SECTION 7. APPENDICES TO THE ACCREDITATION HANDBOOK
Dated 8 April 2016

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APPENDIX 2: ACC2 Academic Accreditation: Submission for Accreditation Form
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    Annex B Masters Degree other than the Integrated Masters LO
APPENDIX 3: Applicability of Output Standards to Masters Degree other Integrated Masters
APPENDIX 4: Graduation Statistics
APPENDIX 5: Methods of Assessment
APPENDIX 6: ACC2C Output Standards Matrix Bachelors or Bachelors Hons IEng
APPENDIX 7: ACC2C Output Standards Matrix Bachelors Hons as partially meeting CEng
APPENDIX 8: ACC2C Output Standards Matrix Integrated Masters (MEng) CEng
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INITIAL SUBMISSION DATA FORM ACC1

For Academic Courses leading to EC Registration

Please list all programmes you wish to be considered for accreditation

**PART A: General Details**

<table>
<thead>
<tr>
<th>Name and Address of University</th>
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<tbody>
<tr>
<td>Department</td>
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<tr>
<td>Head(s) of Department ¹</td>
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<tr>
<td>Email</td>
<td>Tel:</td>
</tr>
<tr>
<td>Member of Staff responsible for submission²</td>
<td></td>
</tr>
<tr>
<td>Email</td>
<td>Tel:</td>
</tr>
<tr>
<td>Suggested date for visit</td>
<td></td>
</tr>
</tbody>
</table>

¹ For joint degrees, give the names of all heads and departments and their email addresses
² Include name, email and telephone

**PART B: Programme Details**

<table>
<thead>
<tr>
<th>Designation and Title ¹</th>
<th>Engineering Council reference number²</th>
<th>Mode and duration FT, SW and PT</th>
<th>Year of first cohort</th>
<th>Other Professional Institutions (if joint visit required)</th>
<th>Registration Category³</th>
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</table>

¹ For example: BEng (Hons) Aeronautical Engineering. Use the Title that appears on the degree certificates
² Please refer to the Engineering Council Academic Courses Accreditation Database (ACAD). If programme is new, please indicate
³ (NEW)
³ Please indicate registration category against which programme will be accredited (e.g. CEng or IEng)

**PART C: Programme Specifications**
On USB or in other electronic format: Please submit programme specifications for each degree title. If you are seeking accreditation for a degree that does not have specifically aeronautical or aerospace content, please indicate the relevance of the programme to the industry.

PART D: Programme Learning Outcomes

Please provide a statement not exceeding 200 words explaining how the University has ensured that the programme(s) meet the AHEP 3rd Edition Learning Outcomes across the six key areas of learning:

- Science and mathematic
- Engineering analysis
- Design
- Economic, legal, social, ethical and environmental context
- Engineering practice
- Additional general skills

To avoid repetition reference should be made where appropriate to the Programme Specifications.

Signed:                                Date:
SUBMISSION FOR ACCREDITATION ACC2

BEng, BSc, BEng (Hons), BSc (Hons), MEng, MSc and EngD
Programmes leading towards
Engineering Council Registration

Department/School of [please insert details]

University of [please insert details]

Signed: ________________________________  
(Head of Department/School)

Date: ________________________________
The completed form and supplementary documentation should be sent to RAeS at least eight weeks before the proposed visit.

Please note:

1. This document is provided for a Professional Engineering Institution accreditation team that is accrediting degree programmes for academic qualifications for Chartered or Incorporated Engineer status.

2. Much of the information will be common to all programmes being considered for accreditation. Where more than one programme is being accredited, a number of the sheets will have to be copied and completed as appropriate for EACH programme. Please cross reference information wherever possible.

3. Where information is not available please indicate why it is missing and when it will be provided.

4. If the answer to any question is available in another document, attach the relevant text as an appendix, incorporate it into this form or indicate where this information is provided within the submission documentation.

When making your submission please ensure that:

1. All core information is supplied in the relevant sections, on the submission document (unless indicated otherwise).

2. Information is not duplicated.

3. All statistics are double-checked.

4. Every page is numbered.

5. Your university name is indicated on every document submitted.

6. The shaded areas containing the statements/questions are not removed from the document.

7. All documentation is submitted on a USB device or by other electronic means.

8. On USB device, the preferred format is HTML with a detailed table of contents linked to the sections. If it is not possible to provide the information in HTML, the other acceptable formats are, in order of preference Word, PDF or RTF. Please include a table of contents referencing names of the files if the format is not HTML. Please ensure that all formats are readable on multiple platforms.
Submission for Accreditation

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F1 Additional information................................................................................ 53
### A1.1 General Details

<table>
<thead>
<tr>
<th>Name and Address of University</th>
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<th>Head(s) of Department</th>
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<th>Member of Staff responsible for submission</th>
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<thead>
<tr>
<th>Email:</th>
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<tr>
<td>Tel:</td>
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</table>

**Suggested date for visit**

1. For joint degrees, give the names of all heads and departments and their email addresses
2. Include name, email and telephone

### A1.2 Programme Details

<table>
<thead>
<tr>
<th>Designation and Title</th>
<th>Engineering Council ref</th>
<th>Mode of delivery and Length of Programme</th>
<th>Accreditation Period</th>
<th>Other Professional Institution (if joint visit required)</th>
<th>Registration Category</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>FT, SW and PT</td>
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</tr>
</tbody>
</table>

1. For example: BEng (Hons) Aeronautical Engineering. Use the Title that appears on the degree certificates
2. Please refer to Engineering Council accredited degree database. If programme is new, please indicate (NEW)
3. To be completed by the Secretariat for use in the visit report and final decision letter
4. Please indicate registration category against which programme will be accredited (e.g. IEng or CEng).

### A1.3 Details of Previous Accreditation (if applicable)

<table>
<thead>
<tr>
<th>Professional Engineering Institutions involved:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Society only, Joint Visit or EAB</td>
</tr>
</tbody>
</table>

**Please state which PEIs were involved**

<table>
<thead>
<tr>
<th>Have all the actions required from the previous visit been addressed?</th>
<th>Yes/No</th>
</tr>
</thead>
<tbody>
<tr>
<td>If yes, please attach a copy of the completed action plan on USB Memory Stick.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>If any actions have not been completed please provide details.</th>
</tr>
</thead>
</table>

| Please provide brief details of any major changes since your last accreditation visit, for example, significant staff, infrastructure or programme changes. |

### A1.4 Programme Specifications

**On USB Memory Stick:** Please submit programme specifications for each degree title.
A1.5 External Examiners Reports
On USB Memory Stick: Please submit External Examiners Reports for each degree title for the past 3 years.

A1.6 Programme Learning Outcomes
On USB Memory Stick: Please provide the following information:

a) For an undergraduate programme, please provide a statement not exceeding 200 words explaining how the University has ensured that the programmes meet appropriate QAA/SCQF levels descriptors and the AHEP 3rd Edition Learning Outcomes across the six key areas of learning:

- Science and mathematics
- Engineering analysis
- Design
- Economic, legal, social, ethical and environment context
- Engineering practice
- Additional general skills

b) For an integrated Masters programme (MEng), please provide a statement not exceeding 200 words explaining how it has been designed to meet the two principal reference points (QAA qualification descriptor and UK-SPEC Learning Outcomes) particularly those at Masters level.

c) For an MSc or EngD programme, please provide a statement not exceeding 200 words explaining how the programme has been designed to meet the Learning Outcomes for Masters degrees other than integrated MEng (published 2011) produced by the Engineering Council. Reference may also be made to the two principal reference points: the QAA qualification descriptor level 7 or the SCQF level 11 and UK-SPEC Learning Outcomes.

To avoid repetition reference should be made where appropriate to the Programme Specifications.

A2 QUALITY ASSURANCE

On USB Memory Stick: Please provide details of the Departmental QA management structure and procedures including:

A2.1 QAA Institutional Audit Review
Please provide a copy of the summary and recommendations from the most recent QAA Audit Review Report. Where one has not been carried out please state when this is scheduled for or expected.

A2.2 Internal Programme Review Reports
Please provide the three most recent reviews (including annual and periodic), covering teaching and learning and the Department’s response.

A3 STAFF

A3.1 Teaching Staff
On tables below: Please provide the following information about staff members.

<table>
<thead>
<tr>
<th>Summary</th>
<th>Number</th>
</tr>
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<tbody>
<tr>
<td>Number of Teaching Staff</td>
<td></td>
</tr>
<tr>
<td>Number of Support Staff (Admin/Secretarial)</td>
<td></td>
</tr>
<tr>
<td>Number of Technical Staff</td>
<td></td>
</tr>
<tr>
<td>Student/Staff Ratio *</td>
<td></td>
</tr>
<tr>
<td>Number of Research Staff</td>
<td></td>
</tr>
<tr>
<td>Number of CEng/IEng</td>
<td></td>
</tr>
<tr>
<td>Membership of Professional Body</td>
<td></td>
</tr>
</tbody>
</table>
Please state which Institution(s) and number of staff members

* Please indicate how the Student/Staff Ratio was calculated

Please provide the following information about staff members.

<table>
<thead>
<tr>
<th>Name</th>
<th>Professional Affiliation</th>
<th>Area of Teaching</th>
<th>Staff Research Activity</th>
<th>Relevant Industrial experience (if any)</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

A3.2 Staff Development and Training

On USB Memory Stick: Provide brief details of the development policies for all staff; please detail how these are implemented and information on the staff appraisal scheme. Specify the training available and how this is funded. Include induction training for new staff. Please also state how professional registration with a Professional Engineering Institution is encouraged.

A4 RESOURCES

On USB Memory Stick: Please provide the following details.

A4.1 Facilities

Provide details of the facilities available under the following headings, including access hours:

a) Teaching Laboratories and Workshops
b) Library Facilities
c) Computers and Computer Laboratories
d) Lecture Rooms
e) Student study areas
f) Finances available and Renewal Plan (State how funding is provided and maintained)

A4.2 Student Experience

Provide brief details on the following:

- Pastoral, academic and welfare support available to students
- Department's response to the most recent National Student Survey
- Describe the role and operation of the Staff-Student Liaison Committee and any other mechanism that have been established to obtain student feedback
- Explain how such feedback is used to improve student support and learning
- Please include any formal minutes of the Staff Student Liaison Committee meetings for the past year.

A5 FUTURE PLANS AND INTENTIONS

A5.1 Planned Changes

On USB Memory Stick: Provide details of any major changes planned or intended in the programme structure or content, facilities, equipment, staff or student intake which could affect the learning experience of the students over the period of accreditation.

SECTION B PROGRAMME ISSUES

B1 PROGRAMMES

PROGRAMME TITLE
On USB Memory Stick: Please provide the following information by programme title.

B1.1 **Programme Structure**
Provide a diagram for the programme structure for each mode of delivery clearly showing core and optional subjects, their total credit value*, and all possible routes through the overall programme OR indicate where this information is provided elsewhere in the submission.

B1.2 **Syllabuses/Module Descriptors**
Module Descriptors should be provided. The descriptors should state their credit value*, pre-requisites and co-requisites. The recommended reading material for each year of the degree should also be provided.

B1.3 **Examination Papers**
Please supply examination papers for all years of study for the past 3 years.

* Please refer to the following guidance on credit values:
www.qaa.ac.uk/Publications/InformationAndGuidance/Documents/creditframework.pdf

---

**B2 PROJECTS (INDIVIDUAL AND GROUP PROJECTS)**

On USB Memory Stick: Please provide the following information.

B2.1 **Project List**
Please provide a list of individual projects and Group projects for MEng students. Titles and marks should be provided for the most recent year available.

B2.2 **Confidentiality Agreements**
Please indicate if there are any confidentiality agreements in place which would have an impact on the availability of project reports for review by accreditation panel members.
If a confidentiality agreement is in place, please could you confirm that a waiver has been requested or whether arrangements have been put in place for panel members to sign a waiver agreement?

B2.3 **Selection and Allocation of Projects**
Please state the process for selection and allocation of projects.

B2.4 **Project Assessment**
Please list details of how projects are assessed including any marking criteria used.

B2.5 **Project Failures**
Please state the implications for a student who fails a project.

B2.6 **Project Guidance**
Include, where available, the Student Project Handbook including a copy of the policy on re-submission of project work.

---

**B3 INDUSTRIAL INPUT AND INFLUENCE**

On USB Memory Stick: Please provide the following information.

B3.1 **Industrial input, influence and research**
Provide brief details of the industrial and research inputs to the programme review and development processes.

B3.2 **Industrial Advisory Board**
Where the School/Department has an Industrial Advisory Board (IAB), describe the various ways in which the IAB contributes to the support and development of the programmes put forward for accreditation.

