Guidelines for Final Year Project Mark sheet.

Examiners with considerable experience, are all well able to grade and comment without micro-management, so any guidelines are somewhat superfluous and irrelevant. However, someone, somewhere may still request guidelines, and, as is custom and practice, it is desirable to be seen to adopt good professional practice, if only in using terms with mutually agreed meaning for the purposes of quality assurance. Nevertheless, agreed meaning of terms does not guarantee agreed standards in the light of personal preferences; *'De gustibus non est disputandum!'*, and there may be other sources of variation which also need attention. With this in mind, adaptations of previous grading guidelines are attached after these introductory remarks.

Comments.
The primary aim of comments on the form, is to provide information regarding a grading decision, either to a curious student or to remind yourself and brief others at an exam board, so overall grading decisions can be finalised and ratified. With that in mind, it could be helpful to indicate throughout the form, any significant issues worthy of note in supporting or limiting grade decisions, which, in your opinion, ought to be brought to the attention of an exam board, especially any details that might not be apparent from a cursory overview of the report, but could only be obtained from a detailed analysis. Comments may be parsimonious or verbose, as appropriate, bearing in mind that students are entitled to see them under freedom of information rights.

Obviously, you can choose to comment as and how you like, and it is preferable to use your own comments for added realism, interest and variety. However, some may prefer a succinctness use of standard terms.

Category classification and descriptors.
Whether for standardisation, or stimulation of a more creative prosaic approach, some commonly used examples follow, categorised either as simple qualitative descriptors, or defined descriptors with associated numbers.

Typical sample qualitative terms might include:-

> trivial, acceptable, moderate, advanced, excellent, research / development level, perfect

or in EBNF :   [[well | moderately | slightly] below | above] average, etc.

either of which give numerous possible classifications.

Category grade index. (CGI)
Qualitative classification is not a robust science, particularly in the case of projects, which vary considerably. Some maintain that reliable qualitative classification by people has an upper limit of approximately 10 categories and therefore resort to a limited set of well defined CGI (category grade index) descriptors, with associated numerical scores as has been done before…

0 = non-existent;	1 = abysmal;	2 = poor;	3 = weak;	4 = fair;	5 = competent;
6 = good;	7 = very good;	8 = excellent;	9 = exceptional;	10 = perfect.	

However, these descriptors are still somewhat open to subjective interpretation and another excellent guideline to further specify descriptors mapped to numbers applied to a range of grading criteria was proposed last year, and is attached as the last 2 pages of this document. Nevertheless, since *"beauty is in the eye of the beholder"*, a program that might be acceptable to someone with an emphasis on algorithms, might be abysmal in the eyes of a software engineer, and an algorithm might be perfectly acceptable to a software developer, might appear fundamentally flawed in the eyes of an algorithms specialist.

Degree classification index.
However, since examiners are used grading exam paper answers with degree classification in mind, these degree classifications may be more natural, practical and reliable, in keeping with accumulated experience. When used in conjunction with the descriptors above, broad degree classifications (e.g. 1st class & Fail) can be resolved to finer resolution for the purpose of awarding a mark as a number, which may facilitate arrival at a total mark for the project.

However, it should be borne in mind that the whole is only equal to the sum of the parts, for simple linear one-dimensional independent scalar quantities, and since grading by its nature is complex, non-linear, multidimensional and grading criteria are often interdependent, a final sanity check on the overall grade for the entire work would seem responsible and prudent. Naturally, the multidimensional non-linear nature of grading must be mapped to a scalar mark to facilitate simple accountancy procedures, where the whole must equal the sum of the parts, but the underlying reality is more complex. For example, problem analysis will affect design, which in turn will affect implementation, testing and evaluation; so a simple addition of component criterion grades will only yield a representative overall grade if the criteria have been graded entirely independently. Clearly an overall mark requires an overall analysis.

Guidelines - by section of the form.

Throughout these sections, you may use your own comments, or avail of those suggested on the previous page, or use any combination or variation thereof.

General comments overall on project level of difficulty, student conduct, or unforseen circumstances other than health.

The aim here is to give an overall review, placing both the project and student in the context of other projects and student conduct in the present and/or past. No direct grade is associated with it, but it may act as a quality check on the overall grade.

Level of difficulty. – with respect to other projects, past & present.

Please highlight any aspects and proportion of the project which are particularly challenging, trivial or otherwise worthy of note and in your opinion should be brought to the attention of the exam board.

Student conduct. – with respect to other students, past & present.

