Graduate Diploma Project

Unit 139:

Solve an engineering problem – Procedure and guidance notes

1 Competence references

Unit 139 Project (12 credits)

2 Preparation

2.1 Location of work

The training centre or other venue where supervision and appropriate working conditions will be provided.

2.2 Supervisor notes

Candidates are required to select and solve, individually, an engineering problem which can be realistically achieved within about 300 hours. The project must be agreed between the candidate and supervisor and must take into account the amount and level of work required and the resources available. The nature of the work must demonstrate the candidate's ability at the relevant level of Graduate Diploma.

2.3 Project proposal

Candidates are required to submit an outline description of the project proposal in about **200** words under the headings, (a) Introduction (b) Objective (c) Methodology and (d) Resources available, with the consent of the supervisor.

i) If the proposal is accepted, the project report must be submitted within 2 years from the date of acceptance of the project proposal.
ii) If the proposal is rejected, a resubmission can be made within 12 months of the first proposal submission, free of charge. Outside of the 12 months a new proposal must be submitted with the appropriate fee.
iii) If the candidate wishes to submit a new proposal within 12 months, the above fee must be submitted.
iv) If the project report is rejected, a resubmission is accepted within 12 months of the first report submission free of charge, provided it does not exceed 2 years from the date of acceptance of the project proposal. Outside of this, a new proposal must be submitted with the appropriate fee.

2.4 Choosing a Project

The standard of the project report is expected to be similar to that of a project undertaken during the final year of a BEng course leading to a UK degree in an engineering discipline.

The theme of the project is to solve an engineering problem for improvement including cost, efficiency and innovation. A few possible areas for project work would be,

- Improvement of the efficiency or the effectiveness of an existing process
- Introduction and commissioning of a new plant
- Modification of existing equipment to perform new or additional operations
- Improvement of maintenance procedures on selected plant or equipment
- Introduction of new procedures for measuring, testing and calibrating products or equipment
- Standardisation of component parts for product assembly
- Development of a new algorithm for a system for better performance in terms of speed and accuracy
- Development of a new mobile application

2.5 Project Guidance

The project is generally considered to be a student centred activity. The supervisor's main responsibility is to create an effective learning environment. In particular the supervisor should check the project objectives, monitor the candidate's progress, advice on project progression, exercise leadership if needed, assist in development of the candidate's skills and knowledge and counsel as appropriate.

Candidates may carry out research and produce materials during the allocated time but the report must be produced at the centre according to the procedure specified under section 8. It is mandatory that the candidates satisfactorily complete item 4.1 of section 4.

Candidates are expected to submit the report prepared in typed form in the recommended layout provided in section 8.

On completion of the report, candidates are required to carry out an oral presentation of their work to a panel of minimum two subject experts including the project supervisor at the place where the project work is carried out. It is envisaged that such a presentation will take about 20 minutes.

3 Candidates' instructions

3.1 Candidates are requested to select and solve a realistic engineering problem and agree it with their supervisor. At each stage of the project, candidate must refer to the project supervisor for continuous guidance and direction.

3.2 Candidate must maintain a log book or a diary summarising the work undertaken each week. This log book will be useful in producing the final report. The candidate has 300 hours to complete this assignment.

3.3 Identify the main elements of the problem to define the objectives of the project.

3.4 Prepare a detailed specification of the problem and organise the tasks to be undertaken chronologically (network diagram or similar).

3.5 Plan the initial programme for solving the problem and determine the resource requirements in terms of time, equipment and materials.

3.6 Prepare a schedule of the work to be carried out (Gantt chart or similar).

3.7 Undertake research in order to obtain the information necessary to solve the problem.

3.8 Select equipment or methods of operation to progress the project.

3.9 Carry out the work necessary for the completion of the project.

3.10 Evaluate the success of the work undertaken and make recommendations for further work.

3.11 Prepare a project report which should contain all the work produced, using the format and layout recommended in section 8.

3.12 Prepare an oral presentation using 'power point' and present it to the panel described under section 2.5, and colleagues.

3.13 Submit two copies of the project report to the supervisor who will forward the same to the centre.

4 Internal Marking / Stage I - Project proposal evaluation

The copy of this section that appears in the official certifying form should be furnished by the head of the centre, which the candidate has attended, and submitted with the project proposal.

(Please mark [S] meaning 'Satisfactory' or [NS] meaning 'Not Satisfactory' as appropriate).

