City & Guilds

The Engineering Council Postgraduate Diploma examination

Assessment of unit 306 - project proposal

To be completed by candidates who have been registered for entry to the Postgraduate Diploma examination and wish to make a submission for project component.

Please write in **block capitals** using **black** ink in the spaces provided.

Enrolment Number | | | | | | | |

Name

Address

If your address has recently changed please place a cross in the box ☐

Title of project:

Field applicable (please tick the appropriate box)

☐	Civil and structural engineering
☐	Electrical and electronic engineering
☐	Mechanical and production engineering
☐	Process engineering
☐	Transport engineering
☐	Information systems engineering

Name of establishment at which the project will be undertaken:

Name and designation of project supervisor:

Signature of supervisor: Date:

Notes

1. Candidates are advised to read carefully the Examination Rules appropriate to the project and the attached 'Notes for the Guidance of Candidates' before completing and submitting this Form.

2. Submission of this form is an acknowledgement that the applicant has read and understood the Examination Rules and agrees to abide by them.

3. Candidates are encouraged to have both academic and industrial supervisors where possible.

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Give below an outline description of the objective of the project, the sequence of work to be undertaken, how aspects of a) – g) in the guidelines are to be satisfied and the role of the candidate in the team.

This outline must **not** exceed **500** words. This section should be **typewritten**.

Signature: Date:

Office use only

Date received:

Amount:

Ref. No:.

Postgraduate Diploma project unit 306

List of entry fees

Candidates are required to remit the following fees:

Between 1 October 2006 and 30 September 2007:

With each submission of the project proposal form	HK$6400

Notes

Proposal:

1. If the proposal is rejected, a resubmission can be submitted within 12 months of your first proposal submission free of charge. Outside of the 12 months a new proposal must be submitted with the fee above.

2. If you wish to submit a new proposal within the 12 months the above fee must be submitted.

Report:

3. If the report is rejected, a resubmission can be submitted within 12 months of your first report submission free of charge, provided it does not exceed the 2 year rule – see Submission of the Report on the information attached. Outside of this a new proposal must be submitted with the fee above.

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1 Rules for the Postgraduate Diploma group project unit

The project on which a report is to be submitted should satisfy aspects a) to g) in the Guidelines.

1.1 Approval for entry

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

Entry must be made on the project proposal form, which may be obtained from the Engineering Council examinations department. The applicant must complete this form with an outline description of the objective of the project, the sequence of work to be undertaken and how aspects a) to g) in the guidelines are to be satisfied and the work of the candidate in the project team. This outline must not exceed 500 words.

The completed project proposal form must reach the above department at least 8 months before the intended date of submission of the full report. Engineering Council examinations department will notify candidates of the acceptance or otherwise of the proposal within three months of receipt of the outline description. If the proposal is rejected, a short summary of the reasons will be given and a candidate will have the opportunity to submit a revised proposal.

The submission of a completed project proposal form is the candidate's acknowledgement that the examination rules have been read and understood.

1.2 The report

The report on the project must be submitted in the English language. It must be typewritten on A4 size white paper and securely bound in a folder. The report must not exceed 40 pages excluding drawings, tables, computer output and appendices. Every page of the submission must be numbered and signed by the candidate as certification that it is his/her own work. No computer discs etc should be submitted with the Report.

Engineering Council examinations department will refuse to consider reports, which exceed the specified length, or reports which are considered to be illegible or ineligible for any other reason.

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

All material on submission becomes and will remain the property of the Engineering Council examinations department. No arrangements can be made for the return of any material submitted.

1.3 Submission of the report

The final report on the project must be submitted to this department within two years of the candidate's proposal being approved.

The report must be accompanied by the completed official certifying form which confirms which work has been undertaken by the candidate and that he/she alone is responsible for the report. The supervisor of the project must countersign this form. This can be the Head of department of the educational establishment which the candidate has attended or, if the candidate is working in industry and the report is on an industry-based project, by a Chartered Engineer of a UK institution, or a corporate member of the professional engineering institution of the country of residence.

The candidate must accept responsibility for the submission of the report to the Engineering Council examinations department. Candidates must therefore use appropriate security of transport at their own expense.

1.4 Assessment of the report

Engineering Council examinations department reserves the right to require a candidate to attend an oral examination.

Engineering Councils examinations department will notify candidates of the acceptance or otherwise of the project report within four months of receipt of the document.

Unsuccessful candidates will be given brief reasons for the failure.

The decisions of the Engineering Council examinations Committee are final. No correspondence will be entered into regarding the results of the assessment.

1.5 Resubmission

Candidates will be permitted to make a resubmission of their project proposal within twelve months of their previous project proposal not being accepted.