Please highlight any aspects of student conduct which demonstrate special aptitude and are worthy of note and in your opinion should be brought to the attention of the exam board.

Unforseen circumstances other than health.

Please highlight any unforeseen obstacles which had a major impact on the conduct of the project, either as a fraction of unforeseen overhead or delay. Relevant issues include unexpectedly unavailable, incompatible, or malfunctioning hardware or software, which may have caused or been caused by changes in project direction.

NB Health issues are confidential and beyond our remit or competence to diagnose. However, such issues are considered by way of doctor's notes at the exam board.

Mark distribution over grading criteria.

Comment as appropriate on apportioning the marks to grading criteria, according to the relative emphasis, effort or achievement of the project e.g. some web projects may have little on design other than GUI, but major on implementation & evaluation, whereas a theory project may major on design and evaluation, but less on implementation.

Marks awarded out of maximum under each grading criterion
Any brief comments on pertinent issues which support or limit the mark to that awarded in each case, especially where marks awarded deviate significantly from normal, and which, in your opinion, should be brought to the attention of the exam board. More detailed issues adapted from previous grading sheets overleaf.

      Technical Writing

      Analysis

      Design

      Implementation

      Evaluation

      Other

Project Report Marking Guidelines

Projects vary widely. Some primarily involve the engineering of an artifact (where the main aim is to produce a high quality software or hardware system); others are more research-oriented (involving prototypes and experimentation). Listed below are representative issues relevant to marking criteria which will be used to judge typical engineering or research projects. Projects, of course, may vary between the two types of project or be different in other ways. But similarly demanding criteria should be used to judge them.

Engineering projects	**Research-oriented projects**

Technical writing

Is the report presented in a professional manner? Does it contain a title page, abstract, table of contents, an introduction, conclusions and recommendations for future work? Are the descriptions, explanations and arguments well structured logically with good division and flow at all levels: chapter, section, paragraph, sentence and clause, supported by diagrams, graphs, tables and standardized citations and bibliography? Is the English clear, precise, concise and grammatically correct? Has the report been properly spell-checked and proof read?

Analysis

Was a proper requirements analysis carried out? Is the requirements specification precise, unambiguous, consistent and complete? Was a proper method for eliciting requirements used?	How comprehensive is the student's literature review? Is the review analytic rather than descriptive? Are the strengths and weaknesses of existing work identified?

Design

Is a suitable design methodology used? Are justifications for the chosen methodology given? Is the development from requirements to high-level design to low-level design properly explained? Are opportunities for re-use properly identified? Is the design realistic?	Is the research methodology the right one? Are the experiments well designed? Are the experimental materials (e.g. prototype systems, etc.) well designed? Can the hypotheses be verified?

Implementation

Is the development from design to artifact properly explained? Does the artifact meet recognized standards (e.g. safety standards in hardware, coding styles in software)? How much of the design was actually implemented	Were the experimental materials properly constructed? Were the experiments properly conducted?

Evaluation

Is there evidence of good testing (unit testing, integration testing and system testing)? Is there any evidence of acceptance testing?	Are the results well reported (e.g. using tables, graphs, etc.)? Are the results analyzed deeply and properly explained? Is there both quantitative and qualitative analysis of the results?

Other

Is there any other evaluation criterion, not in the list above, which you reason is essential or highly relevant to this project? If so, please include; allocate an appropriate proportion of overall marks, and grade within that allocation, using your own grading criteria?