Please provide the following:
1. Details of the Membership of IAB (Names, Affiliations and Professional titles).
2. Terms of Reference
3. Information on the frequency of the meetings
4. Minutes of meetings of the IAB for the past 3 years

B3.3 Visiting Lecturers
Provide details of any arrangements for lectures to students by visiting lecturers and how these relate to the programmes of study? This should include the names of the lecturers, modules covered and qualifications of the lecturers.

B3.4 Industrial Experience
Provide brief details of industrial experience, including sandwich placements, industry placements, internships or apprenticeships, available to students. Please state the method of monitoring and the name(s) of the staff member(s) responsible. Please state how the industrial experience contributes to the degree result. Please state the number of students who are currently on undertaking industrial experience.

B3.5 Industrial Visits
Provide brief details of industrial visits or any other provision by the Department for students to obtain relevant experience off campus for the past 3 years. Detail how these experiences contribute to the overall degree result. Include the name(s) of the staff member(s) responsible.

B4 PARTNERSHIP ARRANGEMENTS AND OVERSEAS STUDY

On USB Memory Stick: Please provide the following information.

B4.1 Period of Study Overseas
Provide brief details of any period of time spent overseas, indicating the length of time spent overseas; when such study occurs (i.e. at which part of the programme); details of the host educational establishment; the elements of study undertaken overseas; how such work is assessed. Please also state the arrangements in place to assure that the study is compatible with that in the home university and whether the work contributes to the degree result.

B4.2 Partnership and Collaboration with Other Institutions*
Please state the details of any programmes put forward for accreditation that are offered in collaboration with other institutions. Details should include the agreement in place, any variants in entry or exit requirements, variants in assessment and pass marks, and progression between the universities involved in the programme.

B4.3 Franchise Arrangements*
If applicable, indicate the Institution where any programme is franchised, and the proportion of the programme studied at that Institution. Please provide procedures by the School/Department to ensure that the franchise arrangements are reviewed.

*Please note that PEIs have a requirement to visit any other providers involved in the programme(s) put forward for accreditation.

B5 ADMISSIONS, PROGRESSION, AWARD AND DESTINATION

On USB Memory Stick: Please provide the following information.

B5.1 Programme Details
Provide details of the following:
- Year the programme commenced
- Year the programme was last revised
- Number of students currently on the programme

B5.2 Published Entry Requirements
Provide details of the published entry requirements for all the programmes submitted for accreditation.
B5.3 Cohort Support
If this programme admits students with a wide range of evidenced ability levels and/or admits students directly into later years of the programme, provide details of how these students are supported.

B5.4 Methods of Assessment
Using ACC2/B: Methods of Assessment please indicate for each year how much of the programme as a whole is assessed by:
1. Written examinations
2. End of unit tests
3. Programme assignments and practical work
4. Major project
5. Other (e.g. placements)

Provide details of pass marks and any provision for compensation, together with referral procedures and opportunities to re-sit examinations.
1. Please include a copy of the policy on re-sitting examinations
2. Please detail the arrangements for resubmitting programme work and project work
3. If it is a collaborative programme with another institution, please provide the above information for the partner institution.

B5.5 Progression
Please detail the conditions governing progression and/or transfer on undergraduate programmes:
1. From one year to another for each of the programmes?
2. From one programme to another? (e.g. between BEng (Hons) and MEng)

B5.6 Exit Award
Please state any exit policy or award in place for non-completion of a specified degree programme.

B5.7 Classification
State how the award of the degree is determined and details on pass/fail/distinction.

B5.8 Graduation
Using ACC2/A: Graduation Statistics please supply the results for the last 2 cohorts to graduate, indicating graduation year.

B6 PROFESSIONAL MEMBERSHIP, PROMOTION OF ACCREDITATION, EUR-ACE

On USB Memory Stick: Please provide the following information.

B6.1 Published Information
Please detail how professional membership and programme accreditation is integrated into all published material (e.g. website, prospectus, handbook, Key Information Set (KIS)) and the process for ensuring accuracy of such information.

B6.2 Student Members
Please state how membership and registration with RAeS is promoted to the students. Please state how many students are members.

B6.3 Professional Institutions
Provide details of staff and student involvement in the activities of RAeS and how such engagement adds to the learning experience.

Provide details of how the university informs students and staff of such activities and the requirements for professional membership and Engineering Council registration.

B6.4 EUR-ACE Labels
The EUR-ACE (European) quality label for engineering programmes is awarded by the European Network for Accreditation of Engineering Education (ENAE) via nine authorised agencies, of which the Engineering Council is
one. The ENAEE makes a charge for award of the label on a programme by programme basis. UK universities may apply for a label for any degree holding accredited status since November 2006. Labels are valid for the duration of accreditation.

If you wish to apply for EUR-ACE Labels for any or all of the programmes put forward for accreditation please contact the Engineering Council.

### B7 SPECIAL / COMMENDABLE FEATURES

**On USB Memory Stick:** Please provide the following information.

**B7.1 Examples of Innovative Features**

Please provide details of any innovative programmes, teaching practice, programme design or innovative modes of delivery that you wish to draw to the attention of the accreditation panel (less than 1000 words).

Please also indicate if you would be happy for RAeS to share details or links to such activity with the Engineering Council or others, including other academic institutions.

Yes [ ] No [ ]

### SECTION C OUTPUT STANDARDS MATRIX

#### C1 PROGRAMME CONTENT

**C1.1 Output Standards Matrix**

Please complete the relevant worksheet in Form ACC2/C: Output Standards Matrix for MEng, BEng (Hons), BSc (Hons) or Form ACC2/D: Output Standards Matrix for MSc or EngD Programmes.

Undergraduate engineering programmes must demonstrate through their teaching and assessment methods that graduates have reached the desired threshold level of each of the Output Criteria as specified in the UK SPEC document Accreditation of Higher Education Programmes.

**Guidance:**

- A separate form should be completed for each programme
- Please refer to the following forms, where appropriate:
  - Form ACC2 Appendix A: Bachelors and Integrated Masters degree Learning (AHEP 3rd edition)
  - Form ACC2 Appendix B: Masters Degree other than the Integrate Masters (MEng), and EngD Learning Outcomes (AHEP 3rd edition)

List all the Programme Modules for all years of the programme and indicate against each module where the output criteria statements are addressed.

### SECTION D ELECTRONIC DOCUMENTATION AND CHECKLIST

#### D1 PROGRAMME CONTENT

Please use this checklist to ensure that all required documentation can be found on the accompanying USB Memory Stick.

<table>
<thead>
<tr>
<th>Reference</th>
<th>Description</th>
<th>Included?</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1.4</td>
<td>Programme Specifications</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## External Examiners Reports

## Programme Learning Outcomes

## QAA Institutional Audit Review

## Internal Programme Review Reports

## Staff Development and Training

## Facilities

## Student Experience, including Staff-Student Liaison Committee Minutes and National Student Survey

## Planned Changes

## Programme Structure

## Syllabuses/Module Descriptors

## Examination Papers

## Project List, including titles and marks

## Confidentiality Agreements, including waiver agreements

## Selection and Allocation of Projects

## Project Assessment

## Project Failures

## Project Guidance, including student handbook

## Industrial Advisory Board, including Industrial Membership, Terms of Reference, Advisory Board Minutes

## Visiting Lecturers

## Industrial Experience

## Industrial Visits

## Periods of Overseas Studies

## Partnership and Collaboration with Other Institutions

## Franchise Arrangements

## Programme Details

## Published Entry Requirements

## Cohort Support

## Methods of Assessment, including ACC2/A: Methods of Assessment

## Progression

## Exit Award

## Classification

## Graduation, including ACC2/B: Graduation Statistics

## Published Information

## Student Members

## Professional Institutions

## Examples of Innovative Features

## Output Standards Matrix, including ACC2/C Output Standards Matrix

## SECTION E  ADDITIONAL INFORMATION FOR VISIT

## ADDITIONAL INFORMATION

### E1  ADDITIONAL INFORMATION

#### E1.1  Additional Information Required for Visit

Please be prepared to produce the following at the visit:
- Model solutions for all examination papers provided in the submission
- Module boxes
  - Samples of assessed student work (including examination scripts and programme work)
  - Samples of student lab books
- Student Project
  - Samples of assessed student projects with marking schemes
  - MEng and BEng Major Projects (2 good, 2 average and 2 weak)
- Copy of latest prospectus and other promotional detail, including Key Information Statements (KIS)
- Programme/Student Handbook
- Confidentiality Agreements for panel members if required to review project work

### SECTION F  ADDITIONAL INSTITUTION SPECIFIC INFORMATION FOR VISIT

#### F1  ADDITIONAL INFORMATION

#### F1.1  Additional Institution Specific Information Required for Visit

The RAeS believes that all students on programmes that it accredits within the broad sphere of aerospace engineering should have practical flight experience. This may be a self contained flight test course, or consist of an integrated programme of flight test and flight simulation. The Society also recognises the growing importance of remotely piloted vehicles, relatively inexpensive examples of which are in the scope of universities to design, instrument, construct and flight test. These may also provide an important means by which students may gain practical experience of flight vehicles.

For more general engineering programmes which may lead to careers in the aerospace industry, it is recognised that, although desirable, the constraints on such programmes may preclude the inclusion of these features.

Your submission should include a statement of the School's policy on this matter.
Annex A: Bachelors and Integrated Masters Degree Learning Outcomes

This appendix is based on the 3rd edition of ‘Accreditation of HE Programmes’ (AHEP) published May 2014

FOR ALL DEGREES, THE WEIGHTING GIVEN TO THE SIX BROAD AREAS OF LEARNING BELOW WILL VARY ACCORDING TO THE NATURE ANDAIMS OF EACH PROGRAMME

Bachelors degrees and Bachelors (Honours) degrees accredited for the purpose of IEng registration will have an emphasis on development and attainment of the know-how necessary to apply technology to engineering problems and processes, and to maintain and manage current technology, sometimes within a multidisciplinary engineering environment. Graduates from accredited Bachelors or Bachelors (Honours) degree programmes must achieve the learning outcomes described below. The breadth and depth of underpinning scientific and mathematical knowledge, understanding and skills will be provided in the most appropriate manner to enable the application of engineering principles within existing technology to future engineering problems and processes. Graduates are likely to have acquired some of this ability through involvement in individual and/or group design projects. Programmes will develop a knowledge and understanding of current engineering practice and processes, with less focus on analysis than in programmes accredited for CEng. Design will be a significant component, especially in integrating a range of knowledge and understanding to design products, systems and processes to meet defined needs using current technology.

Bachelors (Honours) degrees accredited as partially meeting the educational requirement for CEng develop the ability to apply a thorough understanding of relevant science and mathematics to the analysis and design of technical solutions to improve quality of life. Graduates from accredited Bachelors (Honours) programmes must achieve a systematic understanding of the learning outcomes described below, including acquisition of coherent and detailed knowledge, much of which is at, or informed by, the forefront of defined aspects of the relevant engineering discipline. Crucially, they will have the ability to integrate their knowledge and understanding of mathematics; science; computer-based methods; design; the economic, legal, social, ethical and environmental context; and engineering practice to solve problems, some of a complex nature, in their chosen engineering discipline. They are likely to have acquired some of this ability through involvement in individual and/or group design projects.

Integrated Masters (MEng) degrees accredited for CEng registration include the outcomes of accredited Bachelors (Honours) degrees and go beyond to provide a greater range and depth of specialist knowledge, within a research and industrial environment, as well as a broader and more general academic base. Such programmes should provide both a foundation for leadership and a wider appreciation of the economic, legal, social, ethical and environmental context of engineering. Graduates from an accredited integrated Masters (MEng) degree must achieve a systematic understanding of the learning outcomes described below, including acquisition of coherent and detailed knowledge, most of which is at, or informed by, the forefront of defined aspects of the relevant engineering discipline. Some of the learning outcomes will be to levels deeper and broader than in a Bachelors programme, the balance of which will vary according to the nature and aims of each programme. Crucially, graduates will have the ability to integrate their knowledge and understanding of mathematics; science; computer-based methods; design; the economic, legal, social, ethical and environmental context; and engineering practice to solve a substantial range of engineering problems, some of them complex or novel. They will have acquired much of this ability through involvement in individual and group design projects. Ideally some of these projects would have industrial involvement or be practice-based.
LEARNING OUTCOMES SPECIFIED IN AHEP FOR BACHELORS DEGREES AND BACHELORS (HONOURS) DEGREES ACCREDITED FOR IENG REGISTRATION, BACHELORS (HONOURS) DEGREES ACCREDITED AS PARTIALLY MEETING THE EDUCATIONAL REQUIREMENT FOR CENG (WITH FURTHER LEARNING TO MASTERS LEVEL REQUIRED), AND INTEGRATED MASTERS (MENG) DEGREES ACCREDITED FOR CENG REGISTRATION.

