**INDIVIDUAL**

**PROJECT HANDBOOK**

**CS3D660**

**40 Credits**

**COURSE SCHEME’s**

**IN**

**COMPUTING**

**2016-17**

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**1. ACADEMIC OBJECTIVES OF PROJECTS**

Students projects are found in undergraduate courses for the following reasons:-

to allow the student an element of choice in pursuing a degree programme, on a topic of personal interest;

to develop and assess the student's initiative, self-reliance and independence in pursuing an investigation on that topic and achieving a solution of high quality with **minimum** supervision and in producing an **acceptable** project report within a specified deadline;

to develop problem-solving skills which are a necessary complement to formal academic skills and are the specific characteristics of an (honours) graduate.

In summary, the main aim of the project is to allow the student to develop and demonstrate the application of their computing, ICT, research, analysis, evaluation, presentation skills and knowledge acquired during their studies to a non-trivial topic or problem.

**There are a number of courses permitted to undertake this project, and it is imperative that the project undertaken matches with the objectives of the named course. It is the student and supervisor’s responsibility in ensuring that this is the case.**

The Individual Project (CS3D660) provides a way for a student to demonstrate professionalism in computing

For part-time students, it will normally be taken in the final stage of their programme; for full-time students it will normally only be taken when they have gained their DipHE through passing all Level 5 modules or have been exempted there from. It may also be available to a student on a Combined Studies style programme who has undertaken a considerable computing programme at Levels 4 and 5 and who is pursuing the relevant and recommended Level 6 computing modules concurrently.

**2. THE PROJECT PROGRAMME**

2.1 **Defining the Project Topic**

**A project topic must :-**

be a problem which involves significant design decision making and includes a critical evaluation of alternatives using formal and judgmental criteria.

involve the project progressing through the following stages:

* a research and investigative process
* the design and development of a solution to the project (possibly including prototyping) that meets with the objectives set, by making use of the information acquired from the investigative process carried out previously
* a critical process which provides conclusions from the findings produced from the above stages
* a **full evaluation** and critique of the solution(s) produced
* production of a final report, covering points above
* a formal presentation identifying the project’s progress through the stages identified above.

Students should note that it is not implied or specified that a project should necessarily involve the implementation of software; the skills of judgment, evaluation and decision-making are much more likely to be required in the investigation, analysis and design stages of computing, and students are urged to consider projects as their main ways of demonstrating their professional rather than technical capabilities. However, it is important that the student **produces a definitive end product** that makes use of the analysis and evaluative processes undertaken. This ‘end deliverable’ **MUST** be evaluated by an appropriate set users.

**It must not be:**

an extended Level 5 or HND-style project;

an implementation of an existing or pre-defined design, or a re-implementation of an existing solution;

an academic dissertation or literature survey;

a title of the type "a computer system for a tool hire shop"

The Individual Project features in various degree courses. Each has a different emphasis, so your project must relate to the **relevant themes of your course**.

2.2 **Selecting a Project Topic**

A project list will be drawn up by the project organizer seeking suggestions from members of staff, and from external sources solicited through normal industrial contacts or by original requests. These suggestions will be initially evaluated by the Project Organizer and may be allocated to one or more degree courses. Particular care must be taken with externally proposed projects, which are often specified with user-unique constraints and for a particular environment, and without a full understanding of the limited time allocation for projects.

The approved project list will normally be made available to students towards the beginning of the Summer Term. See 2.6 below for alternative schedules.

Students will be invited to produce a project proposal based upon a title or alternatively to submit a topic of their own choice for evaluation in the same way as titles on the approved project list. They will be advised of their allocation at the start of their final year, however considerable discussion between the project organizer and the potential student will often occur between the initial proposal and the final setting of the project objectives.

2.3 **Conduct of the Project**

(a) Students must make every effort to start work on their project from the very beginning of the Autumn term and should aim to meet their supervisor as soon as is possible after enrolment;

(b) students are expected to devote on average thirteen hours per week to project work, spanning two terms;

(c) students must arrange to meet their supervisor regularly once per week. As part of the project requirements, a diary (or a blog) of the project progress should be kept (including reference to these meetings). The details from this diary may be included as an appendix within the final project report. If these meetings do not happen on a regular basis, then it will automatically bring doubt into the mind of the assessor with respect to the originality of the student’s final work;

(d) the project is worth forty credits

(e) students should not enter into any individual contractual obligations in relation to externally proposed projects arising from any source within the academic year.

(f) students must respect the Law of Copyright and the University’s rules relating to unfair practices in coursework. All significant contributions taken from other persons or sources must be acknowledged in the body of a report, as well as in a separate section at the end.

