CS4705 Dissertation – Assessment guidelines 2022/3

1. General Principles

CS4705 is a 60-credit MSc module. All CS4705 projects are assessed under the same set of broad aspects that are relevant to all CS4705 project topics and embrace all of the work that such projects require. CS4705 has one assessment component: the final submitted project work including a dissertation, deliverables and a project viva (i.e. oral examination). The final submitted project work is assessed under five aspects: *literature review, project management and methodology*, *practical realisation*, *evaluation and reflection* and *exposition*. The meaning of these terms is elaborated in section 3. It is expected that the length of the main contents for the dissertation is around 25 pages (10,000 to 15,000 words). If your main contents is more than 15,000 words, you should seek help from your supervisor to keep the content concise and consistent.

An assessor's mark for any particular aspect will be determined by reference to a set of descriptors that relate various characteristics that the work falling under the aspect may exhibit to applicable mark ranges. The overall mark reported by an assessor will be derived from a weighted sum of the marks for the five aspects. To allow for legitimate variation in the nature and orientation of CS4705 topics, an assessor may (within specified limits) vary the weight attached to each aspect. An assessor should in the first instance derive a mark from the descriptors for the five aspects (cf. sections 5-9) then compare their initial overall mark with the overall descriptors given in section 10. Any substantial inconsistency will suggest a need for further consideration of the assessment.

2. Operational procedures

The assessment of all CS4705 assessment components follows the *blind double-marking procedure* as defined in the University's Assessment Policies:

> *"Blind double-marking is the marking of an assessment by two separate markers, in which the second marker cannot see the comments or mark given by the first marker. The two markers are responsible for marking the work of all candidates in the group independently and the final mark is normally obtained from an average of the two marks. If there is a large discrepancy between the two marks (e.g. 6% or more) either the two markers will discuss and agree the final mark or a relevant member of staff (e.g. Programme Director or module leader) will mediate a discussion between the two markers to agree a final mark. If no agreement can be reached a third internal marker will normally mark the work. The third marker should then act as mediator between the two first markers to agree a mark. If the third marker is unable to facilitate such an agreement, the third marker will be responsible for awarding a mark anywhere within the range of marks of the first and second marker."*
>
> Aston University Assessment Regulations 2021-22 (AU-RSC-20-3965-A)

Two assessors will perform the assessment independently. Each assessor will give a numerical mark for each of the five aspects, taking account of the dissertation, project deliverables and other supporting material (e.g. requirement specification, software code and/or multimedia material, etc.), and project viva. By applying appropriate weights to the aspect marks, each assessor will then derive an overall mark. The standard aspect weights will be:

- 0.25 for literature review and contextual analysis;
- 0.20 for project management and methodology;
- 0.25 for practical realisation;
- 0.15 for evaluation and reflection; and
- 0.15 for exposition.

An assessor may vary those weights where justified by the nature of the project, though usually not more than 0.1 away from the standard weight. Any such variation must be explained in writing. The mark given for each aspect and the overall mark should be supported by brief written statements.

The two assessors will subsequently attempt to reconcile their views to produce an agreed overall mark recommendation with a written explanation of the agreed overall mark. If an agreed mark cannot be achieved, a third assessor (nominated by the Module Tutor, Programme Director, the Head of the Computer Science Department, or, in exceptional cases, the Associate Dean for Learning and Teaching, as appropriate) will be consulted. If the three assessors thus involved remain unable to reach an agreed recommendation, as per the University's assessment policies, the third marker will be responsible for awarding a mark anywhere within the range of marks of the first and second assessors. The matter will also be brought to the attention of the relevant examination board.

