    - along with all source code and supplementary materials.
- A public **presentation**. **5%**
- An appraisement of the student's **professional conduct** during the year. **10%**

The dissertation is primary evidence of student output. No matter how well a student does in the supervisor's eyes, it is the dissertation that is marked. It must be possible to justify the mark awarded from the dissertation without other reference to the student's other achievements. All other evidence (video, source code, raw data) is supplementary. Marks will be awarded on the basis of the dissertation. The dissertation is the lens through which the product is viewed.

The assessment will also include the supervisor's judgement of the professional conduct of the student. This is an important part of the assessment and should not be taken lightly.

1.2 Learning outcomes

The assessment should assess the student's attainment of the learning outcomes for the project module. These outcomes are listed below. An excellent project should excel in all of these aspects.

Students should be able to:

1. Manage and organise a large independent solo piece of work
2. Choose among technologies, tools and approaches and apply them effectively
3. Synthesise technical skills appropriately to address a single challenging problem
4. Develop a substantial product which demonstrates technical achievement in computer science.
5. Appropriately evaluate the outcome of their work
6. Conduct themselves in a professional manner, taking responsibility for the progress of the project, recording their time and effectively using their supervisor's input
7. Write a coherent, literate dissertation that documents the project, justifies decisions made and sets their work in context
8. Present their work orally to a technical audience, communicating their project precisely and fluently
9. Produce concise, informative visual summaries of their work

2 Assessment Criteria

The assessment criteria for Level 4 projects, together with their weights are shown below. The supervisor can vary the weights for those components in gray for a particular project by ±5%. Weights for *Professional Conduct* and *Presentation Skills* are fixed.

There are two marking schemes: one for software engineering-type projects, and one for research-type projects. Some projects involve a mixture of both software engineering and research; markers should use their judgement.

2.0.1 Marking process

The supervisor and reader must mark the project in detail, by deciding a band for each criterion and providing a written justification for the band. **The *Presentation* and *Professional Conduct* elements are marked by the supervisor only.**

In arriving at bands supervisors and readers should exercise their judgement regarding the difficulty level of the project and achievement of the student. A less challenging project may be easily completed, whilst a more challenging project might be incomplete but a more impressive achievement.

2.0.2 Combined Honours Students

A combined honours project carries 20 credits, rather than 40 credits for a single honours project. See the addendum for 20 credit projects.

2.1 Software Engineering projects

2.1.1 Analysis 15%

Clarity of thought; precise formulation of problem; understanding of context.
Has the student analysed the problem, and devised a suitable approach for solving it? Has the student surveyed relevant literature and existing software products? Has he/she captured the requirements?

2.1.2 Software Product 40%

Software design, implementation, and documentation where appropriate
Is the software well-designed, functional, reliable, robust, efficient, usable, maintainable, and well-documented? Has it been demonstrated? Is the product represented adequately in the dissertation?

2.1.3 Evaluation 10%

Testing and user evaluation where appropriate; suggestions for future work Has the software been thoroughly tested, and subjected to appropriate user evaluation? Does the student have good suggestions for further work?

2.1.4 Dissertation 20%

Completeness and coherence, organisation, literacy, bibliography
Is the dissertation complete, well-organised, and literate? Does it clearly explain the problem, and how the software was designed, implemented, tested, and evaluated? Does it contain a bibliography and proper citations? Is it well illustrated with appropriate technical imagery?

2.1.5 Professional Conduct 10%

Engagement with supervisor; independence; time management; tool use
Did the student attend meetings, and engage effectively with the supervisor? Was time in meetings used well? Were suitable tools used to manage the project? Was time managed effectively? Did the student *lead* the project? (see the Professional Conduct marking scheme)

2.1.6 Presentation 5%

Oral presentation skills
Did the content reflect a knowledge and understanding of the work done? Were questions handled well? Were visual aids used effectively? Was the delivery fluent and confident, with good eye contact?

2.2 Research-style projects

2.2.1 Analysis 15%

Clarity of thought; precise formulation of problem; understanding of context.
Has the student analysed the problem, and devised a suitable approach for solving it? Has the student surveyed relevant literature? Have clear research questions been developed?

2.2.2 Research Product 40%

Quality of the research, innovation, rigour in the way it is conducted,
Has the research been conducted well (i.e. scientifically sound)? Does it show evidence of original thinking? Are there significant errors? Would the research be worth of publication after revision?