(g) during the first term the students will be expected to attend a series of lectures in the areas of project management, literature reviews, referencing and LSEPI(Legal, Social, Ethical and Professional Issues) with regard to their project.

Students will be required to give an **informal initial presentation** to their supervisor (and possibly second assessor) normally **before** **Friday 14th October, 2016**. If this is not the case then it will be the decision of the supervisor whether a project will be allowed to continue or not. This presentation should provide an outline of the project objectives and the project work plan.

The project objectives should clearly define the aim or purpose of the project and the results and outputs expected from it; the proposed approach and method of investigation ('project methodology'), the likely sources and reading references, and the significant resources/facilities, conditions required for the successful outcome.

Once set, these project objectives should not be deviated from, unless agreed between the student, supervisors and project organizer, and then only under exceptional circumstances.

The project plan (normally included in milestone one) is used to define the stages of the project and the time scale of each stage, bearing in mind:-

* the report deadlines
* the time for write-up and report preparation

At the initial project presentation, the student and his/her assessor(s) should jointly agree the **weightings given to the various areas of assessment** within the Project Assessment Form (***appendix V***). The assessment form weightings give **suggested** guidelines, but these may be extended depending upon the nature of the project that is being undertaken.  Copies of the project objectives form (***appendix IV***) and project plan should be given to both assessors, and the agreement of these assessors and yourself should be recorded at the bottom of all copies. A further copy of this project objectives form **should be provided to the project organizer**, and also **MUST** be included as an appendix within the final project report.

2.4 **The Project Assessment**

The project has a number of “milestones” that must be completed in order to pass the overall project assessment process.

**The initial reports associated with milestones one and two need not be printed or bound, however they should be presented in a professional format. They should be submitted in digital form only via the VLE.** The initial report (milestone one) will include a chapter that details issues concerning the LSEPI (Legal, Social, Ethical and Professional Issues) associated with your project.

All reports are to be submitted to the VLE before the deadline date/time. Both 1st and 2nd assessors should normally perform the marking & feedback of all milestones.

The milestone submission dates are:

2.4.1 **Milestone One**

This report is to be submitted at the latest by **4pm** **Friday 2nd December, 2016**. Feedback will normally be provided within a 2/3 week period following on from this submission. The form of feedback will be either be written via email or presented verbally by the supervisor in a project meeting.

This will be allocated a maximum of 10% of the overall project mark. This milestone report will be expected to clearly identify the outputs produced from the research/literature review process and how they have been applied to the design of the final deliverable. Research will include aspects of **evaluating software**, **platforms**, **methodologies**, **academic** **research**, **evaluation of commercial alternatives**, etc. If a project possesses a final application as a deliverable then it is expected that the student will have commenced their consideration of the expected s/w development platform.

A chapter should also be included that details the **LSEPI** aspects associated with your project.

This milestone report being submitted in digital format offers the option of sending it to a Plagiarism Detection Service for formative assessment purposes.

2.4.2 **Milestone Two**

This report is to be submitted in digital format at the latest by **4pm** **Friday 3rd February, 2017**. Feedback will normally be provided within a 2/3 week period following on from this submission. The form of feedback will be either be written via email or presented verbally by the supervisor in a project meeting.

This will be allocated a maximum of 10% of the overall project mark. This report should include an amended research/literature review chapter and a chapter that details the design of the end deliverable including how the research has been applied to the design. Also initial work concerning the development of the final deliverable should be presented, including how the design has been applied to this deliverable.

A chapter should also be included that is an amended version of how the application of LSEPI issues associated with the project have been addressed.

2.4.3 **Milestone Three**

**TWO COPIES of the final report** should be handed in to the **FACULTY OFFICE (or a designated location), by 4.00 pm Wednesday 29th March, 2017.** This date must be regarded as **a firm and final deadline**. No member of staff has the authority to make individual arrangements with a student concerning late submission. Students must ensure that the administrative staff notes their name and date of submission when they hand in their work. In view of the firm deadline, students are advised to aim to submit their reports well before the above 'final' date(s) so as to avoid the excessive pressure of work on the school’s printers and other facilities. It is important that the final report has the **project title, author, and names of the supervisors** clearly printed on the front of the submitted document.

This final report should be considered to be the final document that details the full project process. Chapters from milestones one and two will be included (amended based upon feedback received and further work). A guide to the expected chapters is provided in ***Appendix VIII***.

An additional appendix should also be included that details the final LSEPI aspects of the project (this will be based on the LSEPI chapters included in milestones one and two).