3. Project aspects

All completed projects complying with the module specification for CS4705 will include activities falling under each of the five aspects, although the proportion of the work under each aspect will probably vary between projects. In particular, projects with a real-world client may justify a higher proportion of work on project management, for example to implement the proposed solution within the company. At the same time a software development project may have a higher proportion of work on practical realisation. If the project work involves human subject research, ethics approval must be sought prior to the commencement of the research work. **Any data collected from a piece of human subject research prior to receiving the required ethics approval cannot be used in the project and must be destroyed.**

3.1 Literature review

This aspect is the initial exploration and research needed before a well-founded solution development or experimental activity can commence. The literature review should provide evidence of familiarity with a range of research sources and appropriate methodologies that informs the remainder of the work. The tasks involved will depend on the nature of the particular project. Projects aimed at exploring particular Artificial Intelligence techniques will need a critical review of previous academic writing and practical work in the relevant area, which should provide motivation for subsequent design of experiments or "action research" aimed at achieving enhanced insight into the relevant areas and techniques. Projects more focussed on Business Strategy improvements will need to consider the relevant academic and professional literature, including existing IT-based solutions. Appropriate broad objectives for the remainder of the work should be established. The dissertation should provide evidence that the student has gained enough background knowledge of the subject areas relevant to their project to be able to continue to the next phase which is the implementation. There should also be evidence of knowledge of other work done in this problem domain, either in the development of other systems or in theoretical work. It is expected that the literature review contain:

- A systematic and thorough investigation of the subject domain.
- A critical appraisal of the subject domain rather than a purely descriptive one.
- Discussion of previous work should include an assessment of how that work relates to and influences the proposed work in this project.
- Appropriate referencing.

Note: Very poor or non-existent referencing will prevent the literature review from meeting the required pass standard.

3.2 Project management and methodology

This aspect is the management of the MSc project and the methodology followed within the MSc project. Here the way in which the methodology to be followed was established, how the project was managed, how the plan as stated in the project definition document was possibly changed and achieved will be assessed. The plan may have substantially changed due to unforeseen factors such as modified client requirements or further relevant literature found. Depending on the nature of the project and the risks involved, the changes could involve making and subsequently adhering to different time allowances.

Evidence for assessing project management will be found primarily in the dissertation.

3.3 Practical realisation

This is the core "produce a solution" element which can vary substantially depending on the nature of the project. The project has been carried out with full regard to its ethical implications. All projects are expected to involve an element of application or investigation of Artificial Intelligence methods and an element of Business Strategy. Some projects may be more focussed on technical aspects, while others more on Business Strategy. Regardless of the nature of the project, it must have been carried out in an ethical manner throughout and, where applicable, evidence of the College's Ethics Committee approval provided.

Evidence for assessing practical realisation will be drawn from the dissertation (including supporting materials such as source code of the project) and the project viva.

3.4 Evaluation and reflection

This aspect embraces all activities and thought aimed at gaining a well-justified summation of what the project work has achieved and what may be learned from it. Systematic, evidence-based comparison of project outcomes with objectives and broad norms of quality is fundamental. The usability of any end-product intended for users should be assessed. The merit of methodology and methods employed (e.g. any particular Artificial Intelligence and/or Business Strategy methods) and their impacts on the project development undertaken should be considered and compared with possible alternatives. Lessons learned should be set out, along with scope for and desirability of further investigations. Where there is a client, input should be obtained from the client, and an assessment made of the value that the client could derive from the project outcome. If the work has an experimental component, the significance of the results obtained should be evaluated. There needs to be evidence that ethical implications of the project have been considered and discussed adequately. Any ethical issues that arose in the project are explained and appropriately addressed.

Evidence for assessing the evaluation and reflection aspect will be drawn from the evaluation and conclusion sections of the dissertation, and from material elsewhere that may or may not provide support for any claims made.

3.5 Exposition

Exposition covers activities aimed at conveying information about and understanding of the project to others. *It includes discussion of methodology ("what should have been done"), though how the methodology was pursued in practice ("what was actually done") falls under practical execution.* The primary vehicle is the dissertation, which needs organised and cogent description, discussion and justification of objectives, context, activities and outcomes, supported by suitable formal documentation (e.g. formal design artefacts). An accurate reference list is essential, with further bibliography where applicable. A high standard of presentation and clarity is important and should be secured through good choice of methods of exposition and accurate use of language. The project viva will also contribute to this aspect.