2.2.3 Evaluation 10%

Evaluation of research results, scientific analysis, suggestions for further work
Has the student critically evaluated and analysed the research results? Is the evaluation an honest and fair assessment of the study? Are results summarised and communicated well (appropriate graphics, statistical analysis, etc.) Is there evidence that the significance of the research is understood? Are there good suggestions for further work?

2.2.4 Dissertation 20%

Completeness and coherence, organisation, literacy, bibliography
Is the dissertation complete, well-organised, and literate? Does it clearly explain the problem, and how the software was designed, implemented, tested, and evaluated? Does it contain a bibliography and proper citations? Is it well illustrated with appropriate technical imagery?

2.2.5 Professional Conduct 10%

Engagement with supervisor; independence; time management; tool use
Did the student attend meetings, and engage effectively with the supervisor? Was time in meetings used well? Were suitable tools used to manage the project? Was time managed effectively? Did the student *lead* the project? (see the Professional Conduct marking scheme)

2.2.6 Presentation 5%

Oral presentation skills
Did the content reflect a knowledge and understanding of the work done? Were questions handled well? Were visual aids used effectively? Was the delivery fluent and confident, with good eye contact?

3 Reconciliation and Arbitration

First and second markers bands may differ. Where this happens:

- If marks differ by 0–2 bands, the supervisor's overall mark will be taken as the final mark.
- If marks differ by more than 2 bands, the supervisor and reader must confer to reconcile their marks. If they are unable to agree, the projects coordinator will invoke arbitration.
- All markers must agree on a joint text justifying the reconciled grade and enter this into the system before marking is complete.
- If marks differ by more than 4 bands, arbitration should normally be invoked.
- A project which receives a reconciled grade of a less than D3 (fail) or a grade of A1 or A2 must be third marked.
- The projects coordinator has absolute discretion to invoke arbitration for any other reason, for example: where the two marks fall on either side of a critical borderline; where one of the markers requests it; or where the agreed mark seems unreasonably high or low; where there is any question of collusion of markers.
- Arbitration entails engaging a third marker, who marks the projects independently. All three markers confer to decide the final mark.
- In cases of unresolved dispute after arbitration has completed, the projects coordinator has final authority to assign a mark.

3.0.1 Grade Descriptors

Project grade descriptors are presented below. Because projects vary so much in content and style, markers will have to interpret these guidelines using their own judgement. High A grades are *exceptional* and should not be awarded lightly. Grade descriptors for the *Presentation Skills* component are shown on the following page.The marking scheme for *Professional Conduct* follow, along with a checklist of questions to help assess professional conduct consistently.

4 Grade descriptors

4.1 Project marking scheme

4.1.1 A1-A5 Excellent

Analysis The problem analysis is excellent. The survey is comprehensive. The approach is definitely feasible.
Product The product is extremely well designed, implemented, and documented.
Evaluation The evaluation is extremely thorough. There are excellent suggestions for further work.
Dissertation The dissertation is complete, very well organised, very clear, and highly literate.
Overall An excellent project. Few errors. Shows good judgement and skill in the methods used.

A1 or A2 indicates a *truly* outstanding and challenging project, definitely worthy of wider dissemination.

4.1.2 B1-B3 Very Good

Analysis The problem analysis is very good. The survey is wide. The approach is feasible.
Product The product is very well designed, implemented, and documented.
Evaluation The evaluation is very thorough. There are very good suggestions for further work.
Dissertation The dissertation is complete, well organised, clear, and literate.
Overall A very good project. Some flaws but the student has demonstrated a high level of competence and initiative.

4.1.3 C1-C3 Good

Analysis The problem analysis is good. The survey is reasonable. The approach is reasonably feasible.
Product The product is well designed, implemented, and documented.
Evaluation The evaluation is quite thorough. There are some good suggestions for further work.
Dissertation The dissertation is nearly complete, fairly well organised, mostly clear, but occasionally less than literate.
Overall A good project. There are flaws but the student has demonstrated competence and initiative.

4.1.4 D1-D3 Adequate

Analysis The problem analysis is adequate. The survey is patchy. The approach is just about feasible.
Product The product is adequately designed, implemented, and documented.
Evaluation The evaluation is just adequate. There are unconvincing suggestions for further work.
Dissertation The dissertation is partly complete, not very well organised, clear in parts, and often less than literate.
Overall A fair project. There are many flaws but the overall performance is satisfactory.

4.1.4.1 A grade below D3 is a fail.

4.1.5 E1-E3 Weak

Analysis The problem analysis is rather confused. The survey is inadequate. The approach is unconvincing.
Product The product is inadequately designed, implemented, and documented.
Evaluation The evaluation is barely adequate. There are weak suggestions for further work.
Dissertation The dissertation is incomplete, disorganised, mostly unclear, and mostly less than literate.
Overall A weak project. There are significant flaws, indicating a lack of understanding of the methods used.