4.1 Suitable engineering problem selected to solve and agreed with supervisor. [ ]
4.2 Clear Introduction towards the objective [ ]
4.3 Well defined objective identified [ ]
4.4 Sound scientific methodology planned [ ]
4.5 Adequate resources available [ ]
4.6 Proper working environment with suitable supervision identified [ ]

5 Internal Marking / Stage II – Project report evaluation

The copy of this section that appears in the official certifying form should be furnished by the head of the centre, which the candidate has attended, and submitted with the project report (please mark [A] meaning 'Achieved' or [NA] meaning 'Not Achieved' as appropriate).

5.1 Project completed in approximately 300 hours. [ ]
5.2 Realistic engineering project selected and agreed with supervisor. [ ]
5.3 Log book or diary maintained throughout the project. [ ]
5.4 The main elements of the problem identified and the objectives defined. [ ]
5.5
5.5.1 Detailed specification prepared [ ]
5.5.2 Tasks to be undertaken organised chronologically [ ]
5.5.3 Network diagram or similar produced. [ ]
5.6
5.6.1 Initial programme planned [ ]
5.6.2 Resource requirements determined in terms of time, equipment and materials. [ ]
5.7 Schedule of work prepared (Gantt chart or similar). [ ]
5.8 Appropriate research undertaken and relevant information obtained. [ ]
5.9 Appropriate equipment and methods to progress the work selected. [ ]
5.10 Necessary work carried out to complete project. [ ]
5.11
5.11.1 Success of the project evaluated and work assessed. [ ]
5.11.2 Recommendations for further work made. [ ]
5.12 Oral presentation prepared and presented. [ ]
5.13 Project report completed. [ ]
5.14 Report handed in. [ ]

6 Project proposal acceptance

The proposal will be accepted for evaluation if all the items in section 4 are marked with a **[S]**.

The proposal will be rejected if item 4.1 is marked with a **[S]** and any other items are marked with **[NS]**, in which case candidate may resubmit the proposal with improvements to these items within 3 months.

If a proposal is rejected twice, then the candidates must submit a new proposal with the relevant fee.

The proposal will be rejected if item 4.1 is marked with **[NS]** in which case the candidate may reapply with a new proposal after 3 months with the relevant fee.

7 Project completion

The project report will be accepted for evaluation if all the items in section 5 are marked with a **[A]**.

The candidate is considered to be unsuccessful in the project if items 5.10 to 5.12 of section 5 are marked with **[NA]**. He/she may resubmit the report with improvements to these items within 3 months.

The candidate is also considered to be unsuccessful if more than 50% of the items in section 5 are marked **[NA].** His/her project report will be rejected.