Evidence for assessing exposition will be drawn from all sections of the dissertation and relevant qualities of the project viva (e.g. clarity/organisation, ability to give clear answers to questions).

4. Detailed descriptors – preamble

In the following, the statement against the specific mark of 50 is an attempt to identify the pass threshold standard for the particular aspect. A mark of 40-48 should be given for an aspect where the relevant threshold is demonstrably missed but there is sufficient merit that the failure to reach the expected standard may reasonably be compensated by strength in other areas. Work more substantially short of a threshold should be given a mark below 40 that reflects the extent of the failure, having regard to the overall descriptors given for the ranges 0-24 and 25-48.

Descriptors pertaining to higher marks should be taken to include (at least) the level of achievement implied by descriptors given for lower marks for the same aspect.

5. Descriptors for literature review

0-24 There is little or no evidence of investigation and critical thought; there are serious flaws in the presentation and/or referencing. The work is fragmentary or ineffective.

25-49 There is some evidence of investigation and critical thought, but the presentation is not appropriate, possibly badly structured, mostly descriptive, the scope of the project is limited. There are flaws in the referencing. Although there is evidence of relevant knowledge and skills, but deployed on such a limited scale or in such an ineffective manner that the threshold standard has not been achieved.

50 There is evidence of an investigative element, but the outcome is presented in a mainly descriptive and/or unstructured manner with little indication of critical thought, and/or is excessively limited in scope, having regard to the project topic. Note that work without any critical thought or with inadequate referencing will normally be given a mark below 50.

51-59 Related practical and/or academic work is reviewed, with some evidence of systematic and/or critical thought, with relevant references cited. The business context and processes of any client are set out in sufficient depth to motivate the work in general and a range of specific objectives. Any experimental objectives of the work are stated with suitable motivation. The potential benefits and the main problems to be addressed have been identified.

60-69 There is substantial evidence of systematic investigation and critical thought, in reviewing previous work, pursuing business analysis or in motivating subsequent work, as applicable. How the investigative work relates to and influences subsequent work is clearly established. The potential benefits and the main problems to be addressed have been discussed.

70-79 There is evidence of both thoroughness (e.g. in attention to detail and scope) and depth of insight into the problems raised by the work and the range of objectives that the work should pursue. Most of the accessible, recent and substantial precursor work is formally cited and critically reviewed. Where relevant, a detailed understanding of a client's business and the related wider business environment is demonstrated, with the project work placed in the context of critical review of existing processes, preferably coupled with suggestions for process improvement or new processes.

80-89 There are some original insights that augment the motivation for, or approach to, the present work. The literature review demonstrates very good understanding and substantial knowledge of the literature reviewed. How the reviewed literature influences the project work has been insightfully explained.

90+ There are substantial original insights that augment the motivation for, or approach to, the present work. The standard of writing is similar to that of a literature review in an academic publication. The work will clearly be at the forefront of current knowledge and/or professional practice.

6. Descriptors for project management and methodology

0-24 There is no reasonable plan or the original plan was ignored without any explanations.

25-49 There is evidence of managing the project in a reasonable way, however there are major issues, such as failure to complete at least two project stages, major risks not considered and managed.

50 There is evidence of adhering to a basic methodology and plan throughout the project. At least two major project stages have been completed successfully. There is an acceptable explanation given for any tasks that have not been completed.

51-59 There is evidence of establishing a methodology and following a plan. Most stages completed and discussed. There could be unexplained or ill-judged derivations from the original plan, possibly achieving little. Discussion may not be entirely well founded.

60-69 The methodology is sound. All major tasks have been completed. If there were any changes in the plan, they are well justified and executed. There is evidence of how project management contributed to the success of the project as a whole.

70-79 There is evidence of both thoroughness (e.g. in attention to detail and scope) and depth of insight into the methodology as well as project management problems raised by the work. Any changes are very well justified and carried through successfully.

80-89 Excellent setting and following a methodology coupled with professional level of project management. The project work demonstrates accurate process management/control.

90+ The project work suggests methodology improvements, strategies for process improvement or entirely new processes.