4.1.6 F1-F3 Poor

Analysis The problem analysis is confused. The survey is poor. The approach is ill-conceived.
Product The product is badly designed, implemented, and documented.
Evaluation The evaluation is inadequate. There are scant suggestions for further work.
Dissertation The dissertation is scrappy, disorganised, unclear, and less than literate.
Overall A poor project. There are major problems but also signs of some work.

4.1.7 G1-G2 Very poor

Analysis The problem analysis is very confused. The survey is very poor. The approach is very ill-conceived.
Product The product is very badly designed, implemented, and documented.
Evaluation The evaluation is worthless. There are worthless or no suggestions for further work.
Dissertation The dissertation is very scrappy, disorganised, opaque, and less than literate.
Overall A very poor project. There are major problems and very few signs of any constructive work.

4.1.8 H No significant attempt

4.2 Presentation marking scheme

4.2.1 A1-A5 Excellent

Organisation Choice of topics to summarise this part of the project indicates an excellent knowledge and understanding of the work done. Handles questions very well, revealing a depth of insight into the work.
Visual aids Very attractive and informative visual aids, communicating effectively a summary of the key points to the audience.
Delivery Fluent, confident delivery. Good audience involvement by means of frequent and effective eye contact. Flowing narrative from one topic to next.

4.2.2 B1-B3 Very good

Organisation Topics chosen indicate a very good knowledge and understanding of the work done. Handles questions well, revealing some insight into the work.
Visual aids Visual aids are informative in general and succeed in communicating effectively a summary of the key points to the audience.
Delivery Mostly fluent, confident delivery. Good eye contact and narrative flow from one topic to next.

4.2.3 C1-D3 Good/adequate

Organisation Topics chosen indicate some knowledge and understanding of the work, however responses to questions betray little insight into the work.
Visual aids Visual aids are satisfactory to good, though some of the key issues are lost to the audience, perhaps because there are too many points to be covered in the time available, or the visual aids do not contain enough information.
Delivery Hesitant or somewhat hesitant delivery. Some eye contact in places, though mostly faces the screen. Disjointed narrative flow from one topic to next.

4.2.4 E1-E3 Weak

Organisation Topics chosen indicate a weak knowledge and understanding of the problem to be solved, which is also reflected in answers to questions.
Visual aids Visual aids are weak, with the result that the audience is confused.
Delivery Halting delivery. Very little eye contact – possibly reading entirely from notes. Little narrative flow from one topic to next.

4.2.5 F1-G2 Poor/very poor

Organisation The content of the talk is minimal or largely inappropriate and reveals a significant lack of knowledge and understanding of the problem to be solved.
Visual aids Visual aids are poor or non-existent, giving very little benefit to the audience.
Delivery Incoherent, disorganised delivery. No eye contact. No narrative flow from one topic to next.

4.2.6 H No significant attempt

4.3 Professional Conduct Marking Scheme

Professional conduct varies according to supervisor style. Use your judgement to decide what aspects are relevant. But make clear to students what you expect, and how you will assess it if you deviate from these guidelines.

Good professional conduct should demonstrate independence; courtesy; organization; time management; adherence to legal and ethical guidelines; and technical project management.

A1-A5: *Exceptional* professionalism. The student carried out independent work, was always prepared thoroughly, very effectively applied appropriate tools and made excellent use of your time. For high A grades (A1-A3), this should reflect the level of professionalism you would expect from a professional consultant, and be genuinely impressive on *all* counts.

B1-B3: Solid professional conduct. Work was independent, perhaps with some intervention required to keep things moving. Not all best practices followed with minuting meetings or preparing for them, but a clear attempt shown to use time effectively. Acceptable use of tools, but unsophisticated or overcomplicated use of version control, etc.

C1-C3: Acceptable conduct. A reasonable level of guidance was required with scoping required by the supervisor throughout the project. Meetings were not always useful or content had to be repeated. Use of tools was present but not clear student was using them effectively.

D1-D3: Barely acceptable conduct. Significant help in planning and running project required. Unable to take forward project without step-by-step instructions. Suggestions for improvement not taken on board. Meetings were sometimes a waste of time and were missed on occasion. Very limited use of tools.

E1-E3: Unacceptable conduct. Only a limited effort by the student in running the project. Meetings never minuted, little to no preparation for meetings, incorrect or inappropriate use of tools. Student was rude/uncooperative. Failed to follow basic professional practices (e.g. failed to get ethical clearance after being informed to do so).