Candidates will be permitted to make a resubmission of their project report within twelve months of their previous project report not being accepted.

Candidates will not be permitted any extension of this time.

Candidates who wish to submit a new report on a different topic must complete and submit a fresh project proposal.

Details of the entry fee will be sent with the appropriate entry form.

If a candidate's initial project proposal is rejected, part of the fee less an administrative charge will be refunded if the candidate decides not to continue with the project report unit.

1.6 Guidance

This document assumes that the rules have been read and understood.

The following paragraphs give useful guidance to candidates in their application, preparation and submission for Postgraduate Diploma project unit. In all instances the published rules take precedence over any statement in this section.

All the information required by the project proposal form must be given but within the limitations imposed by the rules.

The scope of the engineering disciplines is extremely wide. For the purpose of assessing projects, the scope has been divided into six broad groups:

A. Civil and Structural Engineering
B. Electrical and Electronic Engineering
C. Mechanical and Production Engineering
D. Process Engineering
E. Transport Engineering
F. Information Systems Engineering

An applicant must indicate clearly on the proposal form the particular and most appropriate group in which the proposed project should be assessed.

In formulating a project proposal, an applicant may wish to select some of the following headings. The list is not exhaustive nor necessarily in any meaningful order.

- Objectives
- Method or Approach
- Outcome
- Validation
- Problems
- Safety
- Environmental Aspects
- Economic Aspects
- Quality centred techniques and procedures.

When the examiner approval of the outline description of the objective of the project and the work to be undertaken, it is done only in the sense that it is agreeing that the work proposed, when undertaken under competent supervision, may provide suitable material for the submission of a project report

No responsibility can be accepted for supervision of the work to be undertaken.

The rules state:

The project on which a report is to be submitted should satisfy aspects a) to g) in the guidelines.

The report should be written in English and its standard is expected to be similar to that of a project undertaken during the final year of a course leading to a UK accredited MEng degree in an engineering discipline. Close attention will be paid to presentation and to clarity and style of the written work.

The examiner will expect the project report to take account of any comments made at the time of approving the project proposal.

If the project is not the work of a single applicant, the candidate must indicate clearly in the report those parts of the project for which he/she is solely responsible.

It is expected that the majority of projects will be undertaken whilst in employment. In such cases, the candidate must ensure that he has the permission of his employer to submit the report where this is appropriate. Reports marked confidential will not be accepted. Engineering Council examinations department cannot undertake to maintain confidentiality of the project report.

It is essential in all cases for candidates to obtain the guidance and supervision of a competent person.

It is essential that any experimental work is undertaken in a safe manner, and at all times must follow the precepts of any Health and Safety policy statement of the establishment or organisation in which the candidate is working.

The Report should not exceed a total of 40 pages excluding drawings, tables, computer output and appendices. This restriction on length should not be thought to minimise the importance of this project unit of the Postgraduate Diploma examination; rather it is to encourage conciseness of expression and selective presentation of results.

The arrangement and style of papers published in the technical and scientific literature should be studied. Comparing them with one another will help in deciding both what to avoid and what constitutes a suitable type of presentation, viz. one which adequately and concisely describes the work done and at the same time maintains the interest of the report.

In addition to the requirements for the presentation of the project report, it is suggested that the following recommendations are taken into account:

a The full name of the candidate, the candidate's enrolment number, the place where the project was undertaken, the date of submission and the title of the project should appear on the outside of the folder as well as on the title page.

b Identification of the contribution of all people (including their designation) who are involved in the development of the report.

c A short abstract including a summary of the purpose and results of the work should be submitted on a separate sheet (included in the report but not bound to it).

d A page listing the contents, with page numbers, should be included and the text should be sectionalised and sub divided wherever this is helpful.

e A list of the symbols used should be included on page at the end. It is convenient if this is made to fold outwards.

f All quotations, facts and opinions from published work should be identified by the name of the author and the date of publication. The collected references should be given in alphabetical order of the first named author.

g In the case of a report including computing material, flow charts and programme listings are expected and it should be shown clearly how the programmes were tested to ensure that they worked correctly.

h All diagrams must either be A4 size or less or else folded and bound to fit within the limits of the A4 size

i The report should conclude with a short summary including conclusions.

Candidates will be informed as soon as is practicable, after submission whether their report is satisfactory. Normally the Engineering Council examinations department will expect to the assessment of the report to be completed within four months of its receipt.