7. Descriptors for practical realisation

What has been achieved should in broad terms be confirmed by both the dissertation and the project viva, and both should be taken into account in deriving a mark for this aspect.

For a mark above the threshold pass to be awarded, the material submitted should show that an organised project management or software process has been pursued and contain relevant formal artefacts which provide direct evidence of the nature and quality of the work done.

0-24 The objectives have not been met. There is no acceptable end-product. Very little has been achieved.

25-49 Some objectives met, but the result is very limited. There is evidence of work toward an end-product, but it has not been produced as expected. Application of underlying science or methodologies may be misconceived or suffer from fundamental flaws.

50 *Normally*, some major objectives of the work have been achieved, resulting in an acceptable end-product. *Exceptionally*, at least two stages towards the project objectives have been completed with significant success, and a rational, credible explanation for failure to achieve an acceptable end-product has been adduced.

51-59 There is an end-product with functionality/utility exceeding the threshold expectation, broadly meeting the objectives of the work.

A relationship between processes and artefacts and any theoretical material included in the dissertation should be apparent but may suffer from inconsistencies or limited evidence. There could be usability flaws, poor reliability, or gaps in functionality in a software solution.

Work leading to the end-product has followed suitable stages, e.g., analysis, design, implementation and testing, but probably with errors or omissions in application. Relevant formal artefacts (e.g. design

documents) have been produced, though probably with clear flaws. If the work has an experimental element, attention has been given to experimental design. There is evidence that processes and artefacts have taken account of any theoretical material included in the dissertation (though probably not entirely successfully or accurately).

60-69 There is an end-product that substantially meets the objectives of the work, normally with minor flaws only. Recognised development processes have been proficiently applied. Artefacts are in good style, showing consistent and effective attention to the need for quality. If the work has an experimental element, experimental design is well reasoned and sound.

There is clear evidence that processes and artefacts accurately reflect the recommendations of any theoretical material included in the dissertation.

70-79 The end-product shows insight and innovation. There is strong evidence of consistent attention to quality.

80-89 There is an end-product characterised by a very high standard of functionality/utility and usability, coupled with originality. Artefacts are of a near-professional standard.

90+ The work has led to insights allowing the original expectations of the work, either in terms of scope or depth, to be exceeded.

8. Descriptors for evaluation and reflection

0-24 There is no or very little evidence of review. Any review undertaken is inaccurate and fails to reflect the actual achievement of the project.

25-49 There is limited evidence of review. There may be major flaws, such as no client views cited for a client-based project and no explanation provided. Or, no explanations are provided for failure in some aspects.

50 The outcome, the ethical implications, and business strategy values of the work have been reviewed, with opinions expressed as to the successfulness of the work as a whole. There is some evidence of systematic evaluation, e.g. comparison of outcome against objectives for a number of requirements.

51-59 There is evidence of systematic evaluation, e.g. comparison of outcome against objectives over a broad range of requirements, and attention to a wider range of issues, e.g. usability, process, functionality. Client-based projects cite client views.

60-69 Evaluation is systematic and conducted in a manner consistent with any theoretical discussion included in the dissertation. Evaluation is evidence-based, e.g. includes user or client feedback obtained in a systematic manner, or statistical investigation of reliability or other matters. There is evidence of reflection on project processes and outcomes, including (where applicable) the value of the outcome to a client.

70-79 Evaluation processes show evidence of careful design. There is substantial evidence of reflection on the processes and outcomes of the work, leading to exposition of insights gained from the work.

80-89 Evaluation processes show evidence of very careful design and originality. The execution of the evaluation processes shows some level of professionalism and thoroughness.

90+ All of the above have been undertaken to an exceptionally high, professional standard of rigour and thoroughness. Insights gained are substantial and show innovative thought.

9. Descriptors for exposition

Submissions at all mark levels are expected to comply with the rules on quoted material defined for CS4705 (see Appendix A). All direct quotations of English text must appear in quote marks. All quotations of any kind must be referenced.