F1-F3: Poor conduct. Student needed hand-holding the whole way through the project. Meetings largely wasted. No use of tools. Failed to follow basic practices. Could not be trusted to work on their own. Student failed to communicate or was wilfully obstructive.

G1-G2: Problematic conduct. Student did not take any responsibility for the project. Student was hostile or effectively absent. No understanding of appropriate tools. Serious violations of basic practices, even after warning.

H: Only if student is never seen during project (this should never happen!).

4.3.1 Professional Conduct: Checklist

These questions are intended to give a basis to consider student professional behaviour. Some may not apply, and you should interpret them as you see fit.

4.3.2 Meetings

Did the student attend meetings regularly, and rearrange when required?
Did the student attend meetings reasonably on time? (by academic standards!)

Did the student come prepared to meetings?
- With a clear status report?
- With prepared questions to ask?
- With demo/code ready to show (if appropriate)?

Did the student record in some way (e.g. minutes) what was said in meetings? (or did you find yourself repeating yourself?)
- Did you get a chance to review minutes taken?

Was the student polite and courteous in meetings?
Overall, did the student make good use of your time?

4.3.3 Independence and motivation

Did the student take initiative in leading the work?
Were they proactive in doing background research, exploring ideas and bringing their own thoughts to the project?
Did the student complete the project without requiring step-by-step handholding?
Did the student take on board suggestions intelligently?
Did the student record the time they spent working on their project?
- Did this correspond to reality?

Did they honestly assess their own progress without attempting to deceive or offering excuses?
Did the student consult you when things went wrong?
- And make good use of advice offered?

Did the student plan their time effectively?
Did they make a reasonable attempt to adhere to this timeline, and manage obstacles that came up sensibly?

4.3.4 Professional behaviour

Did the student follow applicable procedural guidelines or legal requirements (ethical approval, IP agreements/NDAs, confidentiality, data protection) carefully?
If the project involved external clients, did the student interact professionally with the client?
Were there instances where the student's professional behaviour could have reflected badly on the University, or negatively influenced collaborations you have established/are establishing?
If the project involved collaboration, was the student active and involved in the collaboration? Or did they drop the ball or require you to keep things going?

4.3.5 Tools

Did the student use appropriate version control? (version control is not optional for Level 4 students, unless you have a very strong justification)
Was use of version control at an appropriate level of sophistication for the work? (neither too complex nor too simple)
Did the student use appropriate tools for development (e.g. didn't edit their source code in WordPad)?
Did the student use appropriate software to support development, writing and deployment (e.g. build systems, automated experimental analysis, deployment management systems) or was the project held together with hacky solutions?
Was data stored, transmitted and managed in a secure way, e.g. with respect to data protection (only where applicable)?

4.4 Addendum: 20 credit projects

If a student is doing a joint degree, the project will be 20 credits, rather than 40 credits.
Bear the following points in mind:

Axiom: A 20cr project should take 200 hours of work, as compared to 400 for the 40cr project, but be of similar "quality of work".

4.4.1 Smaller but thorough

A 20cr project getting an A (for example) should demonstrate the same intellectual abilities as a 40cr project getting an A, but have less depth or be less well developed. For example, a project that might be criticised as having "been let down with a weak evaluation" or "having a relatively simplistic implementation" when calibrated against 40cr projects might still be a very good 20cr project. However, an excellent 20cr project will tackle a smaller problem than a 40cr project but do so completely and thoroughly.

4.4.2 Not unfinished

An unfinished project should be graded as such. Part of the project experience is to evaluate your capabilities in scoping work appropriately. Getting halfway through a 40cr project's worth of work indicates a serious lack of scoping.

4.4.3 Self contained

In some cases (e.g. a research-based project) the questions being answered may be open-ended, and here a 20cr project might have explored fewer of the questions, or answered less completely. In a software engineering style project, the project should be complete, but have tackled a smaller problem. In all cases, a top-quality project is a still a complete, self-contained whole.

4.4.4 Dissertation limit

A 20 credit project has a 30 page limit. This means that some dissertations may struggle to explain the project with same level of detail as might be expected from a 40cr dissertation. This may particularly affect research projects or software engineering projects dealing with complex existing systems or theory, where a significant portion of the write-up is necessarily dedicated to explaining the background.

4.4.5 Not an uplifted 40 credit project

A 20 credit project is *never* simply marked as a 40 credit project and then has its grade uplifted!