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1.7 Postgraduate Diploma projects

1. The guidance on group projects endorsed by the Registration Standards Committee states in paragraph 6 that

   Specific aspects that should normally be covered within the group project include the application and integration of:

   a Team working skills (but with the individual being responsible for at least one major part of the project
   b Multi-disciplinary activities (i.e. across the engineering disciplines)
   c Multi-function activities, where possible (i.e. across the business functions, such as finance, legal, etc)
   d Project management skills and quality control techniques and procedures
   e Written and verbal communication skills (i.e. both to communicate effectively with other project team members and to communicate the results of the project)
   f Industrial relevance (i.e. the 'real world' of the discipline)
   g Industrial involvement (i.e. a 'real' industrial problem)

   In all cases the performance of the individual must be assessed.

   And in paragraph 7 that:

   Where a matching section is undertaken in industry concurrently with Initial Professional Development, or simply during employment in an engineering environment, it is likely that the Group Project can be undertaken as part of the normal employment tasks. Candidates for the Postgraduate Diploma would fall into these categories.

2. The Guidance goes on to state that:
   Where a project has to be carried out to satisfy the requirements of the Engineering Council Part 3 (Postgraduate Diploma) examination, it is essential that the above seven aspects are still satisfied. However, in this event, the aspects which need to be 'simulated' and those which are 'real' will be different from those described in the previous section (for university based routes). The requirements could be met in the following ways:

3. It is unlikely that anyone working in industry or commerce will not be working in some form of team. This may be a small or large internal team or may be a self-employed individual working in a 'team' with his/her client. In either case, the team will be 'real' with a real objective and a real customer. The members will have varying experience and the team or project leader will have to develop and use team management and communication skills. The project must have an acceptable amount of engineering content. This situation would satisfy aspects a) to d).

   Aspect e) will almost certainly need to be simulated, at least in part. The individual concerned may be the only member of the team who needs to use the project for formal assessment. It will thus be necessary to produce an individual, written project report which will be available for assessment during the Professional Review process, if not before (to complete the requirements for the Postgraduate Diploma).

The report would need to replicate the normal requirements of a university-based project. Firstly, this would be describe and analyse the project aims, design, implementation and results. Secondly, it would analyse the project in terms of its management, quality control and progression; set out the successes and failures and propose alternative improved procedures, etc. Obviously, the report will need to be cleared with the team leader or supervisor of the author.

By definition, a project undertaken in industry should satisfy aspects f) and g).

4. Since the project reports will be the work of an individual, their assessment will relatively straightforward, following similar procedures to those currently followed for the Part 2 (Graduate Diploma) projects. Supporting documentation and authentication would be available from the Supervisor/employer. Involvement of the nominated body at this stage should be possible.

5. The RSC has made an explicit statement in the Guidance as to the acceptability of assessed group project work carried out in employment as a replacement for the simulated project in an academic environment. In many cases, the work-based project could be seen to be advantageous.

1.8 Guidance on group projects

(Endorsed by Registration Standards Committee on 4 May 1999)

Introduction

1. SARTOR 3rd Edition specifies a number of important differences which will exist between an accredited BEng (Hons) course and an accredited MEng course or between an accredited IEng course and an HND course.

2. These are:
   - a Both broader and deeper technical knowledge
   - b Broader coverage of non-technical aspects, such as commercial, management, communication, legal, etc.
   - c A group project, preferably multi-disciplinary

   Each of the above requirements must be presented with industrial relevance.

3. For an HND or BEng (Hons) graduate, the above aspects have to be completed by the addition of a Matching Section to the prior educational experience. The Matching Section may be achieved totally or partially by means of a formal course in a university or college; by distance learning, such as through the Open University; by Work Based Learning (WBL), assessed during employment; or by a combination of these.

4. While RSC wishes, as always, to retain variety and flexibility in the routes to Registration, it is necessary to aim for comparable standards. Thus, it is preferable that, whichever of the above routes is to be used, any definition of a Group Project should meet the general requirements and assumptions set out below, both for the Project itself and for demonstrating its industrial relevance.

SARTOR project requirements

5. The required course content for CEng and IEng degrees is specified in SARTOR 1997 Part 2, CEng Section 4.1.1., paragraph 14 and IEng Section 4.1.2., paragraph 12. Much of the required practical awareness of management issues, leadership, risk analysis, environmental factors, etc., can be gained through a Group Project. Similarly, potential professional engineers are able to demonstrate, while working in a team, the ability to be creative, innovative and adaptable in their problem solving.