*Where the characteristics of a dissertation generally fall into a particular descriptor range but the dissertation suffers from deficiencies in identification of quotations or referencing, e.g. failure to reference a limited amount of non-original material, the matter may be dealt with by a separately stated deduction from the mark for the exposition aspect, in the range **10** to **35**. The assessor should give specific reasons for the mark deduction, which should include identification of representative examples of relevant failings and the scale of the issues.*

However, if the assessor believes the extent or nature of the failings may indicate a deliberate attempt to gain unfair advantage, or are so substantial as to amount to "reckless disregard" of expected academic practice, the assessor is required to report the work for investigation under the University's Regulations on Student Discipline.

0-24 The dissertation totally fails to provide meaningful communication of the project work.

25-49 The dissertation attempts to communicate the content and outcome of the work, but has too many defects, e.g. most or all of the following: regular errors of English (possibly occurring on every page); numerous spelling or typographical errors (typically on every page); substantial repetition and/or irrelevance; substantial gaps in the account; disorganised structure; a standard of presentation (e.g. layout, fonts, headings) so poor as to actively damage communication.

50 The dissertation has an apparent structure and addresses all major areas of activity, though it may be unbalanced in the attention given to particular aspects and may exhibit significant flaws, e.g. regular errors of English (possibly occurring on every page); numerous spelling or typographical errors; repetition and/or irrelevance; gaps in the account; poor ordering of material; a standard of presentation that does not assist communication. Use is made of formal references and bibliography.

Some theoretical material may be included, but is likely to show only limited relevance to practical work evidenced in the material provided for assessment (dissertation, supplementary material, project viva).

The student attended and engaged with the project viva.

51-59 The dissertation presents the work in a logical order with reasonably balanced attention given to all major areas of activity. Some of the flaws listed in the threshold descriptor are likely to be present, though with a lower frequency and severity of errors. Presentation is clear with only occasional, less serious flaws. There are some useful examples and diagrams. Use of formal references, bibliography and appendices is appropriate.

Any theoretical material included is broadly relevant to practical work evidenced in the material provided for assessment.
In the project viva, the student was able to explain the broad purpose of project and some detailed aspects.

60-69 The dissertation includes substantial reasoned argument as well as statement of facts. The style of writing is appropriate to formal scientific or business communication. There may be occasional English or spelling errors, but not such as to hinder clear communication. Examples and diagrams are employed as a systematic aid to effective communication. Referencing and bibliography are accurate and comprehensive.

Any theoretical material included is well chosen and shows a high standard of relevance to practical work evidenced in the material provided for assessment.

In the project viva, the student showed a good grasp of the work at overview and detail levels and was able to give reasoned answers to questions.

70-79 The dissertation can be described as very well written: all the expected material is expounded in a well organised manner, with repetition and irrelevance avoided. Supporting arguments show evidence of careful, systematic and/or innovative thought. The presentation of the dissertation is of a consistently high standard, with very few English or spelling errors. Use of formal references and bibliography is meticulous.

80-89 Writing is concise, as well as thorough and precise. There may be a couple of very minor flaws in English, typography or presentation. Examples and diagrams have been well chosen and enhance the discussion in the text,

90+ Writing is concise, elegant as well as thorough and precise. There are essentially no flaws in English, typography or presentation. Examples and diagrams are truly illuminating in that they aid the reader in understanding the issues being discussed. The standard of writing is close to professional.

The project viva confirmed the student's depth of insight into the work and capacity for innovation and/or original thought.

10. Overall descriptors

0-24 Fragmentary or largely ineffective activity.

25-48 Work that provides evidence of relevant knowledge and skills, but deployed on such a limited scale or in such an ineffective manner that the threshold standard for the module has not been achieved. For example, expected activities have been undertaken, but there is no appropriately reasoned outcome, or there is an operational end-product but it satisfies few or none of the identified objectives and/or is totally compromised by lack of usability. Alternatively, the dissertation lacks any coherent structure or totally fails to address major areas of activity.

46-48: See notes below.