Interpretation

In the tables below, the following terms are used with the meanings stated:

<table>
<thead>
<tr>
<th><strong>Understanding</strong> is the capacity to use concepts creatively, for example in problem solving, in design, in explanations and in diagnosis.</th>
<th><strong>Knowledge</strong> is information that can be recalled.</th>
<th><strong>Know-how</strong> is the ability to apply learned knowledge and skills to perform operations intuitively, efficiently and correctly.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Skills</strong> are acquired and learned attributes which can be applied almost automatically.</td>
<td><strong>Awareness</strong> is general familiarity, albeit bounded by the needs of the specific discipline.</td>
<td><strong>Complex</strong> implies engineering problems, artefacts or systems that involve dealing simultaneously with a sizeable number of factors that interact and require deep understanding, including knowledge at the forefront of the discipline, to analyse or deal with.</td>
</tr>
</tbody>
</table>

In the tables below, learning outcomes related specifically to Bachelors and Bachelors (Honours) degrees accredited for IEng are numbered with an ‘i’, learning outcomes related specifically to Bachelors (Honours) degrees accredited for CEng (with further learning required) are numbered with a ‘b’ and learning outcomes related specifically to integrated Masters degrees accredited for CEng are numbered with an ‘m’. Where a learning outcome applies to IEng or CEng and is identical to the statement for Bachelors (Honours) for CEng it is shown in the relevant column(s) with no ‘i’, ‘b’ or ‘m’. Note the numbering is only for the purpose of enabling a matrix for EAB submissions.
**Science and Mathematics (SM)**

**Engineering is underpinned by science and mathematics, and other associated disciplines, as defined by the relevant professional engineering institution(s). Graduates will need:**

<table>
<thead>
<tr>
<th>Bachelors and Bachelors (Honours) degrees accredited for IEng</th>
<th>Bachelors (Honours) degrees accredited for CEng (with further learning required)</th>
<th>Integrated Masters (MEng) degrees accredited for CEng</th>
</tr>
</thead>
</table>
| **SM1i**  
- Knowledge and understanding of the scientific principles underpinning relevant technologies, and their evolution | **SM1b**  
- Knowledge and understanding of scientific principles and methodology necessary to underpin their education in their engineering discipline, to enable appreciation of its scientific and engineering context, and to support their understanding of relevant historical, current and future developments and technologies | **SM1m**  
- A comprehensive knowledge and understanding of the scientific principles and methodology necessary to underpin their education in their engineering discipline, and an understanding and know-how of the scientific principles of related disciplines, to enable appreciation of the scientific and engineering context, and to support their understanding of relevant historical, current and future developments and technologies |
| **SM2i**  
- Knowledge and understanding of mathematics and an awareness of statistical methods necessary to support application of key engineering principles | **SM2b**  
- Knowledge and understanding of mathematical and statistical methods necessary to underpin their education in their engineering discipline and to enable them to apply mathematical and statistical methods, tools and notations proficiently in the analysis and solution of engineering problems | **SM2m**  
- Knowledge and understanding of mathematical and statistical methods necessary to underpin their education in their engineering discipline and to enable them to apply a range of mathematical and statistical methods, tools and notations proficiently and critically in the analysis and solution of engineering problems |
| **SM3b**  
- Ability to apply and integrate knowledge and understanding of other engineering disciplines to support study of their own engineering discipline | **SM3m**  
- Ability to apply and integrate knowledge and understanding of other engineering disciplines to support study of their own engineering discipline and the ability to evaluate them critically and to apply them effectively | **SM4m**  
- Awareness of developing technologies related to own specialisation. |
| SM5m | • A comprehensive knowledge and understanding of mathematical and computational models relevant to the engineering discipline, and an appreciation of their limitations |
| SM6m | • Understanding of concepts from a range of areas, including some outside engineering, and the ability to evaluate them critically and to apply them effectively in engineering projects |
**Engineering Analysis (EA)**

**Engineering analysis involves the application of engineering concepts and tools to the solutions of engineering problems. Graduates will need:**

<table>
<thead>
<tr>
<th>Bachelors and Bachelors (Honours) degrees accredited for IEng</th>
<th>Bachelors (Honours) degrees accredited for CEng (with further learning required)</th>
<th>Integrated Masters (MEng) degree for accredited CEng</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EA1i</strong></td>
<td>• Ability to monitor, interpret and apply the results of analysis and modelling in order to bring about continuous improvement</td>
<td><strong>EA1b</strong></td>
</tr>
<tr>
<td><strong>EA2i</strong></td>
<td>• Ability to apply quantitative methods in order to understand the performance of systems and components</td>
<td><strong>EA2</strong></td>
</tr>
<tr>
<td><strong>EA3i</strong></td>
<td>• Ability to use the results of engineering analysis to solve engineering problems and to recommend appropriate action</td>
<td><strong>EA3b</strong></td>
</tr>
<tr>
<td><strong>EA4i</strong></td>
<td>• Ability to apply an integrated or systems approach to engineering problems through know-how of the relevant technologies and their application</td>
<td><strong>EA4b</strong></td>
</tr>
<tr>
<td></td>
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</tbody>
</table>
**Design (D)**

*Design at this level is the creation and development of an economically viable product, process or system to meet a defined need. It involves significant technical and intellectual challenges and can be used to integrate all engineering understanding, knowledge and skills to the solution of real problems. Graduates need the knowledge, understanding and skills to:*

<table>
<thead>
<tr>
<th>Bachelors and Bachelors (Honours) degrees accredited for IEng</th>
<th>Bachelors (Honours) degrees accredited for CEng (with further learning required)</th>
<th>Integrated Masters (MEng) degrees accredited for CEng</th>
</tr>
</thead>
</table>
| **D1i**  
- Be aware of business, customer and user needs, including considerations such as the wider engineering context, public perception and aesthetics | **D1**  
- Understand and evaluate business, customer and user needs, including considerations such as the wider engineering context, public perception and aesthetics | **D1**  
- Understand and evaluate business, customer and user needs, including considerations such as the wider engineering context, public perception and aesthetics |
| **D2i**  
- Define the problem identifying any constraints including environmental and sustainability limitations; ethical, health, safety, security and risk issues; intellectual property; codes of practice and standards | **D2**  
- Investigate and define the problem, identifying any constraints including environmental and sustainability limitations; ethical, health, safety, security and risk issues; intellectual property; codes of practice and standards | **D2**  
- Investigate and define the problem, identifying any constraints including environmental and sustainability limitations; ethical, health, safety, security and risk issues; intellectual property; codes of practice and standards |
| **D3**  
- Work with information that may be incomplete or uncertain and be aware that this may affect the design | **D3b**  
- Work with information that may be incomplete or uncertain and quantify the effect of this on the design | **D3m**  
- Work with information that may be incomplete or uncertain, quantify the effect of this on the design and, where appropriate, use theory or experimental research to mitigate deficiencies |
| **D4i**  
- Apply problem-solving skills, technical knowledge and understanding to create or adapt designs solutions that are fit for purpose including operation, maintenance, reliability etc | **D4**  
- Apply advanced problem-solving skills, technical knowledge and understanding, to establish rigorous and creative solutions that are fit for purpose for all aspects of the problem including production, operation, maintenance and disposal | **D4**  
- Apply advanced problem-solving skills, technical knowledge and understanding, to establish rigorous and creative solutions that are fit for purpose for all aspects of the problem including production, operation, maintenance and disposal |
<p>| | | | |</p>
<table>
<thead>
<tr>
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<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>D5i</strong></td>
<td>- Manage the design process, including cost drivers, and evaluate outcomes</td>
<td><strong>D5</strong></td>
<td>- Plan and manage the design process, including cost drivers, and evaluate outcomes</td>
</tr>
<tr>
<td><strong>D6</strong></td>
<td>- Communicate their work to technical and non-technical audiences</td>
<td><strong>D6</strong></td>
<td>- Communicate their work to technical and non-technical audiences</td>
</tr>
<tr>
<td><strong>D7m</strong></td>
<td></td>
<td></td>
<td>- Demonstrate wide knowledge and comprehensive understanding of design processes and methodologies and the ability to apply and adapt them in unfamiliar situations</td>
</tr>
<tr>
<td><strong>D8m</strong></td>
<td></td>
<td></td>
<td>- Demonstrate the ability to generate an innovative design for products, systems, components or processes to fulfil new needs</td>
</tr>
</tbody>
</table>
### Economic, legal, social, ethical and environmental context (EL)

Engineering activity can have impacts on the environment, on commerce, on society and on individuals. Graduates therefore need the skills to manage their activities and to be aware of the various legal and ethical constraints under which they are expected to operate, including:

<table>
<thead>
<tr>
<th>Bachelors and Bachelors (Honours) degrees accredited for IEng</th>
<th>Bachelors (Honours) degrees accredited for CEng (with further learning required)</th>
<th>Integrated Masters (MEng) degrees accredited for CEng</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EL1</strong></td>
<td><strong>EL1</strong></td>
<td><strong>EL1m</strong></td>
</tr>
<tr>
<td>• Understanding of the need for a high level of professional and ethical conduct in engineering and a knowledge of professional codes of conduct</td>
<td>• Understanding of the need for a high level of professional and ethical conduct in engineering and a knowledge of professional codes of conduct</td>
<td>• Understanding of the need for a high level of professional and ethical conduct in engineering, a knowledge of professional codes of conduct and how ethical dilemmas can arise</td>
</tr>
<tr>
<td><strong>EL2</strong></td>
<td><strong>EL2</strong></td>
<td><strong>EL2</strong></td>
</tr>
<tr>
<td>• Knowledge and understanding of the commercial, economic and social context of engineering processes</td>
<td>• Knowledge and understanding of the commercial, economic and social context of engineering processes</td>
<td>• Knowledge and understanding of the commercial, economic and social context of engineering processes</td>
</tr>
<tr>
<td><strong>EL3i</strong></td>
<td><strong>EL3</strong></td>
<td><strong>EL3m</strong></td>
</tr>
<tr>
<td>• Knowledge of management techniques that may be used to achieve engineering objectives</td>
<td>• Knowledge and understanding of management techniques, including project management, that may be used to achieve engineering objectives</td>
<td>• Knowledge and understanding of management techniques, including project and change management, that may be used to achieve engineering objectives, their limitations, and how they may be applied appropriately</td>
</tr>
<tr>
<td><strong>EL4i</strong></td>
<td><strong>EL4</strong></td>
<td><strong>EL4</strong></td>
</tr>
<tr>
<td>• Understanding of the requirement for engineering activities to promote sustainable development</td>
<td>• Understanding of the requirement for engineering activities to promote sustainable development and ability to apply quantitative techniques where appropriate</td>
<td>• Understanding of the requirement for engineering activities to promote sustainable development and ability to apply quantitative techniques where appropriate</td>
</tr>
<tr>
<td><strong>EL5</strong></td>
<td><strong>EL5</strong></td>
<td><strong>EL5m</strong></td>
</tr>
<tr>
<td>• Awareness of the relevant legal requirements governing engineering activities, including personnel, health &amp; safety, contracts, intellectual property rights, product safety and liability issues</td>
<td>• Awareness of relevant legal requirements governing engineering activities, including personnel, health &amp; safety, contracts, intellectual property rights, product safety and liability issues</td>
<td>• Awareness of relevant legal requirements governing engineering activities, including personnel, health &amp; safety, contracts, intellectual property rights, product safety and liability issues, and an awareness that these may differ internationally</td>
</tr>
<tr>
<td>EL6i</td>
<td>Awareness of risk issues, including health &amp; safety, environmental and commercial risk</td>
<td></td>
</tr>
<tr>
<td>------</td>
<td>------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>EL6</td>
<td>Knowledge and understanding of risk issues, including health &amp; safety, environmental and commercial risk, and of risk assessment and risk management techniques</td>
<td></td>
</tr>
<tr>
<td>EL6m</td>
<td>Knowledge and understanding of risk issues, including health and safety, environmental and commercial risk, risk assessment and risk management techniques and an ability to evaluate commercial risk</td>
<td></td>
</tr>
<tr>
<td>EL7m</td>
<td>Understanding of the key drivers for business success, including innovation, calculated commercial risks and customer satisfaction</td>
<td></td>
</tr>
</tbody>
</table>
This is the practical application of engineering skills, combining theory and experience, and use of other relevant knowledge and skills. This can include:

<table>
<thead>
<tr>
<th>Engineering Practice (P)</th>
<th>Bachelors and Bachelors (Honours) degrees accredited for IEng</th>
<th>Bachelors (Honours) degrees accredited for CEng (with further learning required)</th>
<th>Integrated Masters (MEng) degrees accredited for CEng</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1i</td>
<td>Knowledge of contexts in which engineering knowledge can be applied (eg operations and management, application and development of technology, etc)</td>
<td>Understanding of contexts in which engineering knowledge can be applied (eg operations and management, application and development of technology, etc)</td>
<td>Understanding of contexts in which engineering knowledge can be applied (eg operations and management, application and development of technology, etc)</td>
</tr>
<tr>
<td>P2i</td>
<td>Understanding of and ability to use relevant materials, equipment, tools, processes, or products</td>
<td>Knowledge of characteristics of particular materials, equipment, processes or products</td>
<td>Knowledge of characteristics of particular equipment, processes or products, with extensive knowledge and understanding of a wide range of engineering materials and components</td>
</tr>
<tr>
<td>P3i</td>
<td>Knowledge and understanding of workshop and laboratory practice</td>
<td>Ability to apply relevant practical and laboratory skills</td>
<td>Ability to apply relevant practical and laboratory skills</td>
</tr>
<tr>
<td>P4i</td>
<td>Ability to use and apply information from technical literature</td>
<td>Understanding of the use of technical literature and other information sources</td>
<td>Understanding of the use of technical literature and other information sources</td>
</tr>
<tr>
<td>P5</td>
<td>Knowledge of relevant legal and contractual issues</td>
<td>Knowledge of relevant legal and contractual issues</td>
<td>Knowledge of relevant legal and contractual issues</td>
</tr>
<tr>
<td>P6i</td>
<td>Ability to use appropriate codes of practice and industry standards</td>
<td>Understanding of appropriate codes of practice and industry standards</td>
<td>Understanding of appropriate codes of practice and industry standards</td>
</tr>
<tr>
<td>P7</td>
<td>Awareness of quality issues and their application to continuous improvement</td>
<td>Awareness of quality issues and their application to continuous improvement</td>
<td>Awareness of quality issues and their application to continuous improvement</td>
</tr>
<tr>
<td>P8</td>
<td>Ability to work with technical uncertainty</td>
<td>Ability to work with technical uncertainty</td>
<td>Ability to work with technical uncertainty</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>P9m</td>
</tr>
<tr>
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<tr>
<td></td>
<td></td>
<td></td>
<td>P10m</td>
</tr>
<tr>
<td>P11i</td>
<td>Awareness of team roles and the ability to work as a member of an engineering team</td>
<td>P11</td>
<td>Understanding of, and the ability to work in, different roles within an engineering team</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P11m</td>
<td>Understanding of different roles within an engineering team and the ability to exercise initiative and personal responsibility, which may be as a team member or leader</td>
</tr>
</tbody>
</table>
### Additional General Skills (G)

Graduates must have developed transferable skills, additional to those set out in the other outcomes, that will be of value in a wide range of situations, including the ability to:

<table>
<thead>
<tr>
<th>Bachelors and Bachelors (Honours) degrees accredited for IEng</th>
<th>Bachelors degrees accredited for CEng (with further learning required)</th>
<th>Integrated Masters (MEng) degrees accredited for CEng</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>G1</strong></td>
<td>• Apply their skills in problem solving, communication, information retrieval, working with others and the effective use of general IT facilities</td>
<td><strong>G1</strong></td>
</tr>
<tr>
<td><strong>G2</strong></td>
<td>• Plan self-learning and improve performance, as the foundation for lifelong learning/CPD</td>
<td><strong>G2</strong></td>
</tr>
<tr>
<td><strong>G3i</strong></td>
<td>• Plan and carry out a personal programme of work</td>
<td><strong>G3</strong></td>
</tr>
<tr>
<td><strong>G4i</strong></td>
<td>• Exercise personal responsibility, which may be as a team member</td>
<td><strong>G4</strong></td>
</tr>
</tbody>
</table>

Other reference points are:
- QAA’s Framework for HE Qualifications in England, Wales and Northern Ireland: [http://www.qaa.ac.uk/publications/information-and-guidance/publication/?PubID=2718#.U9I0ivldXZg](http://www.qaa.ac.uk/publications/information-and-guidance/publication/?PubID=2718#.U9I0ivldXZg)
- The Scottish Credit and Qualifications Framework: [www.scqf.org.uk](http://www.scqf.org.uk)
- The Dublin Descriptor for first cycle qualifications: [www.uni-due.de/imperia/md/content/bologna/dublin_descriptors.pdf](http://www.uni-due.de/imperia/md/content/bologna/dublin_descriptors.pdf)
ANNEX B: MASTERS DEGREE OTHER THAN THE INTEGRATED MASTERS (MENG), AND ENGD LEARNING OUTCOMES THIS APPENDIX IS BASED ON THE 3RD EDITION OF ACCREDITATION OF HE PROGRAMMES (AHEP) PUBLISHED MAY 2014

The weighting given to the six broad areas of learning below will vary according to the nature and aims of each programme

Masters degrees (other than the integrated Masters) accredited as further learning to Masters level for the purposes of registration with the Engineering Council vary in nature and purpose. Some offer the chance to study in greater depth particular aspects or applications of a broader discipline in which the graduate holds an Honours degree at Bachelors level. Others bring together different engineering disciplines or sub-disciplines in the study of a particular topic, or engineering application, while a further category may be truly multi-disciplinary. Masters programmes also provide an opportunity to integrate the technical and non-technical aspects of engineering and to develop a commitment to professional and social responsibility and ethical codes. The key factor in considering Masters degrees for accreditation is that they deliver the learning outcomes, specified in AHEP and summarised below, which should be interpreted in the context of the particular discipline. The outcomes are designed to enable programme development and innovation.

Graduates from an accredited Masters degree must achieve a systematic understanding of the learning outcomes described below, including acquisition of coherent and detailed knowledge, most of which is at, or informed by, the forefront of defined aspects of the relevant engineering discipline. Some of the learning outcomes will be to enhanced and extended levels, the balance of which will vary according to the nature and aims of each programme. Crucially, graduates will have the ability to integrate their prior knowledge and understanding of the discipline and engineering practice with the development of advanced level knowledge and understanding, to solve a substantial range of engineering problems, some of them complex or novel. They will have acquired much of this ability through individual and/or group projects. Ideally some of these projects would have industrial involvement or be practice-based.

An EngD may be considered an exemplifying academic award for CEng for an individual holding an accredited Bachelors degree with honours in engineering or technology, sometimes referred to as ‘accredited further learning’. This applies to an EngD that has been accredited since 1 March 2012. The principal reference point for the accreditation of the EngD is the set of learning outcomes for Masters degrees other than the MEng. Of particular note are the references in that preamble (copied above) to the varying nature and purpose of such degrees, and the opportunity to study in greater depth and the multidisciplinary nature of some degrees. These considerations also apply to the EngD.

When considering an EngD for accreditation as an academic award, the key assessment is whether or not the programmes is delivering the knowledge and understanding that underpins the CEng standard. The EngD will need to deliver the engineering-specific learning outcomes and the additional general skills at the required level. EngDs are generally accepted to provide training and the opportunity for the development of competence; however these are not the focus of assessment during academic accreditation. Particular attention is likely to be paid to the nature of the project, the balance between management and more technical engineering content, the integration of learning with the research project objectives and application, supervision arrangements for the Research Engineer (RE), and systems for ensuring that the RE is allowed sufficient time to undertake any university modules and prepare for exams.

In line with normal accreditation practice, there will be a meeting with REs and usually with some employers of REs.
### LEARNING OUTCOMES SPECIFIED IN AHEP FOR MASTERS DEGREES (OTHER THAN THE INTEGRATED MASTERS) ACCREDITED AS FURTHER LEARNING TO CENG LEVEL, AND FOR ENGINEERING DOCTORATES ACCREDITED AS FURTHER LEARNING TO CENG LEVEL.

<table>
<thead>
<tr>
<th>Understanding</th>
<th>Knowledge</th>
<th>Know-how</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Understanding</em> is the capacity to use concepts creatively, for example in problem solving, in design, in explanations and in diagnosis.</td>
<td><em>Knowledge</em> is information that can be recalled.</td>
<td><em>Know-how</em> is the ability to apply learned knowledge and skills to perform operations intuitively, efficiently and correctly.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Skills</th>
<th>Awareness</th>
<th>Complex</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Skills</em> are acquired and learned attributes which can be applied almost automatically.</td>
<td><em>Awareness</em> is general familiarity, albeit bounded by the needs of the specific discipline.</td>
<td>Complex implies engineering problems, artefacts or systems that involve dealing simultaneously with a sizeable number of factors that interact and require deep understanding, including knowledge at the forefront of the discipline, to analyse or deal with.</td>
</tr>
</tbody>
</table>

Numbers follow on from numbering given for Bachelors and integrated Masters degree learning outcomes, with a capital M to distinguish from integrated Masters (MEng) learning outcomes where there are differences. Where a learning outcome is described in identical language to that for integrated Masters degrees it is numbered identically in Annex A. Note the numbering is only for the purpose of enabling a matrix for EAB submissions.
**Science and Mathematics (SM)**

*Engineering is underpinned by science and mathematics, and other associated disciplines, as defined by the relevant professional engineering institution(s). The main science and mathematical abilities will have been developed in an accredited engineering undergraduate programme. Masters graduates will therefore need additionally:*

| SM7M | A comprehensive understanding of the relevant scientific principles of the specialisation |
| SM8M | A critical awareness of current problems and/or new insights most of which is at, or informed by, the forefront of the specialisation |
| SM9M | Understanding of concepts relevant to the discipline, some from outside engineering, and the ability to evaluate them critically and to apply them effectively, including in engineering projects |

**Engineering Analysis (EA)**

*Engineering analysis involves the application of engineering concepts and tools to the solution of engineering problems. The main engineering analysis abilities will have been developed in an accredited engineering undergraduate programme. Masters graduates will therefore need additionally:*

| EA6M | Ability both to apply appropriate engineering analysis methods for solving complex problems in engineering and to assess their limitations |
| EA5m | Ability to use fundamental knowledge to investigate new and emerging technologies |
| EA7M | Ability to collect and analyse research data and to use appropriate engineering analysis tools in tackling unfamiliar problems, such as those with uncertain or incomplete data or specifications, by the appropriate innovation, use or adaptation of engineering analytical methods |

**Design (D)**

*Design at this level is the creation and development of an economically viable product, process or system to meet a defined need. It involves significant technical and intellectual challenges and can be used to integrate all engineering understanding, knowledge and skills to the solution of real and complex problems. The main design abilities will have been developed in an accredited engineering undergraduate programme. Masters graduates will need additionally:*

| D9M | Knowledge, understanding and skills to work with information that may be incomplete or uncertain, quantify the effect of this on the design and, where appropriate, use theory or experimental research to mitigate deficiencies |
| D10M | Knowledge and comprehensive understanding of design processes and methodologies and the ability to apply and adapt them in unfamiliar situations |
| D11M | Ability to generate an innovative design for products, systems, components or processes to fulfil new needs |
### Economic, legal, social, ethical and environmental context (EL)

Engineering activity can have impacts on the environment, on commerce, on society and on individuals. Graduates therefore need the skills to manage their activities and to be aware of the various legal and ethical constraints under which they are expected to operate, including:

<table>
<thead>
<tr>
<th>EL8M</th>
<th>Awareness of the need for a high level of professional and ethical conduct in engineering</th>
</tr>
</thead>
<tbody>
<tr>
<td>EL9M</td>
<td>Awareness that engineers need to take account of the commercial and social contexts in which they operate</td>
</tr>
<tr>
<td>EL10M</td>
<td>Knowledge and understanding of management and business practices, their limitations, and how these may be applied in the context of the particular specialisation</td>
</tr>
<tr>
<td>EL11M</td>
<td>Awareness that engineering activities should promote sustainable development and ability to apply quantitative techniques where appropriate</td>
</tr>
<tr>
<td>EL12M</td>
<td>Awareness of relevant regulatory requirements governing engineering activities in the context of the particular specialisation</td>
</tr>
<tr>
<td>EL13M</td>
<td>Awareness of and ability to make general evaluations of risk issues in the context of the particular specialisation, including health &amp; safety, environmental and commercial risk</td>
</tr>
</tbody>
</table>

### Engineering Practice (P)

The main engineering practice abilities will have been developed in an accredited engineering undergraduate programme. Masters graduates will need to demonstrate application of these abilities where appropriate and additional engineering skills which can include:

| P12M | Advanced level knowledge and understanding of a wide range of engineering materials and components |
| P9m | A thorough understanding of current practice and its limitations, and some appreciation of likely new developments |
| P10m | Ability to apply engineering techniques, taking account of a range of commercial and industrial constraints |
| P11m | Understanding of different roles within an engineering team and the ability to exercise initiative and personal responsibility, which may be as a team member or leader |

### Additional general skills (G)

Graduates must have developed transferable skills, additional to those set out in the other learning outcomes, that will be of value in a wide range of situations, including the ability to:

| G1 | Apply their skills in problem solving, communication, information retrieval, working with others, and the effective use of general IT facilities |
| G2 | Plan self-learning and improve performance, as the foundation for lifelong learning/CPD |
| G3m | Monitor and adjust a personal programme of work on an on-going basis |
| G4 | Exercise initiative and personal responsibility, which may be as a team member or leader |

Other reference points are:

- The Scottish Credit and Qualifications Framework [www.scqf.org.uk](http://www.scqf.org.uk)
- The Dublin Descriptor for second and third cycle qualifications: [www.uni-due.de/imperia/md/content/bologna/dublin_descriptors.pdf](http://www.uni-due.de/imperia/md/content/bologna/dublin_descriptors.pdf) and for the Engineering Doctorate: "Doctoral degree characteristics" published by the QAA in September 2011: [www.qaa.ac.uk/Publications/InformationAndGuidance/Documents/Doctoral_Characteristics.pdf](http://www.qaa.ac.uk/Publications/InformationAndGuidance/Documents/Doctoral_Characteristics.pdf)
## Preamble

Masters degrees\(^1\) accredited for the purposes of registration with the Engineering Council vary in nature and purpose. Some offer the chance to study in greater depth particular aspects or applications of a broader discipline in which the graduate holds an honours degree. Others bring together different engineering disciplines or sub-disciplines in the study of a particular topic, or engineering application, while a further category may be truly multi-disciplinary.