6. Specific aspects that should normally be covered within the Group Project include the application and integration of:
   - a Team working skills (but with the individual being responsible for at least one major part of the project)
   - b Multi-disciplinary activities (i.e. across the engineering disciplines)
   - c Multi-function activities, where possible (i.e. across the business functions, such as finance, legal, etc.)
   - d Project management skills and quality control techniques and procedures
   - e Written and verbal communication skills (i.e. both to communicate effectively with other project team members and to communicate the results of the project)
   - f Industrial relevance (i.e. the ‘real world’ of the discipline)
   - g Industrial involvement (i.e. a ‘real’ industrial problem)

   In all cases the performance of the individual must be assessed.

7. Thus, any MEng degree or degree for IEng should satisfy the above requirements. The same will be true in a Matching Section package which must always include a Group Project if the individual's first qualification did not contain one (and see paragraph 8, below). Where a Matching Section is undertaken in industry concurrently with Initial Professional Development, or simply during employment in an engineering environment, it is likely that the Group Project can be undertaken as part of the normal employment tasks.

University-based or College-based projects

8. The Group Project should always occur after the end of the second year of any full-time CEng course and after the end of the first year for a full-time IEng course (or equivalent position in a part-time course). This requirement is to ensure that the project will be at the correct academic level, building on knowledge and skills already acquired. As, realistically, there is usually not time to carry out a Group Project as well as an individual project in the final year of a BEng (Hons) or HND, the Group Project will normally need to be part of a Matching Section, in these cases. If, however, the Group Project **is** designed as part of any formal course, the requirements could be met in the following ways:

9. **Problem** To satisfy items (a) to (d)

   Solution Student teams could be established possibly including members from different engineering courses within the Faculty or School and possibly also from business-related courses. The team members will all have approximately the same level of experience, will manage the project themselves and will usually be supervised by an academic staff member. This is thus simulating a real-world project.

10. **Problem** To satisfy item (e)

    Solution Formal project reports and presentations will be required as in any academically based project. Some of the assessment will be of the whole group and some will be of each individual.

11. **Problem** To satisfy items (f) and (g)

    Solution An appropriate project will be defined and/or approved by academic staff and the industrial aspects may need to be simulated by involving selected industrial or commercial organisations and relevant individuals in the specification of the project. A better solution would be to tackle a real industrial problem, with some supervision by and involvement of the company concerned.

12. **Problem** To provide a robust system of individual assessment.

    Solution This would form part of the normal process of 'in course' assessment with the same requirements as for any project in an accredited course.

Work-based projects

13. Where a project has to be carried out to satisfy the requirements of a formal Distance Learning route, such as the OU or Engineering Council Part 3 examination, or as part of WBL, it is essential that the above seven aspects are still satisfied. However, in this event, the aspects which need to be 'simulated' and those which are 'real' will be different from those described in the previous section.

14. Depending on the company size and geographical situation of the individual's employment, the requirements could be met in the following ways:

15. **Problem** To satisfy items (a) to (d)

    Solution It is unlikely that anyone working in industry or commerce will not be working in some form of team. This may be a small or large internal team or may be a self-employed individual working in a 'team' with his/her client. In either case, the team will be 'real' with a real objective and a real customer. The members will have varying experience and the team or project leader will have to develop and use team management and communication skills. The project must have an acceptable amount of engineering content.

16. **Problem** To satisfy item (e)

    Solution This aspect of the requirements will almost certainly need to be simulated, at least in part. The individual concerned may be the only member of the team who needs to use the project for formal assessment. It will thus be necessary to produce an individual, written project report which will be available for assessment during the Professional Review process, if not before.

    The report would need to replicate the normal requirements of a university-based project. Firstly, this would be to describe and analyse the project aims, design, implementation and results. Secondly, it would analyse the project in terms of its management, quality control and progression; set out the successes and failures and propose alternative improved procedures, etc. Obviously, the report will need to be cleared with the team leader or supervisor of the author.

    This recommended procedure follows very closely that which runs successfully in high quality sandwich degree programmes where student assessment is a joint procedure between the University and the employer and, often, presentations are given by the student.

17. **Problem** To satisfy items (f) and (g)

    Solution By definition, the project undertaken in industry should be able to satisfy these requirements.

18. **Problem** To provide a robust system of individual assessment.

    Solution This would need to be provided through a range of means and would certainly require assessment expertise from an academic source, possibly in conjunction with the nominated body. Preferably, supporting documentation and authentication would be available from the employer. In cases where the employer is formally supporting the applicant this will be simpler than where the applicant is acting independently.

Conclusion

19. RSC wishes to make an explicit statement as to the acceptability of assessed group project work carried out in employment as a replacement for the simulated project in an academic environment. In many cases, the work-based project could be seen to be advantageous.

20. Nominated bodies should develop appropriate advice and guidance for academia, employers and potential members, either based on that proposed above or a demonstrably equivalent alternative. This guidance should include any specific requirements regarding the selection of project topics.