2.4.4 **Milestone Four**

Students **MUST** also give a final project presentation to assessors during the time allocated in the third term of study, in which they will relate their achievements to the objectives with which they began the project. A time slot of 30-45 minutes will be allocated (normally 15-20 minutes presentation). These presentations will take place between **Tuesday 2nd May - Friday 19th May**. It is expected that the first & second assessors will lead the question and answer session, with the third assessor acting mainly as an observer. However, the third assessor is allowed to seek clarification of points that have not been made clear during the presentation or subsequent questioning.

***NOTE: the presentation is not intended to be a session where merely a demo of the final deliverable occurs. The student will be expected to fully describe their project not just demonstrate an end product. It may be advisable for the student to include any relevant screen dumps to illustrate their project progress rather than rely upon technology. The student will be expected to present an A3 POSTER at their presentation that details the research undertaken, project progress and outcomes.***

2.5 **Marking the Project**

The marks associated with the “quality” of a project will reflect the methods utilized by the student for referencing and overall presentation. Also their ability in presenting the overall project process will be taken into account with regard to clarity and professional output.

(a) Project work is assessed according to the standard proforma (***appendix V***) using the previously agreed weightings under the different headings. It will be the norm that the first assessor only will provide a mark for project management due to their position of having closely supervised the project throughout its progress.

The marks pro-forma is to be completed independently by the supervisor (first assessor) and a second assessor. The project may also be assessed by the Project Audit team; and a contribution to the assessment of an External Project may be made by the Sponsor. This sponsor contribution will normally take the form of a letter with a mark being generated through discussion between the sponsor and the supervisor.

(b) Projects handed in after the submission date **without extenuating circumstances will be treated under the university guidelines governing late coursework submissions**.

(c) The general criteria that assessors are looking for in reaching a fair assessment are shown in the Project Assessment Profiles (***appendix VI***).

2.6 **Alternative Project Schedules**

It is only under exceptional circumstances that a project may be permitted to deviate from the deadlines as shown above. If these exceptional circumstances are related to illness, etc. then it will be dependent upon the Faculty’s extenuating circumstances committee supporting the request as to whether the schedules may be amended. The project organizer will consult with respective academic leaders before making a decision on how to modify the schedule for a particular student.

If there are problems with respect to the progress of a project, it is advised that these problems are noted and acted upon immediately and not left until the end.

If a project fails but is offered as a first attempt, then it is the decision of the relevant course board as to whether the project should be completed within the normal re-assessment time scale or be given extra time. However, it is the original project and objectives that should be met.

A failed project with no extenuating circumstances should be re-submitted following the normal re-assessment time scale. It is expected that a new report MUST be provided following the guidelines for milestone three report submissions.

**However, if the course board considers it impractical for a student to be permitted to complete a referral within the normal referral timescales (normally a fail rather than a narrow fail), the student may be given a new project to be completed by the end of the following academic year.**

**2.7 Ethical Issues**

General ethical issues can arise in the final year project. For computing projects, this may involve some element of tests or evaluations with users or subjects and possibly contact with people or organizations external to the University. Standard ethical issues concerning informed consent of subjects, anonymity and privacy, respect for others, non-harm, etc. may arise. Students should familiarize themselves with the University ethical guidelines. These university guidelines may be found at ….

http://research.southwales.ac.uk/ethics/

**3.** **KEY FEATURES OF A PROJECT**

**3.1 Project Management**

The key to a successful project, given adequate academic technical capability, is Project Management, which implies: -

understanding the objectives of the project;

working to a project plan;

organizing the work according to that plan;

**3.2 Project Planning**

Both staff and student defined projects are evaluated by the Projects Organizer and respective course leaders to ensure that they are of the relevant level and of a size that in principle permits the achievement of a full solution. However, it is in the nature of a project that initially the full extent of work required may not be clear and in particular it is in the nature of a design/programming type project that the amount of programming cannot be estimated until the design work has been completed.

**There is a common tendency towards optimism and thus to under-estimate the amount of work required for ALL projects.**

You must design and deliver a quality solution to the set problem, but you may have to prioritize the more important aspects of your solution. At the very least you should research the background of your topic, produce a design and some kind of deliverable or solution, and undertake an evaluation of that deliverable/solution.

It is usually better to deliver a solution that addresses the core of the problem really well, even if it is incomplete, than to attempt to do everything but do it badly. For example, a prototype system that successfully demonstrates an innovative solution to a problem (but lacks all the ‘bells and whistles’) will probably earn higher marks than a system that tackles all the irrelevant side issues, but is mundane and/or fails to solve the core of the problem. You may find it useful to prioritize features or deliverables using the MoSCoW method:

• Must have (the absolute bare minimum features required to earn a pass).

•  Should have (all the other features that you expect to produce).

• Could have (less important features that you might add in if they are relatively easy).

• Won’t have (features you declare from the start that you cannot be expected to produce).