Masters programmes also provide an opportunity to integrate the technical and non-technical aspects of engineering and to develop a commitment to professional and social responsibility and ethical codes.

The key factor in considering Masters degrees for accreditation is that they deliver the learning outcomes, which should be interpreted in the context of the particular discipline. The outcomes are designed to enable programme development and innovation.

Graduates from an accredited Masters degree will have the general and specific learning outcomes described here and will have some of these to enhanced and extended levels.

Crucially, they will have the ability to integrate their prior knowledge and understanding of the discipline and engineering practice with the development of advanced level knowledge and understanding, to solve a substantial range of engineering problems, some of a complex nature. They will have acquired much of this ability through individual and/or group projects. Ideally some of these projects would have included industrial involvement or be practice-based.

### General Learning Outcomes

The range of general learning outcomes described for graduates from Bachelors programmes will also apply to graduates from Masters degree programmes. In respect of general transferable skills, the following enhanced outcomes should be expected of Masters degree graduates:

- The ability to develop, monitor and update a plan, to reflect a changing operating environment;
- The ability to monitor and adjust a personal programme of work on an on-going basis, and to learn independently;
- The ability to exercise initiative and personal responsibility, which may be as a team member or leader;
- The ability to learn new theories, concepts, methods etc and apply these in unfamiliar situations.

### Specific Learning Outcomes

In respect of the specific learning outcomes, Masters degree graduates will also be characterised by some or all of the following (the balance will vary according to the nature and aims of each programme):

#### Underpinning science and mathematics, etc.

- A comprehensive understanding of the relevant scientific principles of the specialisation
- A critical awareness of current problems and/or new insights much of which is at, or informed by, the forefront of the specialisation.
- An understanding of concepts relevant to the discipline, some from outside engineering, and the ability to critically evaluate and apply them effectively.

#### Engineering Analysis

- The ability to use fundamental knowledge to investigate new and emerging technologies;
- The ability to apply appropriate models for solving problems in engineering, and the ability to assess the limitations of particular cases;
- The ability to collect and analyse research data and use appropriate engineering tools to tackle unfamiliar problems, such as those with uncertain or incomplete data or specifications, by the appropriate innovation, use or adaptation of engineering analytical methods.

#### Design

- The ability to apply original thought to the development of practical solutions for products, systems, components or processes.

#### Economic, social and environmental context

- Knowledge and understanding of management and business practices, and their limitations, and how these may be applied appropriately, in the context of the particular specialisation;
- The ability to make general evaluations of risks through some understanding of the basis of such risks.

#### Engineering Practice

- A thorough understanding of current practice and its limitations, and some appreciation of likely new developments;
- Advanced level knowledge and understanding of a wide range of engineering materials and components;
- The ability to apply engineering techniques taking account of a range of commercial and industrial constraints.

---

\(^1\) The term ‘Masters degree’ is used throughout this document to mean an engineering degree at Level 7 (Level 11 in Scotland) other than the integrated Masters degree (MEng)
### Graduation Statistics
(Refer to Section B5.8 of Form ACC2)

Supply the results for the last 2 cohorts to graduate, indicating graduation year.

<table>
<thead>
<tr>
<th>Entry Routes</th>
<th>Year</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial Entry</td>
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<tr>
<td>Transfer into course</td>
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<td>Fail during course</td>
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<td>Withdrawal during course</td>
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<td>Total sitting finals</td>
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<table>
<thead>
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<th>Awards</th>
<th>Year</th>
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<td>Honours (2.1)</td>
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<td>Honours (2.2)</td>
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<td>Honours (3rd)</td>
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<tr>
<td>Fail</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other – please specify</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| MSc                          |      |      |
| MSc                          |      |      |
| PgD                          |      |      |
| PgC                          |      |      |
| Fail                         |      |      |

| HND                          |      |      |
| Pass                         |      |      |
| Fail                         |      |      |
## Methods of Assessment
(Refer to Section B5.4 of ACC2)

### Title of Programme:

<table>
<thead>
<tr>
<th>Module Code</th>
<th>Module Title</th>
<th>Module Weight</th>
<th>Semester</th>
<th>Compulsory / Optional</th>
<th>Exam Length</th>
<th>% Exam</th>
<th>% module assessment for teamwork **</th>
<th>Examination</th>
<th>Continuous Assessment (weighting and length, where appropriate)</th>
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<tbody>
<tr>
<td>E.g. A001</td>
<td>Thermodynamics</td>
<td>10</td>
<td>2</td>
<td>C</td>
<td>2hr</td>
<td>80%</td>
<td>-</td>
<td></td>
<td>1 lab report 10%</td>
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<tr>
<td>E.g. D001</td>
<td>Group design</td>
<td>30</td>
<td>1 and 2</td>
<td>C</td>
<td>-</td>
<td>-</td>
<td>Peer assessment 10%</td>
<td></td>
<td>x1 100 page group report 60% 2 presentations 20%</td>
</tr>
</tbody>
</table>

* For each programme part, list compulsory modules before optional ones.

** Where the % module assessment for group or teamwork is 50% or above, it should be stated whether an element of individual / peer assessment is included.
### Appendix 6:

**ACC2C Output Standards Matrix (for use with AHEP 3rd edition)**

**Bachelors or Bachelors (Hons) Degree for which accreditation as fully meeting the educational requirements for IEng is sought**

<table>
<thead>
<tr>
<th>Programme Title:</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Module numbers (where the output criteria statements are addressed)</strong></td>
<td>0</td>
<td>111</td>
<td>222</td>
<td>etc</td>
</tr>
</tbody>
</table>

**Bachelor/Bachelor (Hons) Learning Outcomes**
(see EAB/ACC2 - Appendix A for more details)

**Science & Mathematics**
- SM1i
- SM2i

**Engineering Analysis**
- EA1i
- EA2i
- EA3i
- EA4i

**Design**
- D1i
- D2i
- D3
- D4i
- D5i
- D6

**Economic, legal, social, ethical and environmental context**
- EL1
- EL2
- EL3i
- EL4i
- EL5
- EL6i

**Engineering Practice**
- P1i
- P2i
- P3i
- P4i
- P6i
Additional General Skills

<p>| | | | | | | | | | |</p>
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</tr>
</tbody>
</table>
Appendix 7:  
ACC2C Output Standards Matrix (for use with AHEP 3rd edition)  

Bachelors (Hons) Degree for which accreditation as partially meeting the educational requirements for CEng is sought

<table>
<thead>
<tr>
<th>Programme Title:</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4 (if applicable)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
<tr>
<td>Module numbers (where the output criteria statements are addressed)</td>
<td>0</td>
<td>111</td>
<td>222</td>
<td>etc</td>
</tr>
</tbody>
</table>

Bachelor (Honours) Learning Outcomes  
(see EAB/ACC2 - Appendix A for more details)

**Science & Mathematics**

<table>
<thead>
<tr>
<th>SM1b</th>
<th>SM2b</th>
<th>SM3b</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Engineering Analysis**

<table>
<thead>
<tr>
<th>EA1b</th>
<th>EA2</th>
<th>EA3b</th>
<th>EA4b</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Design**

<table>
<thead>
<tr>
<th>D1</th>
<th>D2</th>
<th>D3b</th>
<th>D4</th>
<th>D5</th>
<th>D6</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Economic, legal, social, ethical and environmental context**

<table>
<thead>
<tr>
<th>EL1</th>
<th>EL2</th>
<th>EL3</th>
<th>EL4</th>
<th>EL5</th>
<th>EL6</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓</td>
<td></td>
<td></td>
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</tbody>
</table>

**Engineering Practice**

<table>
<thead>
<tr>
<th>P1</th>
<th>P2</th>
<th>P3</th>
<th>P4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>P5</td>
<td>✓</td>
<td></td>
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<tr>
<td>P6</td>
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<tr>
<td>P11</td>
<td></td>
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</tr>
</tbody>
</table>

**Additional General Skills**

| G1 | ✓ |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| G2 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| G3 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| G4 | ✓ |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
## Appendix 8

### ACC2C Output Standards Matrix (for use with AHEP 3rd edition)

#### Integrated Masters (MEng) Degree for which CEng accreditation is sought

<table>
<thead>
<tr>
<th>Programme Title:</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
<tr>
<td><strong>Module numbers (where the output criteria statements are addressed)</strong></td>
<td>0</td>
<td>111</td>
<td>222</td>
<td>etc</td>
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<tr>
<td><strong>Learning Outcomes for integrated Masters degrees</strong></td>
<td>(see EAB/ACC2 - Appendix A for more details)</td>
<td></td>
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</tr>
<tr>
<td><strong>Science &amp; Mathematics</strong></td>
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<tr>
<td>SM1m</td>
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<tr>
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<tr>
<td>SM3m</td>
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<td>SM5m</td>
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<td>SM6m</td>
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<tr>
<td><strong>Engineering Analysis</strong></td>
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**Engineering Practice**

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**Additional General Skills**

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## Appendix 9

### Output Standards Matrix

Masters Degree other than the Integrated Masters (MEng), and EngD for which accreditation as fully meeting the educational requirements as further learning for CEng is sought (AHEP 3rd edition)

<table>
<thead>
<tr>
<th>Programme Title:</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
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</thead>
<tbody>
<tr>
<td>Module numbers (where the output criteria statements are addressed)</td>
<td>0 111 222 etc</td>
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</tbody>
</table>

Masters Degree other than the Integrated Masters (MEng), and EngD Learning Outcomes
(see EAB/ACC2 - Appendix B for more details)

**Science and Mathematics**
- SM7M
- SM8M
- SM9M

**Engineering Analysis**
- EA6M
- EA5m
- EA7M

**Design**
- D9M
- D10M
- D11M

**Economic, legal, social, ethical and environmental context**
- EL8M
- EL9M
- EL10M
- EL11M
- EL12M
- EL13M

**Engineering Practice**
- P12M
- P9m
- P10m
- P11m
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<td>G1</td>
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<td>G2</td>
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<td>G3m</td>
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<td>University/Company:</td>
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<td>Action required</td>
<td>Proposed action</td>
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ACADEMIC ACCREDITATION: ASSESSOR’S REVIEW FORM - for personal use

Panel member: ______________________________

<table>
<thead>
<tr>
<th>Academic institution:</th>
<th>Visit date</th>
</tr>
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</table>

1. ISSUES FOR DISCUSSION

2. ISSUES FROM PREVIOUS VISIT

3. COVERAGE OF UK-SPEC LEARNING OUTCOMES, including
   Maths; IT
   Design
   Flight testing/simulation
   Risk assessment, health & safety
   Sustainability
<table>
<thead>
<tr>
<th>4. WORKSHOP AND LABORATORY FACILITIES AND USAGE</th>
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<tr>
<th>5. CANDIDATE ASSESSMENT, COURSEWORK AND PROJECT WORK</th>
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<tr>
<th>6. STAFFING</th>
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<tr>
<td>Including awareness/membership of Society</td>
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<th>7. INVOLVEMENT WITH INDUSTRY, including Industrial Advisory Panel</th>
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<th>8. NOTES FROM MEETING WITH STUDENTS</th>
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<tr>
<td>Including awareness/membership of Society, issues raised</td>
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<th>9. NOTES FROM MEETINGS WITH STAFF</th>
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<th>10. MSc PROGRAMMES</th>
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<th>11. POINTS OF GOOD PRACTICE</th>
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<th>12. CONDITIONS: to be met before accreditation can be given</th>
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<th>13. POINTS TO BE INCLUDED IN AN ACTION PLAN</th>
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**Date by when actions to be completed, if any:**

<table>
<thead>
<tr>
<th>14. RECOMMENDATIONS TO BE ADDRESSED BY THE UNIVERSITY: review at next visit</th>
</tr>
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<tr>
<th>15. RECOMMENDATION FOR ACCREDITATION: to CAC/NCAC</th>
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</table>
Questions to ask during the meeting with students:

Do they know about accreditation?
Experience of hands on/lab work?
Access to staff for consultation?
Teaching quality?
External teachers (other departments) OK?
Role of Visiting Professors / Tutors?
Personal tutors and general support?
Peer teaching / support?
Is there a Staff / Student Liaison Committee, are all Years represented’?
Exam/assessment scheduling & management?
Feedback and turn round time on Lab/ Continuous Assessed work?
Project allocation?
Computer/software access?
Does the Library have enough copies of popular / necessary books?
Are maths teaching and support ok?
Understanding of risk assessment/sustainability issues?
What's worst / what's best? What would they change?
Professional Institution membership and information?
RAeS Academic Accreditation: A Handout for Students

Introduction
The University has invited the Royal Aeronautical Society to consider your degree for accreditation. Graduates from accredited degrees have a distinct advantage if they decide in due course to register as a Chartered Engineer (CEng) or an Incorporated Engineer (IEng) – many employers take this into account when recruiting graduate engineers. Independent professional accreditation is well recognized both in the UK and Internationally.