Grade	% range	Effort	Achievement	Technical Writing
Fail	< 40	Insufficient effort; unenthusiastic; needed 'chasing'.	Objectives not met, e.g. non-functioning or substantially mal-functioning software.	The appearance of being a last-minute rush; substantially incomplete; messy.
Weak	40 – 49	Poor effort; reliant on others for technical guidance and organisation of activities.	Objectives met to a limited degree, e.g. functioning software but with limited realism, limited capabilities or deficiencies in areas central to the objectives.	Lacking a clear structure; poor standard of English; in need of spellchecking or proof-reading. Where relevant, software documentation is adequate but, e.g., may fail to adhere to documentation standards.
Satisfactory	50 – 59	Adequate effort; needed regular technical guidance; some evidence of self-organisation.	Objectives wholly met, e.g. software is fit for purpose but may display limitations or weaknesses in areas that are not central to the objectives.	Structure is generally clear; English is generally good; few mistakes remain. Where relevant, software documentation is of good quality and adheres to documentation standards.
Good	60 – 69	Diligent student; required limited technical guidance; well-organised; showed some initiative.	Exhibits all the characteristics of a Satisfactory grade. Additionally, artefacts are of high quality (e.g. software meets some of the standards for good design, good coding and good user interface, as appropriate).	Clear structure; very good English; few mistakes remain. Professionally presented with good use of tables and diagrams. Where relevant, software documentation is of good quality and adheres to documentation standards. Where relevant, evidence of an appreciation of how to cite the literature
Excellent	70 – 79	Exhibited all the characteristics of a Good grade. Additionally, exhibited high initiative and self-motivation	Exhibits all the characteristics of a Good grade. Evidence of overcoming challenges and problems. Outcomes such as software or other artefacts are of a quality that makes real-world deployment realistic; alternatively, outcomes such as ideas, theories, results, etc. are of some academic interest.	Exhibits all the characteristics of a Good grade using English that is concise and grammatical.
Outstanding	80 – 89	Exhibited all the characteristics of an Excellent grade on work of high difficulty.	Exhibits all the characteristics of a Good grade on work of high difficulty. Additionally, challenges and problems are overcome with a degree of originality, innovation, creativity or flair; alternatively, outcomes have academic or commercial significance.	Exhibits all the characteristics of a Good grade using English that is concise, precise, grammatical and pitched at the right level.
Perfect	90 – 100	Exhibited all the characteristics of an Outstanding grade on work of exceptional difficulty.	Exhibits all the characteristics of a Good grade on work of exceptional difficulty. Additionally, there is a high degree of originality, innovation, creativity or flair; alternatively, outcomes have high academic or commercial significance.	Faultless or near faultless.

Grade	% range	Problem statement and analysis	Main content of report	Evaluation and Conclusions
Fail	< 40	Poor understanding of the problem; lack of clarity in statement of objectives.	Activities and artefacts inadequately described. E.g. poor design documentation; low quality implementation; not tested.	No attempt to critically evaluate the work; conclusions are missing, unjustifiable or fatuous.
Weak	40 – 49	Some understanding of the key problems; shallow or careless statement of objectives. Good understanding of key problems; some appreciation of problem context; clarity of objectives.	Activities and artefacts adequately described. E.g. evidence of some methodology; some design documentation; low quality design and implementation; barely tested.	Evaluation is written without proper criteria, is entirely subjective and is a biased assessment; conclusions are vague and unsubstantiated.
Satisfactory	50 – 59	Good understanding of key problems; some appreciation of problem context; clarity of objectives.	Activities and artefacts are well-described. E.g. evidence of some methodology; design and implementation are well documented and justified; some evidence of testing.	Evaluation is written using criteria at least some of which are objective; conclusions are justifiable.
Good	60 – 69	High understanding of the key problems; good appreciation of problem context; clarity of objectives. Where relevant, requirements analysis has been properly conducted; requirements are comprehensive and properly prioritised. Where relevant, a literature review cites and describes key sources.	Exhibits all the characteristics of a Satisfactory grade. Additionally, there is a consideration of alternative approaches, e.g. alternative designs and implementations; the artefact adheres to recognised standards (e.g. coding standards); evidence of some testing, experimentation or validation, as appropriate.	Evaluation is written using criteria which are predominantly objective; conclusions are justifiable; some ideas about future work.
Excellent	70 – 79	Exhibits all the characteristics of a Good grade. Additionally, the requirements analysis and/or literature review are suitably comprehensive and authoritative.	Exhibits all the characteristics of a Good grade. Additionally, the consideration of alternative approaches (e.g. alternative designs and implementations) is well-argued; there is evidence of good testing, experimentation or validation, as appropriate.	Exhibits all the characteristics of a Good grade. Additionally, the evaluation is thorough; the ideas for future work show insight or imagination, and deep understanding.
Outstanding	80 – 89	Exhibits all the characteristics of an Excellent grade with a degree of insight and critical analysis.	Exhibits all the characteristics of an Excellent grade with insightful consideration of alternatives (e.g. alternative designs and implementations) and unusually thorough testing, experimentation or other validation.	Exhibits all the characteristics of an Excellent grade. Additionally, the evaluation is unusually insightful.
Perfect	90 – 100	Exhibits all the characteristics of an Outstanding grade with unusually high insight and critical analysis.	Exhibits all the characteristics of an Excellent grade with unassailable comprehensiveness.	Exhibits all the characteristics of an Outstanding grade with unassailable comprehensiveness.