**3.3 Getting Started and Getting Ideas**

Students often have difficulty in getting started, when faced with the project's objectives.

**Output Analysis**

Since most projects are defined as the production of specific outputs (displays, reports, messages, signals etc.), acquire/produce a definition/example/facsimile of these outputs and work back from there (entity relationships or class diagrams are helpful) every item of data output must be derived either from input, previously stored data, or from computations performed in a process.

**Reinventing the Wheel**

It is most unlikely that a similar problem has not occurred and been solved before - look around for similar systems or implementations. Do not, however, take this principle to the extent at which the originality of your project may be in doubt. In some cases, new technology will permit new solutions, or better versions of long-standing solutions. (see Downsizing and Mobility below)

**Automating the Manual Process**

Start by considering how a problem is/could be/might be solved manually, and then seek specific computer-based improvements, using systematic questioning to gain insight into ways of advancing on manual solutions.

**Partitioning/Decomposing the Problem**

Most problems can be decomposed into an organized set of smaller problems according to a list of criteria; Systems Methodologies (i.e. Myers & Constantine) provide guidance. These smaller problems may be more tractable, but don't forget their interactions. Alternatively virtually all-working systems can be analyzed initially as having Input - Process - Output characteristics, from which design methodologies can be launched.

**Literature Searches**

You should seek as much published material as possible, either through books and journals in the Library department or through journal articles identified by a title, subject or author search in the online Web of Science database. Appropriate high quality survey articles can be very useful, such as the special themed issues of CACM (the Communications of the ACM). Hardware and software suppliers can also be approached directly for information. Some newspaper libraries are also accessible to students. You have access to a wide range of full text journal articles though the LRC’s web pages. Professional journal articles and some conference proceedings have been through a selection and peer review process that aims at providing quality. However, you should always use your judgment and common sense in evaluating the quality of the material, particularly unreferenced material (i.e. not in professional journals); the information explosion and ease of access to the Internet have made available much web material of questionable value which you should treat as such. To help make judgments of quality, you can draw on criteria - such as the reputation of the website owners (is it a professional organization or an individual with some claim to authority or expertise?), is the website a subject gateway (portal) of specially selected information, such as the EEVL Engineering and Computing gateway, is the web document a copy of material published elsewhere, or on the other hand, are there signs of obvious bias?

The LRC set of finding and searching resources will be an invaluable aid to developing a successful literature review. To see databases relevant to Computing, choose ‘Computing’ in the pull-down menu for Search by Subject. The *ACM Digital Library* is a tremendous resource of high quality journal articles and conference proceedings. Some material will be over-specialized for your purposes but you will find cutting edge papers in, for example, the *Magazines* and *Proceedings* (eg CHI, Multimedia, Agents, Electronic Commerce, etc). Other Databases include bibliographic catalogues such as *Inspec* and *Web of Science*. Also on FindIt is the index to the LRC’s comprehensive set of *E-Journals*, full text access to electronic versions of many of the leading journals. The *SubjectDdirectory* is a small directory of web resources on computing. *Search the Internet* is a collection of searching tools – see the various subject gateways (*BUBL* and *EEVL* are relevant for computing). Under search engines, *More* gives useful background on the different kinds of search engines and tips on how to search. A visit to *SearchEngineWatch* is definitely recommended for a vast compendium of search engine data.

**Downsizing and Mobility**

The ever-decreasing cost and size of computers, and the increasing scope of mobile computers and non-fixed networks, make possible radical new solutions and re-designs of existing systems. Try to think above constraints of current technology.

**3.4 Success and Meeting the Objectives**

Particularly if the project is a demanding one, the possibility of not achieving the objectives of a project is always present and should **not** be considered as an irretrievable disaster provided that the project report demonstrates the efforts that a student has made and contains a detailed evaluation of the unsuccessful outcome plus proposals for alternative routes that might lead to a more successful outcome.

***What is of utmost importance throughout the project’s progress is that every decision made is clearly backed up by research evidence. A student’s subjective opinion is of course the main judge of a project but great care should be taken in providing a balanced argument in eliminating the various alternatives.***

**4.** **PROJECT REPORT REQUIREMENTS**

**4.1 THE FINAL PROJECT REPORT (milestone three)**

**Report Layout**

A student **MUST** produce a satisfactory final report to pass the Project.

The project report **MUST be word-processed** and well produced at the student's own expense. It is not necessary for the report to be produced on the latest laser printer/desktop publishing system, and a variety of print sources will be considered as adequate.

The pages of the report(s) must be clearly identified via unique page numbers

It is important that the report does not become a copy and paste exercise, which merely shows evidence of research. It is more important that the report highlights the process that the student has undertaken in attempting to meet the objectives of the project, and the conclusions made from their research.