What is involved?
A team of academic and industrial accreditors, plus a member of RAeS staff, will visit the university for two days. They will have discussions with staff, visit the laboratories and most importantly meet you, the students. The team hopes to see students from each Year together with recent graduates. Often, the team will divide you into two smaller groups to give you all the chance to speak.

The meetings are confidential - university staff are excluded – and the discussions will cover the programme, the resources, the teaching staff and your overall learning and social experience. The team will take up, anonymously, with the University any appropriate issues that you would like them to raise.

What happens afterwards?
The Panel will report to the next meeting of the Society’s Accreditation Committee which will take the decision to accredit the degree or otherwise. Once confirmed, accreditation is normally awarded for five years unless it’s a new programme. The degree will be added to the Engineering Council’s list of accredited courses at www.engc.org.uk.

Membership of the RAeS
If you are not already a member, go to www.aerosociety.com/membership and check out the benefits; you can apply on-line for free membership. The Society has a very dynamic Young Members section that represents all members under the age of 30.

Registration as a Professional Engineer
For CEng registration, you will need either an accredited integrated MEng degree OR an accredited Bachelors degree (Hons) in engineering or technology, plus either an accredited MSc degree or appropriate further learning to Masters level. For IEng Registration, you need either an accredited Bachelors degree in Engineering or Technology OR a Higher National Certificate OR Diploma OR a Foundation Degree in engineering or technology, and appropriate further learning to degree level.

Engineers become competent through a combination of education and professional development. Registration is open to everyone who can demonstrate competence to perform professional work to the necessary standards, and commitment to maintain that competence, to work within professional codes and to participate actively within the profession. Registration has many advantages; further information can be found on our website.

mycareerpath - the Society’s Online Professional Development recording scheme
You are strongly advised to register with mycareerpath, the Society’s online recording scheme for your professional development against UK-SPEC competence requirements as it progresses – whilst a student, during the early part of your career, leading up to registration, and beyond. Visit the Society’s website: www.aerosociety.com
Royal Aeronautical Society Careers Centre – services for you

Did you know that the RAeS runs a dedicated Careers Centre to help you find the perfect job in the aerospace or aviation industry?

Key services:
- Free and unlimited 1-2-1 guidance service offering personalised help and support for people at all stages of your career. Get feedback on your CV, online applications, interview technique or job-hunting and study advice.
- Comprehensive website with course and job-hunting information, advice on CVs, covering letters, interviews and assessment centres.
- CV workshops at college and university campuses for aerospace and aviation students.
- Magazines and job-hunting packs available free of charge.

Making an appointment
Individual appointments are available at either our London office or at the National Aerospace Library in Farnborough. This is a popular service so you need to book an appointment in advance by calling 01252 701061/2, email careers@aerosociety.com

Coming to you
If you can’t come to London for a 1-2-1 we can run a CV and Skills Workshop at your college or university for groups of 10 aerospace/aviation students or more. To request a Careers Centre visit contact careers@aerosociety.com or call 0207 670 4325

Magazines and Job-hunting packs
- ‘Career Flightpath’ - An annual journal featuring, case studies, interviews and articles with people from across the aerospace community.
- ‘So you want to be a pilot’ – written by experts from our Flight Operations Group and produced in partnership with the Independent and GAPAN, this guide provides an impartial view into civil and military pilot routes with sponsorship and profiles from major Flight Training Organisations.
- RAeS Handbook – to accompany our job-hunting specialist listings (downloadable from our website or by contacting careers@aerosociety.com), the Society’s handbook lists all our Corporate Partners with lots of useful graduate recruitment and HR contact details. Request your free copy!

Centennial Scholarship Scheme
The Careers Centre also administers the Society’s Centennial Scholarship Scheme which has helped many aerospace/aviation students with final-year undergraduate tuition fees and postgraduate tuition fees since its launch in 2003 to celebrate 100 years of powered flight. Applications are accepted twice each year. There are no nationality restrictions but membership of the RAeS is a condition of entry. You can download the application pack and accompanying guidelines at www.aerosociety.com/scholarships.

Contacts
If you would like more information about any of the above contact:
Learning and Development Team
Tel: + 44 (0) 207 670 4325
Email: careers@aerosociety.com
Get started at www.aerosociety.com/careers

Find out more from the Society’s website: www.aerosociety.com and on Twitter or Facebook:
www.twitter.com/aerosociety
www.facebook.com/royalaeronauticalsociety
EXAMPLE: DECISION LETTER TO A UNIVERSITY

Professor A N Other
Head of School
School of Aeronautical Engineering

Dear Professor Other

DEGREE ACCREDITATION

<table>
<thead>
<tr>
<th>Programme</th>
<th>FT</th>
<th>SW</th>
</tr>
</thead>
<tbody>
<tr>
<td>BEng (Hons) Aerospace Engineering</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>BEng (Hons) Aerospace Systems Engineering</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>MEng Aerospace Engineering</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>MEng Aerospace Systems Engineering</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

I write to complete the process with regard to the accreditation of the above programmes following the visit by the Society and IMechE to your School earlier this year. The Society’s Accreditation Committee has found your Action Plan to be satisfactory so I can now confirm the following decision:

a. To accredit the BEng (Hons) degrees for five years, to cover 2006 to 2010 intakes.

b. To accredit the MEng degrees for four years, to cover the 2006 to 2009 intakes, at which point a final year project and final year examination review would be due following the first graduating cohort on the ‘new format’ MEng (with a view to extend accreditation to five years), and to backdate accreditation to cover the 2005 intake (which was the first cohort onto the ‘new format’ MEng).

The above programmes and the agreed period of accreditation have been added to the EC website of accredited courses. In return, you will be asked to amend UCAS’s website database of courses so that when people want to search for a course that leads to professional accreditation, the above programmes will appear listed under the results.

We would be grateful if you could ensure that the University’s KIS statement includes the following, or its equivalent:

MEng
This course is recognised by the Royal Aeronautical Society for the purposes of meeting in full the academic requirement for registration as a Chartered Engineer.

BEng (Hons)
This course is recognised by the Royal Aeronautical Society for the purposes of fully meeting the academic requirement for IEng and partly meeting for CEng.

Commendable features
- The students who are articulate and engaged fully with the programmes.
- Etc.

The Action Plan
The Committee agreed that your plan has satisfactorily addressed the following issues:

The Society will ask you for an update on these two issues in 2009 during the final year project and examination review. At the same time, you will be asked to brief the Society on the proposed actions listed in the Action Plan.

Please see attached information regarding promotion of accreditation, provided by the Engineering Council.

Yours sincerely

xxxxxxx

Membership and Accreditation Officer
For MSc courses: accredited from 20xx – 20xx, backdated to the 200x-200x intakes, as meeting the EC requirement for further learning for holders of accredited BEng Honours degrees seeking to satisfy the academic requirements for CEng. It should be noted that, if individual modules are offered to those seeking to meet EC further learning requirements, candidates must be able to show that suitable assessment of their performance has been carried out.

Promoting engineering degree accredited status

1. Engineering Council accredited degree logo
Universities and colleges are encouraged to use the ‘Engineering Council accredited degree’ logo alongside the name of all degree programmes that have been accredited by a licensed Professional Engineering Institution (PEI). Educational institutions should ensure that their own publicity materials accurately reflect the accreditation status of their programmes and the relationship to registration as Incorporated Engineer (IEng) or Chartered Engineer (CEng).

The logo and instructions for its use are available for downloading at: http://www.engc.org.uk/education--skills/accreditation/accredited-degree-logo

Please note that the logo may only be used with a programme that currently holds accredited status, and care must be taken not to mislead potential students if, for example, accreditation is about to run out. Accredited status, which is by intake year, may be checked at: http://www.engc.org.uk/education--skills/accreditation/accredited-course-search

Some PEIs permit the use of their logo with an accredited degree. This may be used in addition to the Engineering Council logo.

2. Explanation of accreditation
Universities are encouraged to include with the logo the accredited course search http://www.engc.org.uk/education--skills/accreditation/accredited-course-search

and an explanation of accreditation. Wording which is aimed at potential students and for use with the logo to explain the meaning, and promote the value, of accredited status is available at: http://www.engc.org.uk/education--skills/accreditation/accredited-degree-logo

The name(s) of individual discipline-specific PEIs that accredit the degree may be inserted in this statement.

3. Engineering Council website ‘Information for Students’
This can be accessed at: http://www.engc.org.uk/education--skills/accreditation/information-for-students

Promoting Registration to undergraduates

1. A ‘Student guide to professional registration with the Engineering Council’ is available on request to: marketing@engc.org.uk putting IEng/CEng in the subject line.

2. An introductory email aimed at new undergraduates is available on request to: marketing@engc.org.uk putting IEng/CEng in the subject line.
Form PD1

Application for the Assessment of Professional Development Schemes

This form is for use by companies or organisations seeking accreditation or re-accreditation of their Professional Development Schemes. An electronic version may be obtained from the PDP website at www.pd-how2.org. Please read carefully the guidelines before completing the form and contact the selected institutions as required.

Please tick all boxes relevant to your application. If you are seeking joint accreditation, please put a cross for your chosen lead institution.

This Application is made to:

<table>
<thead>
<tr>
<th>Institution</th>
<th>Registration Categories</th>
<th>Scheme Type</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>CEng</td>
<td>IEng</td>
</tr>
<tr>
<td>IET</td>
<td>❑</td>
<td>❑</td>
</tr>
<tr>
<td>IMechE</td>
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<tr>
<td>RAeS</td>
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<tr>
<td>IOP</td>
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Section 1 – Applicant Information

1.1 Name of Organisation

1.2 Nature of Business

1.3 Title of Scheme
### Purpose and scope of Scheme

<table>
<thead>
<tr>
<th>Purpose and scope of Scheme</th>
</tr>
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</table>

### Locations/Divisions where the Scheme is in operation

**HQ address**

<table>
<thead>
<tr>
<th>Tel No:</th>
<th>Fax No:</th>
<th>Web:</th>
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**Additional locations/divisions**

### Person with ultimate responsibility for the scheme

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
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<th>Address</th>
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<th>Tel No:</th>
<th>Fax No:</th>
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### Person responsible for day-to-day administration of the scheme

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<th>Position</th>
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### Management and Staff - Please list on a separate sheet with the following details:

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<tr>
<th>Name</th>
<th>Job Title</th>
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<th>Location</th>
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<tr>
<th>Institution</th>
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<thead>
<tr>
<th>Class / Grade</th>
<th>Any designatory letters</th>
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</table>
### 1.9 Detail of Candidates on the Scheme

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<thead>
<tr>
<th>Total number currently on the Scheme</th>
<th>If a new Scheme, how many now joining it?</th>
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</thead>
</table>

### 1.10 History of the Scheme

- How long has the Scheme been operating?  
  - Years
  - Months

Which PDP Institutions or others have previously assessed this scheme (please tick)

- IET  
- IMechE  
- IoP  
- RAeS  
- None  
- Other (please specify)

### Section 2 – Accreditation Criteria

#### 2.1 Track Record:

What evidence can you provide to show that your organisation/scheme has a track record for training and development and that the standards for registration can be consistently met?