49 *See notes below.*

50-59 Work satisfying the learning outcomes, but not showing the additional quality to justify a merit or distinction grading. Expected activities have been undertaken in a manner that shows a clear grasp of what is required and leads to a broadly acceptable outcome that has undergone evaluation. The work has been systematically reported and meaningfully described. However, the practical work and/or the dissertation show significant weaknesses, e.g. limited scope, unsatisfactory usability, poor organisation.

60-69 Work producing a sound outcome, for example a project management solution for a company that is proved to be successful or an end-product substantially meeting project objectives, with no major flaws in usability. The scope of the work reasonably reflects the student hours appropriate to an 60-credit project module. The outcome has undergone evidence-based evaluation. The work has been carefully reported, with observation supported by reasoning.

70-79 Work distinguished by superior quality in all aspects of the work undertaken, evidence of a deeper level of understanding, insight and innovation, and with very few (if any) clear flaws.

80-89 Distinguished work of very high standard. The project can be seen as a worthwhile contribution to knowledge (either academic or professional), with aspects of the project outcomes having potential for conference publication.

90+ Exceptional work approximating a professional standard that a member of academic staff would be satisfied to have produced themselves. The dissertation is of publishable quality and the project work can be seen as a good contribution to knowledge (either academic or professional).

Notes

Having selected a particular descriptor as giving the most accurate reflection of what has been achieved for a particular aspect, the assessor should choose an appropriate numerical mark by judging where the work falls in the range covered by the descriptor. A central or "standard" rating should be recorded as a mark ending in 5. Where work is judged to lie exactly on the boundary between adjacent descriptors, the mark given should be the lower end point of the range for the higher descriptor (e.g. 60, if the relevant ranges are 50-59 and 60-69).

A numerical mark awarded to each aspect must be accompanied by a written explanation, which should include identification of representative examples of achievements and/or failings in the submitted project work.

In accordance with School rules, an overall mark of 49 should not be given. Any case for a mark in the range 46-48 should be carefully reviewed to determine whether, on balance, there is in fact sufficient evidence of suitable work to justify a threshold pass mark of 50.

Appendix A – Extract from student guidance

Quotations and referencing

Any material in your dissertation that comes from an external source is called a **quotation**. The nature of the material does not matter – whether it is English text, program code, diagrams, or a mixture, if it is taken from an external source, it is a quotation. The nature of the external source does not matter – it may be a textbook, a website, a reference manual, newspaper, a radio/video broadcast, etc. – if material in the dissertation comes from anywhere except your own mind, it is a quotation. All quotations **must** be clearly identified as such. English text quotations **must** be enclosed in double quote marks "…", whether the text is a short phrase, or one or more sentences or paragraphs. Quotations of a paragraph or more should preferably be made to stand out better by indenting the text from the left margin and/or putting in the text in italics, as well as enclosing it in "…".

Near to (usually immediately after) a quotation of any kind, you must include a reference code (citation) which links to full details of the source of the quotation, which must appear in the **References** section of the dissertation. In the preferred *Harvard* system, a reference code usually takes the form (Author date, page number), e.g. (Barnes 2004, p.24). It is **not** sufficient simply to list your sources in the **References** section – **all** quoted material must have an appropriate reference code close to where it is used.

Referencing:

References should apply the Harvard system, with short in-text citations plus a final reference list presented in alphabetical order. If an author has written more than one cited piece in a year then use 'Bloggs (1998a)', 'Bloggs (1998b)' etc. in both the main text and the final list of references.

A reference to a *journal paper* should look like:
Porter, M.E. and Millar, V. (1985) 'How Information Gives You Competitive Advantage'. *Harvard Business Review* Vol 63, No. 4, pp.149–160

A reference to a *book* should look like:

When referring to a specific page, insert page number as follows in the citation: (Grant & Jordan, 2015: 83). However, the page number is not to be included in a final reference list.

This is how you would refer to a web site:
Schrage, M. 'The Key to Innovation: Overcoming Resistance' [WWW document] http://www.cio.com/archive/101505/it_work.html (accessed October 20, 2018).

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