It is suggested that the student uses a twelve point font, with one and a half line spacing, and only print on the facing page. Two copies of the final report must be handed in by the respective deadlines. The final report must be bound (a glued spine is sufficient). An A4 ring binder is not an acceptable form of presentation.

There is no specific world limitation included within the report requirements. It is suggested that an approximate guideline of one hundred pages for the final report is considered (suggested 20 to 40 pages for milestones 1 and 2). It is strongly advised that sections of the report are shown to the supervisor at various stages of the report development. The supervisor’s advice and guidance should be sought and hopefully followed at all times throughout the project’s progress.

For general guides with regard to the chapters and layout of the project reports, the students should seek clarification firstly from their own supervisor and then if necessary from the project organizer.

A suggested layout of the chapters expected of the final report is given in ***appendix VIII***.

Students will be required to sign a declaration confirming the work submitted is the result of their own efforts and has not been previously submitted as part of another course ***Appendix VII***. The report will not be accepted if this is not completed.

**4.2 References**

It is of vital importance that all materials and sources used throughout the project reports are fully referenced. **References should be listed at the back of your report AND also cited in the main body of the text**. You reference not only to give credit for any material quoted from other sources but also to direct your reader to find out more about the topic and to provide ammunition for your arguments; your opinions are important but they will be more persuasive if backed up by critical argument and citing of sources. All direct quotes should be clearly identified enclosed within double quotes, with a citation to the source. Direct quotes should be used fairly sparingly for particularly key or well-phrased points, or for a few important tables or figures from another source. Most of your literature or research review will be written in your own words. However you will still want to cite the sources you are drawing on in the body of your report, even when the text is your own summary or description. This shows that you have done research and where to look for more information. You should also try to make comparisons between and discuss the sources you cite rather than just summarizing them individually. Try to relate the material to your own project. Harvard Referencing is the University’s Standard of choice, thus every effort should be made to conform to this standard.

There are a variety of methods, which can be employed for citing a source and for listing your references at the back. The References and bibliography at the back should include full details on the publication, including title, author, publisher and year. An example of a journal article might be:

Koch T. 2000. Quality-controlled subject gateways: definitions, typologies, empirical overview. Online Information Review, 24(1), 24-34.

An example of a book might be

Marchionini. G. 1995*. Information seeking in electronic environments. Cambridge University Press.*

It is important, whichever method you decide to employ that you remain consistent throughout the report text.

The list of references should be included at the back of the report, and all references should be **collated in alphabetic order**.

Also a bibliography should be included, indicating sources of background reading undertaken in reaching decisions concerning the project. This bibliography can often indicate to the supervisors the amount of research undertaken by the student. It is important the list corresponds to actual material utilized by the student, and content should be referenced somewhere within the report’s text.

Any plagiarism found will be reported and be subject to the University’s disciplinary processes. **There is no excuse for plagiarizing material**. If you are unsure of what constitutes plagiarism then seek advice from your project supervisor. Do not rely upon hearsay as being fact.

With continually increasing access to the World Wide Web ever more research information is becoming readily available to students. It should be noted however that books and articles published in professional journals go through a long and arduous process of checking, refereeing by peer experts, etc. This is not true of vast amounts of information that can be found on the Web. This instant publication on the Web does not conform to the necessary regulations that students should conform to for inclusion within their project report. If any material is taken from the Web, then every effort should be made by the student to cross check and confirm the validity of the information. If this may not be achieved, then it is suggested that this material is not included within the report.

Also, since Web pages can be changed rapidly and without warning, Web material should be additionally referenced by the date on which it was viewed

Any material, which is included within the report off the Web, should be referenced in exactly the same way as if it were taken from a researched journal. Failure to do so will be treated as plagiarism.

This is not intended to condemn the Web as a valuable source of information. The material found can prove extremely valuable in aiding the student in sourcing the necessary information in aiding the progress of their project.

**Any information included within the report text, which is not clearly referenced, will be treated as plagiarism.**

**APPENDIX I - The Project Supervisor’s Responsibilities**

1. The final year project is essentially a student-directed activity. The Project Supervisor has the general responsibility of helping the student to achieve the project's objectives, and in particular: -

(a) to ensure that the student has a full understanding of the project's objectives and environment which, in the case of a project originating elsewhere than from the student or supervisor, will mean putting the student directly or indirectly in touch with the source of the project;

(b) to ensure that as soon as possible the student formally defines the project's objectives in terms which match the general criteria for a final year project, and produces a project plan;

(c) to bring to the student's attention the literature references and other source material likely to be relevant to the project;

(d) to periodically and regularly check (normally weekly) that the student is making satisfactory progress according to the Project Plan, and to help solve problems that occur;

(e) to advise the student of the availability of resources to help him or her implement the project's objectives and produce the project report.