#### 2.2 Candidate Entry:

What development plans do you put in place when candidates join the scheme? How do these plans take into account the current academic and professional attainment of candidates, the needs of the business and the requirements for registration?
<table>
<thead>
<tr>
<th>2.3</th>
<th><strong>Scheme Content:</strong> Please describe the content and general pattern of the scheme. How long does it take candidates to gain a suitable profile of competence to meet registration requirements?</th>
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</thead>
<tbody>
<tr>
<td>2.4</td>
<td><strong>Candidate Completion:</strong> What roles do candidates undertake on successful completion of the scheme?</td>
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<tr>
<td>2.5</td>
<td><strong>Learning Environment:</strong> What evidence can you provide to show that your organisation has a learning environment that is generally conducive to professional development?</td>
</tr>
</tbody>
</table>
### 2.6 Candidate Support: What form of support do you provide for candidates aiming to become registered?

### 2.7 Candidate Assessment: How (and how often) do you assess the competence and performance of candidates on the scheme?

### 2.8 Candidate Records and Scheme Documentation: Please outline what kind of records candidates must keep and how the scheme itself is documented.
Section 3 – List of Attachments

This space is for listing any supplementary material attached to your application, e.g. scheme manual, training records etc, as supporting evidence for all aspects of section 2.
### Section 4 - Checklist and Declaration

#### 4.1

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<thead>
<tr>
<th>Section</th>
<th>Completed</th>
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</table>

#### 4.2 Fees

The institutions have different fee structures associated with accreditation and monitoring of candidates. Fee information is detailed on a separate sheet available from each institution if not included with the Application Guidelines.

#### 4.3 Declaration

This must be signed by the Chief Executive or other person having the authority to allocate the resources required to support this scheme.

By submission of this application the Company agrees to honour its commitment for the professional development of candidates and pay the accreditation fees due to the relevant institutions. The Company is also giving assurance that qualified staff and resources are available to support the Scheme.

The Company is responsible for ensuring that all relevant personnel involved with the development of the candidates are fully aware of this application and the Partner institutions’ requirements. Accreditation is subject to review at any time and may in exceptional circumstances be withdrawn; this would only be implemented after extensive discussions between the Company and the accrediting professional bodies.

It is a condition of accreditation that any significant changes which could affect this scheme, must immediately be notified in writing to the accrediting institutions. This includes changes in key personnel. In addition, the accrediting institutions require an Annual Self-Assessment of the Scheme by the Company/Organisation, identifying any developments and providing targets for improvement.

On behalf of the named organisation, I apply for accreditation of the professional development scheme described in this document. I have read the notes above and understand and accept the implications of making this application.

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<tr>
<th>Name</th>
<th>Signature</th>
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<td>Position</td>
<td>Date</td>
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**Office Use Only**

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<tr>
<th>Date received</th>
<th>Visit Date</th>
<th>Scheme Number</th>
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<tbody>
<tr>
<td>Multi Site</td>
<td>Joint Visit</td>
<td>Follow-up required</td>
</tr>
<tr>
<td>Committee Date</td>
<td>Decision</td>
<td>Audit Type</td>
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<tr>
<td>SAR due</td>
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APPLICATION GUIDELINES TO AID COMPLETION OF FORM: SCHEME SUBMISSIONS

MAKING AN APPLICATION
Applying to a single institution
This form is for organisations seeking accreditation or re-accreditation of a professional development scheme and should be completed and returned to the institution selected. It is advisable to inform and to seek any further advice from the chosen institution prior to completing the form.

Applying to more than one institution
This form facilitates a multiple institution accreditation submission to any of the following Institutions: The Institution of Engineering and Technology, The Institution of Mechanical Engineers, the Institute of Physics and the Royal Aeronautical Society, one of whom you should nominate as the “lead” institution to co-ordinate the accreditation process. You are advised to inform and to seek any further advice from the chosen institutions prior to submitting the completed form.

This same submission can be presented to each institution unless the scheme offers different solutions for different disciplines or different categories of registration. Where this is the case, it may be necessary for separate submissions to be made. Please consult with the selected institutions before attempting to submit a scheme.

Sending in the completed applications
This application should be sent electronically, normally on a USB stick. Please make sure that sufficient USB sticks are provided of the full application and supporting documentation are supplied to EACH selected institution. When applying for a single institution accreditation please post THREE hard copies of the full application and supporting documentation.

Accreditation Visit
Where accreditation is sought from more than one institution, a single joint accreditation visit can be arranged to avoid unnecessary disruption to your company and personnel. This will be co-ordinated by the “lead” institution.

THE SECTIONS

Section 1 – Company Information
This section requests basic details about your organisation and contacts, as well as basic information on the scheme being submitted for assessment, including any relevant accreditation history (if any).

Section 2 – Accreditation Criteria
This section requests information that indicates how the scheme addresses the accreditation criteria. Please provide as clear as possible descriptions in your responses to these. Further guidance on the type of information and the indicators you might consider including in your response is given below.

Section 3 – List of Attachments
Please list any appended supplementary information. This might include a Scheme Manual, Mentor Scheme Notes, examples of logs or records kept for monitoring progress and verified assessment of work completed.

Section 4 – Checklist and Declaration
Please check to ensure all sections have been completed. The application must be signed by an authorised or senior person, e.g. Chief Executive or other person who has the authority to allocate the company resources required to support the scheme.

Special Note: If your scheme uses the IMechE’s Monitored Professional Development Scheme (MPDS) please indicate this in your response to IMechE. No further explanation is required where MPDS evidently satisfies the criterion concerned.

DETAILS TO BE CONSIDERED TO AID THE ASSESSMENT OF THE SCHEME

Section 2 Additional Guidance
The questions raised follow an agreed multi-institutional approach to scheme assessment. The first five cover the general operational aspects of the scheme whilst the second five relate to the processes employed.
Q2.1 Track Record
Those seeking accreditation for the first time should state this clearly.

Where possible, responses should show how your organisation has gained a good reputation for engineering training and development, perhaps from previously accredited schemes with a professional institution. In this case it is helpful to include information relating to the success of such a scheme, eg: the number of candidates achieving registration per year, as well as information on current scheme status, or reasons for discontinuing the scheme etc.

It is also helpful, where appropriate, that mention be made of your organisation’s involvement with other initiatives, such as Investors in People (IiP) as this may provide additional background on aspects of people development and quality systems to support your application.

Q2.2 Candidate Entry
Responses should indicate whether scheme entrants are at different ages and stages or have different academic qualifications and if so, what methods are used to establish their development needs. It should indicate the rationale behind whether individuals are given different or the same learning and development pathways. It is also helpful to show, where appropriate, how gaps in academic attainment might be tackled within the scheme and how prior knowledge and/or skills are taken into account.

Q2.3 Scheme Content
Responses should detail the scheme, its content and duration. Points that should also be covered include how the scheme develops competence, links to any competency framework and whether the competences required for registration have been allowed for, perhaps by mapping company to registration competences.

It is helpful to show how candidates become familiar with all aspects of any underlying business, process, project, contract, or product cycle, and what scope there is for increasing responsibility and rotational assignments.

Q2.4 Candidate Completion
Responses should indicate the roles that candidates may typically undertake on completing the scheme and stepping forward for registration. This includes sample job descriptions, levels of responsibility and whether progression is possible through similarly supported Continuing Professional Development (CPD).

Q2.5 Learning Environment
Responses should indicate the level of commitment that exists to support the scheme. Where this is shown in the organisation’s business plan or mission statement this should be stated. It is important to show how support cascades down through management. Also, to indicate the facilities and infrastructures that are in place to support learning, such as intranet sites or learning centres and any current active involvement with the profession.

Any policies in place that relate to the payment of professional membership fees should also be mentioned.

Q2.6 Candidate Support
Responses should indicate the employer’s understanding of the desired outcomes, including satisfying the registration requirements. State who provides support to candidates and what their role is. This should include mentoring/coaching methods and the qualifications/experience/training of those involved. It is also important to show how this operates within the scheme, for example with the use of individual and flexible development plans.

Q2.7 Candidate Assessment
Responses should outline the methods and frequency of assessments employed to ensure candidates are performing. Also an indication of how they gain feedback to keep them on a development track. This may include Performance Reviews, Appraisals, Training and Development Action Plans as well as Competence Records.

Please indicate how competence is defined and assessed to be at a given level within the organisation’s performance management system and how this maps to the registration requirements in UK SPEC.

Q2.8 Candidate Records and Scheme Documentation
Responses should cover two aspects.

The first should show how the candidate can gather evidence relating to the registration competence criteria. This may follow a variety of formats that may be translated or put into portfolio format for the purposes of the Professional Review. This evidence should show how records are maintained and updated, and how they are appropriately annotated when verified or assessed by assessors/mentors/sponsors.
The second aspect relates to the scheme documentation including any manual that describes the scheme content and its operation, the roles and responsibilities of those involved, and details of any steering group, mentor or candidate forums aimed at maintaining and improving the scheme.

**Q2.9 Scheme Co-ordination and Quality**
Responses should outline the control mechanisms and quality systems that are in place to ensure the consistency and integrity of the scheme. This is particularly important where the scheme operates across other divisions or locations. Evidence of auditing processes and self-assessment reports might be included as well as how feedback from all those involved is used to improve the scheme. Registration to any formal quality standards should be stated where relevant.

**Q2.10 Risks Factors**
Responses should identify those actions or plans in place to address any key factors that might render the scheme ineffective during the 3-5 years a candidate may need to complete IPD. It is helpful to include such aspects as succession planning of key staff and what arrangements are in place to honour the learning contract.
PROFESSIONAL DEVELOPMENT SCHEME: ASSESSOR’S REVIEW FORM - for personal use

Panel member: __________________________________

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<th>Company:</th>
<th>Visit Date</th>
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**ISSUES FOR DISCUSSION**

**1. TRACK RECORD**
The employer/scheme demonstrates a track record for training and development that indicates the standards for professional registration can be consistently met.

**2. SCHEME CONTENT**
The content and general pattern of the scheme allows academically qualified candidates who wish to become registered as professional engineers (or technicians) to acquire and maintain a suitable profile of competence within 3-5 years. (Note: More experienced candidates may take less time.)

**3. CANDIDATE COMPLETION**
On successful completion of the scheme, candidates are encouraged to become registered and are able to continue working in suitable professional roles.
4. LEARNING ENVIRONMENT
The general environment in which the scheme operates is conducive to a successful outcome.

5. CANDIDATE SUPPORT
Every candidate on the scheme is provided with adequate support to become professionally registered.

6. CANDIDATE ASSESSMENT
The competence and performance of each candidate is effectively assessed and regularly monitored.

7. CANDIDATE RECORDS AND SCHEME DOCUMENTATION
The candidate records and scheme documentation are fit for purpose and up to date.

8. SCHEME COORDINATION AND QUALITY
The scheme is properly coordinated and there are effective monitoring, feedback, evaluation and quality assurance procedures in place.

9. CONDITIONS

10. RECOMMENDATION
Recommend accreditation for a period of:
RAeS Accreditation: A Handout for Young Engineers

Introduction
Your company has invited the Royal Aeronautical Society to consider your professional development scheme for accreditation. Young engineers from accredited schemes have a distinct advantage if they intend to register as a Chartered Engineer (CEng) or an Incorporated Engineer (IEng). Independent professional accreditation is well recognized both in the UK and internationally.

What is involved?
A team of two to three accreditors, plus a member of RAeS staff, will visit the company for a day. They will have discussions with senior managers, line managers, mentors, visit the workplace and resources and most importantly, meet you. The team hopes to see young engineers from each year of the Scheme together with those who have already completed it.

The meetings are confidential – company staff are excluded. Discussions will cover the scheme, the resources and your overall learning and social experience. The team will take up, anonymously, with the company any appropriate issues that you would like them to raise.

What happens afterwards?
The team will report to the next meeting of the Society’s Accreditation Committee which will take the decision to accredit the Scheme or otherwise. Once confirmed, accreditation is awarded for three years, unless specific circumstances apply, e.g. it's a new Scheme.

Membership of the RAeS
If you are not already a member, go to www.aerosociety.com and check out the benefits; you can join today as an Affiliate then you can apply for an upgrade to MRAeS and CEng in due course. The Society has a very dynamic Young Members section.

Registration as a professional Engineer
For CEng registration, you will need either an accredited integrated MEng degree OR an accredited Bachelors degree with honours in engineering or technology, plus either an accredited or approved MSc degree or appropriate further learning to Masters level. For IEng Registration, you need either an accredited Bachelors degree in Engineering or Technology OR a Higher National Certificate OR Diploma OR a Foundation Degree in engineering or technology, and appropriate further learning to degree level.

Registration is open to everyone who can demonstrate competence to perform professional work to the necessary standards, and commitment to maintain that competence, to work within professional codes and to participate actively within the profession. Registration gives you status and recognition; further information can be found on our website.

myPath - the Society’s Online Professional Development recording scheme
Your company should have a preferred recording scheme for professional development but you may wish to consider, for the future, myPath, the Society’s online facility, to track your CPD against UK-SPEC competence requirements, your own or your company’s objectives. Visit: www.aerosociety.com/membership.