8 Project report writing

The general layout of the project report should be as follows:-

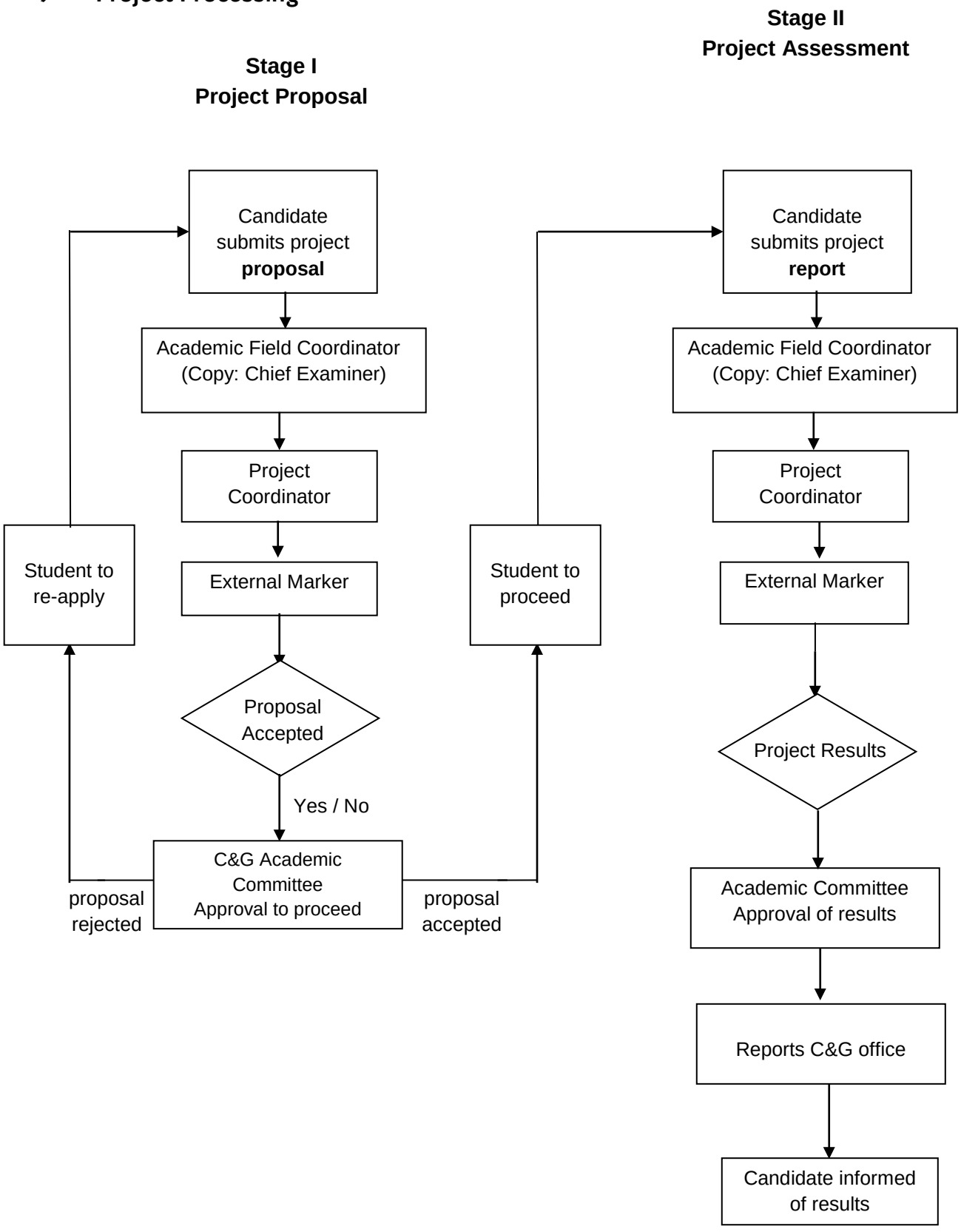
- title page
- abstract
- contents page
- list of figures, list of tables, list of symbols, as required
- Introduction (relevant background information ending with a clear aim of project)
- Literature survey (previous work undertaken by other people within the area of activity)
- Work carried out (methodology used to solve the problem and the actual work carried out)
- Evaluation of the results
- Conclusions as related to the aims of the project
- Recommendations for future work
- Acknowledgements
- References
- Appendices

Formatting and Length of the report:

Font /size:	Arial: 11
Line spacing:	1.5
Paper size:	A4
No. of pages of main body:	Between 20 and 25
Total number of pages of report:	Less than 35

The report on the project must be submitted in the English language, and it must be typewritten. Each and every page of the submission must be signed by the candidate as certification that it is his/her own work. No computer discs etc. should be submitted with the report.

9 Project Processing



10 Rules for the Post Graduate Diploma project

10.1 Approval for entry

A candidate must be registered as a Graduate Diploma candidate following submission of the registration form.

10.2 Assessment of the report

City & Guilds will expect to notify candidates of the acceptance or otherwise of the project proposal within one month of receipt of the proposal.

City & Guilds will expect to notify candidates of the acceptance or otherwise of the project report within four months of receipt of the report.

The decisions of City & Guilds are final. No correspondence will be entered into regarding the results of the assessment.

10.3 The report

City & Guilds will refuse to consider reports, which exceed the specified length, or reports which are considered to be illegible.

The project report is expected to take account of any comments made at the time of approving the project proposal.

The candidate must ensure that he/she has the permission of his/her employer to submit the report where this is appropriate. City & Guilds will not consider reports, which are marked confidential and cannot undertake to maintain confidentiality of the report.

The project report must be accompanied by the completed official certifying form which confirms that the work has been undertaken by the candidate and that he/she alone is responsible for the report. The form has to be countersigned by the head of the centre, which the candidate has attended, and by a Chartered Engineer of a UK institution, or a corporate member of the professional engineering institution of the country of residence.

All material on submission becomes and will remain the property of City & Guilds. No arrangements can be made for the return of any material submitted.

11 Notes to the Supervisor

City & Guilds will be in touch with the supervisors for any additional information needed.