2. Any difficulties in a project, which the Project Supervisor is unable to solve, should be reported to the Project Organizer in the first place, as should any failure of the student to meet any two successive scheduled supervision sessions.

3. The project supervisor also acts as the First Assessor for the project, and under current arrangements, as the student's Personal Tutor. Experience suggests that progress in the project, and resolving conflicts of priorities with other assessed course work, is the single most serious problem that final year student's experience; and project supervisors are expected to be the student's first source of general academic and personal advice in their Level 6 programme.

4. Project supervisors assigned to externally-defined projects should note that special considerations apply where any sort of arrangement has been made with an external body.

(a) external projects are conducted in the same manner as internal projects, except that the objectives are usually not open to student re-definition or modification; and thus any serious problems or failures have to be reported back to the sponsor;

(b) there is no commitment as to liability or specific performance, other than that the sponsor receives a copy of all project deliverables on an 'as seen' basis;

(c) the current University policy is that all Intellectual Property Rights in coursework belong to the student.

(d) the University cannot guarantee confidentiality since all project reports must be available to the Examination Boards including the External Examiners;

(e) the Project Organizer may have previously arranged for the sponsor to be present at/informed of the project presentation, regular reporting sessions or final project demonstration, or to be involved in the assessment of the project;

(f) there may be specific resource requirements, including use of resources outside the University, for which expenses will normally be arranged directly between the sponsor and the student. Project Supervisors required to visit sponsor's premises with the student will be able to claim expenses under normal arrangements.

5. The Project Supervisor is responsible for arranging the initial project presentations in conjunction with the Second Assessor, and for agreeing the weightings for the project assessment; and for arranging the final presentations and demonstration after the project hand-in date.

6. **It is essential that the assessments of the first and second assessors are reached independent of each other**, and that both assessments are made after examining all the results of a project. It will therefore often be necessary, in the case of a project involving software implementation, for the second assessor to be given a complete demonstration of the working software. In the case of a significant difference between the two assessments, the Projects Organizer will seek to resolve differences of views, failing which it will be submitted to the Project Audit team.

7. It is the responsibility of the project supervisor in ensuring that the grade that they allocate to the student falls into the correct category of project profiles, as indicated in ***appendix VI***.

8. It is important in justifying the mark allocated that the supervisor(s) fully complete the rear comments section of the marks form (***appendix V***).

9. In this project module it is the joint responsibility of the first and second assessor to ensure that marking is completed in time to facilitate detailed feedback to the student at the original milestone. Due to the tight time constraints, all feedback should be returned within two working weeks of the milestone reports being submitted. This feedback must be tangible, and verbal feedback is not really sufficient. The actual marks or grades are not to be returned.

10. The final presentation will be made to the first/second assessors. To ensure consistency across all projects, it is the responsibility of all supervisors to sit in on a number of presentations as an observer. If a third assessment is required then this observer’s comments will be taken into account. An observer will only sit it on a maximum of two presentations linked to a particular pair of supervisors.

11. With regard to feedback for milestones one, the supervisor(s) will normally provide feedback to their respective students within a period of two weeks, and these comments should then be included within the comments boxes on the rear of the final marks form, ***appendix V***.

**APPENDIX II - External Projects**

1. An external project is a project proposed by a person or organization (‘sponsor’) external to the Faculty, accepted after evaluation for inclusion in the final year project list. Such projects are proposed either directly to the department, or indirectly via a student with whom the sponsor has some prior contact (eg during a SWE placement).

2. External projects are valuable and welcome because of their relevance, individuality and challenge, but are more difficult for students because of several factors:-

(a) progress can be affected by events outside the student’s or the University’s control;

(b) the problem may turn out to be larger than can be (fully) solved within the strictly defined limits of a project;

(c) Implications about legal liability, ownership of the results etc.

3. The university has therefore evolved some rules and guidelines for the conduct of external projects:-

(a) external projects are conducted in the same way as internal projects, except that the objectives are usually not open to student re-definition or modification; and thus any serious problems or failures have to be reported back to the sponsor;

(b) there is no commitment by the University as to liability or specific performance, and the sponsor receives a copy of all project deliverables on an ‘as seen’ basis;

(c) the University cannot guarantee confidentiality since all project deliverables and reports must be available to the Examination Boards, including the External Examiners;

(d) the University may determine that for specific performance of the project, only a subset of the sponsor’s problem, or a subset of the solution, is required. A full solution in this case rests upon a subsequent arrangement between the student and the sponsor;

(e) the sponsor will be responsible for access to, or supply of, resources required by the project which are not available at the University, and reimbursement of travel expenses if incurred by the student. The sponsor must also accept personal liability for the student during any work at the sponsor’s site;

(f) the sponsor may be involved in the assessment of the project. If there is a mark associated with the sponsor, then a letter will be requested from the sponsor detailing their thoughts on how the student has met the external objectives of the project. The project supervisor through discussion with the sponsor will then allocate a mark for assessment purposes.

4. The Project Organizer and respective academic/course leaders will be happy to discuss proposals for external projects with any interested person.

**APPENDIX III - Creative Thinking Techniques**

This appendix *describes* several techniques:

***Third party discussion (Also referred to as 'contact' and 'contact points')***

This is the simplest but also one of the most important techniques - talking your problems over with other people. If they are experts, they may well suggest options you had not thought of. If they are non-experts then many very useful insights can emerge from the exercise of trying to explain to them what you are doing. Remember that if you are talking to an expert and do not understand what he says, keep on asking until you do. Similarly, if a non-expert seems puzzled at what seems quite obvious to you. NEVER REJECT THEIR DIFFICULTIES AS MERE IGNORANCE. Underlying confusions you will almost invariably find either contradictions in your own thinking or assumptions or problems you had not thought of. If you have enough time and patience always follow the discussions through in order to pinpoint difficulties, and see what their implications are for your own ideas.

***Brainstorming***

This is a technique for generating ideas about a particular problem by a small group of people. The procedure is as follows:

1. Formulate a problem statement

2. Gather together a small group of people. The session should be fairly light-hearted and enjoyable.

3. Allow a few minutes for each person to write down ideas about the problem and its possible solution.

4. Each person in turn reads out one of the ideas. Members should try to build on the ideas of other members and add to the list. No criticism is allowed and any kind of idea however crazy or outrageous it may appear, should be encouraged.

5. Finally evaluate the different ideas in terms of the different aspects of the problem or solution, which they highlight.

***Scenario Writing***

This is useful for identifying potential alternative solutions to a problem. It is a kind of predictive essay writing: starting from the information at hand, a step by step argument is put forward about a possible future with the emphasis on causal processes and decision points.

***Delphi etc***

There are several other non-quantitative predictive techniques available for identifying potential solutions to problems. However, they can be quite extensive in workload, for instance, the Delphi technique in which a group of experts are asked questions independently and are then informed of other group members' answers. This process is managed iteratively until some kind of consensus is reached.

***Mind Mapping***

This is a graphical presentation, starting with a central symbol or image representing the problem, and showing ideas as branches from the central image, with connections, pictures, keywords and sub-branches from each branch until you have exhausted all possible trains of thought. It is similar but much more organised than, the Rich Picture which is part of Checkland's Soft Systems methodology, which shows all the concepts, ideas etc associated with a defined problem area. These techniques should appeal to compulsive doodlers

Appendix IV

CS3D660 DEGREE PROJECT

**Objective Settings Proforma**

(to be completed and submitted to your supervisor by Friday 14th October, 2016)

Student’s Name: ….......................................................

First Assessor: ...........................................................

Second Assessor: ...........................................................

Project Title:

Project Objectives & Deliverables

***Please tick this box to indicate your awareness of the university’s policy on ethical issues***

***The deliverables and objectives can often change due to unforeseen circumstances, or through the student’s research causing the project to follow a different path. If this is the case, and the project objectives change significantly, then the first assessor should make a note of the date and fill in a new objectives proforma, which should also be included as an appendix to the project report. The project organizer is to be consulted at this stage.***

Appendix V

**CS3D660 Individual Project Assessment and Comment Form 2016-17**

**Student .....................................................................**

**Project Title: .....................................................................**

**Supervisor: (1 or 2) …………………………………………**

|  |  |  |  |
| --- | --- | --- | --- |
| **Mark**  **Category** | **Proposed Weighting Ranges** | **Agreed Weighting** | **Mark** |
| **Project Management**  ***(Only set by Supervisor 1)*** | 50 – 80 |  |  |
| **Originality & Self-Direction** | 40 – 80 |  |  |
| **Technical Complexity** | 20 – 80 |  |  |
| **Solutions, Evaluation & Conclusions** | 80 – 120 |  |  |
| **Final & Sub-Report Quality** | 50 |  |  |
| **Prototype / System Demo**  **Or Project Deliverable** | 50 – 100 |  |  |
| **Sponsor Mark** | 00 – 60 |  |  |
| **Sub-Total Marks** | ------- |  |  |
| **Sub-Total Percentage** | ------- | **50%** | % |
| **Milestone 1**  **Research**  **Literature Review**  **Milestone 2**  **Amended Research**  **Research Applied to Design**  **Deliverable Development** | ------- | **10%**  **10%** | %  % |
| **LSEPI Appliance** | ------- | **10%** |  |
| **Final Presentation (including poster production)** | ------- | **20%** | % |
| **TOTAL PERCENTAGE** | ------- | **100%** | % |

*The weightings for the various aspects of the project are to be set at the initial objectives setting stage. The ranges shown are guidelines and the actual weighting set may be outside of these ranges if deemed appropriate.*

|  |
| --- |
| MILESTONE ONE FEEDBACK |
| MILESTONE TWO FEEDBACK |
| LSEPI: Appliance to project |
| PRESENTATION/VIVA/POSTER |
| FINAL REPORT: INCLUDING CONCLUSIONS AND EVALUATIONS |
| OVERALL SUPERVISOR COMMENTS |

Appendix VI ……………. Project Assessment Profiles

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Target Award** | **Project Management** | **Understanding of Problem and Use of Material** | **Quality of Final Report** | **Evalaution and Conclusions** |
| (90% +) | Totally self motivated and handled planning to a professional level. | Outstandingly exceptional quality with original results. | Quality worthy of professional or academic publication. | Extremely high academic and professional levels attained. |
| (80%-89%) | Totally self motivated and handled planning to a professional level. | Outstanding exceptional quality. | Quality worthy of future development for professional or academic publication. | High academic and professional levels attained. |
| (70%-79%) | Planned own work, obtained resources and met self set deadlines. | Demonstrates an excellent understanding of the problem and the complexity of the issues involved. Clear evidence shown of original thinking and depth of background research. | Exceptional quality of output, showing creative and innovative flair. | Outstanding levels of self reflection shown with respect to evaluation and conclusions. |
| (60%-69%) | Has consistently met deadlines which have been mainly self set. | Demonstrates a clear understanding of the problem. Few significant errors within report, with a degree of original thinking demonstrated. | Well written report, showing good skills in creativity and good design. | Active reflective process shown, but could improve upon conclusions reached and feedback. |
| (50%-59%) | Has met deadlines which were not exceptionally demanding. | Demonstrates an adequate understanding of the major issues of the project. | Report well written. | Conclusions and reflective process slightly limited. |
| (40%-49%) | Has attempted to meet deadlines, but has failed in certain areas, and has required significant guidance. | Project fails to demonstrate a full understanding of the problems. There is some factual information presented, but there may be significant errors within the report. | Work is not well presented, and merely scrapes the surface of the project. | Needs prompting and very limited if any reflective process. |
| (30%-39%) | Has failed to meet deadlines. | Project falls short of reaching objectives set at commencement of project. Limited research. | Report is poorly put together with very little insight shown in selection of material. | Limited if any conclusions reached. Has failed to get to grips with project. |
| (0-29%) | Has failed to meet deadlines, and has shown few management skills | Objectives not met. Poor effort with respect to research and development process. | Report very poorly presented. Little effort shown with respect to layout. | No real understanding shown of project. No reflective process or conclusions shown. |

Appendix VII

**STATEMENT OF ORIGINALITY**

**CS3D660 Individual Project**

This is to certify that, except where specific reference is made, the work described within this project is the result of the investigation carried out by myself, and that neither this project, nor any part of it, has been submitted in candidature for any other award other than this being presently studied.

Any material taken from published texts or computerized sources have been fully referenced, and I fully realize the consequences of plagiarizing any of these sources.

Student Name (Printed) ………………………………..

Student Signature ………………………………..

Registered Course of Study ……………………………….

Date of Signing ……………………………….

Appendix VIII

**Sample Milestone Three Report Layout**

Title Page

Statement of Originality

Abstract (A précis of the total project)

Acknowledgements

Table of Contents

Introduction and Objectives

Main Body of Report (normally some or all of the following)

Plan (timescales / milestones)

Research undertaken and outputs (this will be an augmented version of the relevant information taken from milestones 1&2)

Design & Development (this will be an augmented version of the relevant information taken from milestones 1&2)

Selection of Suitable Evaluation Methodology

Report on Evaluation undertaken

Future Enhancements and Recommendations

Conclusions (refer back to original objectives set)

Appendices

Objectives Setting Report

Agreed Marking Scheme Weightings

References

Bibliography

Diary/Blog Print Out (or summary)

LSEPI

***Ensure that the guidelines for the report presentation format are clearly followed with respect to font, spacing, etc.***

***There is no specific word range specified. A general guideline of a total of 100 pages is proposed. This will of course vary from project to project, often dependent upon the type of project undertaken.***

***Check that you have proof read the report(s) before submission. Once a report has been submitted, it is will not be permitted to modify any contents. Take great care with respect to plagiarism issues. If you are unsure, then ask your supervisor.***