Find out more from the Society’s website: www.aerosociety.com and on Twitter or Facebook:
www.twitter.com/aerosociety
www.facebook.com/royalaeronauticalsociety

Thank you for your time and participation.

xxxxxxxxx
Director, Membership & Professional Standards
EXAMPLE: DECISION LETTER TO A PROFESSIONAL ORGANISATION

Dear

[Name of scheme]

Further to the recent visit made by the Society, [IMechE, and the IEE], I write to inform you of our Corporate Accreditation Committee’s decision. Before doing so, I would like to thank your company for a very enjoyable and productive visit.

I am pleased to let you know that the Committee has agreed to accredit the above Scheme at the ??? sites for three years, from [month] 20XX to [month] 20XX. I enclose the Certificate that confirms the decision.

The Committee noted the following commendable points:

- The Scheme has been designed so as to map its competences directly to those in UK-SPEC.
- The way in which the company actively encourages the achievement of CEng.
- The strong support from senior management.
- The encouragement and training of mentors.
- The Scheme documentation that is exemplary.

The Committee made some observations that the next visit should follow-up:

- Copies of UK-SPEC should be distributed to mentors and mentees to ensure that they are aware of it and kept up to date with its requirements.

Also, the Society would be interested in the proposed new database as a good example of best practice.

If you have any queries regarding the Committee’s decision, please do not hesitate to contact Xxxxx, our Accreditation Officer, at Xxxxxx@aerosociety.com

Yours sincerely

XXXXX
Director, Membership & Professional Standards
Form PD1AS

Application for the Assessment of Apprenticeship Schemes

This form is for use by companies or organisations seeking accreditation or re-accreditation of their Professional Development Schemes. Please read carefully the guidelines before completing the form and contact the selected institutions as required.

Please tick all boxes relevant to your application. If you are seeking joint accreditation, please put a cross for your chosen lead institution.

This Application is made to:

<table>
<thead>
<tr>
<th>Institution</th>
<th>Registration Categories</th>
<th>Scheme Type</th>
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<tbody>
<tr>
<td></td>
<td>IEng</td>
<td>EngTech</td>
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<tr>
<td>IET</td>
<td></td>
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<tr>
<td>IMechE</td>
<td></td>
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<tr>
<td>RAeS</td>
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<td></td>
</tr>
</tbody>
</table>

Section 1 – Applicant Information

1.1 Name of Organisation

1.2 Nature of Business
<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.3</td>
<td>Title of Scheme, whether approved by BIS, and Qualification Provider</td>
</tr>
<tr>
<td>1.4</td>
<td>Purpose and scope of Scheme</td>
</tr>
</tbody>
</table>
| 1.5     | Locations/Divisions where the Scheme is in operation  
HQ address  
Tel No:  
Fax No:  
Web:  
Additional locations/divisions |
| 1.6     | Person with ultimate responsibility for the scheme  
Name  
Position  
Address  
Tel No:  
Fax No:  
E-mail: |
| 1.7     | Person responsible for day-to-day administration of the scheme  
Name  
Position  
Address  
Tel No:  
Fax No:  
E-mail: |
### 1.8 Management and Staff
- Please list on a separate sheet with the following details:
  - **Name**
  - **Job Title**
  - **Location**
  - **Institution**
  - **Class / Grade**
  - **Any designatory letters**

### 1.9 Detail of Candidates on the Scheme
- **Total number currently on the Scheme**
- **If a new Scheme, how many now joining it?**

### 1.10 History of the scheme
- **How long has the Scheme been operating?**
  - **Years**
  - **Months**

- Which PDP Institutions or others have previously assessed this scheme (please tick):
  - IET
  - IMechE
  - RAeS
  - None

- Other (please specify)

### Section 2 – Accreditation/ Approval Criteria

#### 2.1 Track Record:
- What evidence can you provide to show that your organisation/scheme has a track record for training and development and that the standards for registration can be consistently met?

<table>
<thead>
<tr>
<th>Document/Ref</th>
<th></th>
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</table>


### 2.2 Candidate Entry
What development plans do you put in place when candidates join the scheme? How do these plans take into account the current academic and professional attainment of candidates, the needs of the business and the requirements for registration?

### 2.3 Scheme Content
Please describe the content and general pattern of the scheme. How long does it take candidates to gain a suitable profile of competence to meet registration requirements?

### 2.4 Candidate Completion
What roles do candidates undertake on successful completion of the scheme?
<table>
<thead>
<tr>
<th>Section</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.5</td>
<td><strong>Learning Environment</strong>: What evidence can you provide to show that your organisation has a learning environment that is generally conducive to professional development?</td>
</tr>
<tr>
<td>2.6</td>
<td><strong>Candidate Support</strong>: What form of support do you provide for candidates aiming to become registered?</td>
</tr>
</tbody>
</table>
### 2.7 Candidate Assessment:
How (and how often) do you assess the competence and performance of candidates on the scheme?

### 2.8 Candidate Records and Scheme Documentation:
Please outline what kind of records candidates must keep and how the scheme itself is documented.
### 2.9 Scheme Co-ordination and Quality
Please explain how the scheme is co-ordinated and what monitoring, feedback, evaluation and quality assurance procedures are in place.

### 2.10 Risk Factors
How do you ensure that the scheme remains effective over time and that the reasonable expectations of participants and other stakeholders continue to be met.
Section 3 – List of Attachments

This space is for listing any supplementary material attached to your application, e.g. scheme manual, training records etc, as supporting evidence for all aspects of Section 2.

Section 4 - Checklist and Declaration

4.1
Section 1 completed  
Section 2 completed  
Section 3 completed  

4.2 Fees

The institutions have different fee structures associated with accreditation and monitoring of candidates. Fee information is detailed on a separate sheet available from each institution if not included with the Application Guidelines.
4.3 Declaration

This must be signed by the Chief Executive or other person having the authority to allocate the resources required to support this scheme.

By submission of this application the Company agrees to honour its commitment for the professional development of candidates and pay the accreditation fees due to the relevant institutions. The Company is also giving assurance that qualified staff and resources are available to support the Scheme.

The Company is responsible for ensuring that all relevant personnel involved with the development of the candidates are fully aware of this application and the Partner institutions’ requirements. Accreditation is subject to review at any time and may in exceptional circumstances be withdrawn; this would only be implemented after extensive discussions between the Company and the accrediting professional bodies.

It is a condition of accreditation that any significant changes which could affect this scheme, must immediately be notified in writing to the accrediting institutions. This includes changes in key personnel. In addition, the accrediting institutions require an Annual Self-Assessment of the Scheme by the Company/Organisation, identifying any developments and providing targets for improvement.

On behalf of the named organisation, I apply for accreditation of the professional development scheme described in this document. I have read the notes above and understand and accept the implications of making this application.

Name

Signature

Position

Date

Office Use Only

Date received

Visit Date

Scheme Number

Multi-Site

Joint Visit

Follow-up required

Committee Date

Decision

Audit Type

SAR due
APPRENTICESHIPS: SUBMISSION GUIDELINES

MAKING AN APPLICATION

Applying to a single institution
This form is for organisations seeking accreditation or re-accreditation of an Apprenticeship Scheme and should be completed and returned to the institution selected. It is advisable to inform and to seek any further advice from the chosen institution prior to completing the form.

Applying to more than one institution
This form facilitates a multiple institution accreditation submission to any of the following Institutions: The Institution of Engineering and Technology, The Institution of Mechanical Engineers and the Royal Aeronautical Society, one of whom you should nominate as the “lead” institution to co-ordinate the accreditation process. You are advised to inform and to seek any further advice from the chosen institutions prior to submitting the completed form.

This same submission can be presented to each institution unless the scheme offers different solutions for different disciplines or different categories of registration. Where this is the case, it may be necessary for separate submissions to be made. Please consult with the selected institutions before attempting to submit a scheme.

Sending in the completed applications
Although this application may be sent electronically it is likely that supporting documentation will take the form of hard copy. Please make sure that TWO copies of the full application and supporting documentation are supplied to EACH selected institution. When applying for a single institution accreditation please post THREE hard copies of the full application and supporting documentation.

Accreditation Visit
Where accreditation is sought from more than one institution, a single joint accreditation visit can be arranged to avoid unnecessary disruption to your company and personnel. This will be co-ordinated by the “lead” institution.

THE SECTIONS

Section 1 – Company Information
This section requests basic details about your organisation and contacts, as well as basic information on the scheme being submitted for assessment, including any relevant accreditation history (if any).

Section 2 – Accreditation Criteria
This section requests information that indicates how the scheme addresses the accreditation criteria. Please provide as clear as possible descriptions in your responses to these. Further guidance on the type of information and the indicators you might consider including in your response is given below.

Section 3 – List of Attachments
Please list any appended supplementary information. This might include a Scheme Manual, Mentor Scheme Notes, examples of logs or records kept for monitoring progress and verified assessment of work completed.

Section 4 – Checklist and Declaration
Please check to ensure all sections have been completed. The application must be signed by an authorised or senior person, e.g. Chief Executive or other person who has the authority to allocate the company resources required to support the scheme.

DETAILS TO BE CONSIDERED TO AID THE ASSESSMENT OF THE SCHEME

Section 2 Additional Guidance
The questions raised follow an agreed multi-institutional approach to scheme assessment. The first five cover the general operational aspects of the scheme whilst the second five relate to the processes employed.

Q2.1 Track Record
Those seeking accreditation for the first time should state this clearly.

Where possible, responses should show how your organisation has gained a good reputation for engineering training and development, perhaps from previously accredited schemes with a professional institution. In this case it is helpful to include information relating to the success of such a scheme, eg: the number of candidates achieving registration per year, as well as information on current scheme status, or reasons for discontinuing the scheme etc.

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**Q2.10 Risks Factors**
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# LEARNING OUTCOMES FOR ENGTECH

**Apprenticeship or Qualification Title:**

<table>
<thead>
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<th>Module or component numbers</th>
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<th>B</th>
<th>C</th>
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<td>A2</td>
<td>B1</td>
<td>B2</td>
<td>B3</td>
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Output Standards for Approved Qualifications and Apprenticeships

INTERPRETATION

Within this handbook, the following terms are used with the meanings stated:

- **Understanding** is the capacity to use concepts creatively, for example, in problem solving, design, explanations and diagnosis
- **Knowledge** is information that can be recalled
- **Know-how** is the ability to apply learned knowledge and skills to perform operations intuitively, efficiently and correctly
- **Skills** are acquired and learned attributes that can be applied almost automatically
- **Awareness** is general familiarity, albeit bounded by the needs of the specific discipline

UNDERPINNING KNOWLEDGE AND UNDERSTANDING REQUIREMENTS

For qualifications and Apprenticeships, the six key areas of learning are as follows:

SCIENCE AND MATHEMATICS

Engineering is underpinned by science and mathematics, and other associated disciplines, as defined by the relevant professional engineering institution(s).

Technicians will need:

- A descriptive, formula-based knowledge and understanding of the scientific principles underpinning relevant current technologies
- Knowledge and understanding of relevant mathematics, including numerical and data analysis, that is necessary to support the application of technical and practical skills

ENGINEERING ANALYSIS

Engineering analysis involves the application of engineering concepts and tools to the solution of engineering or ICT problems.

Technicians will need:

- To understand the limitations of standard tests and measurements relevant to their field of activity
- Know-how to use the results of engineering analysis for the purpose of developing solutions to well-defined engineering or ICT problems
- To apply appropriate solutions to well-defined engineering or ICT problems using methods specific to their field of activity

DESIGN

Design at this level involves the awareness of an economically viable product, process or system to meet a defined need.

Technicians will need:

- Awareness of business, customer, and user needs
- Awareness of constraints on the design process including environmental and sustainability limitations; ethical, health, safety, security and risk issues; intellectual property; codes of practice and standards
- Knowledge that supports design for the purpose of developing solutions to well-defined engineering or ICT problems
- Know-how to contribute to the design and/or the design process
• Know-how to communicate their work to technical and non-technical audiences

ECONOMIC, LEGAL, SOCIAL, ETHICAL AND ENVIRONMENTAL CONTEXT
Engineering or ICT activity can have impacts on the environment, on commerce, on society and on individuals.

Technicians therefore need the skills to manage their activities and to be aware of the various legal and ethical constraints under which they are expected to operate, including:

• Understanding the need for a high level of professional and ethical conduct in engineering or ICT and a knowledge of professional codes of conduct
• Knowledge of the commercial, economic and social context of the engineering or ICT processes
• Understanding the requirement for engineering or ICT activities to promote sustainable development
• Awareness of relevant legal requirements governing engineering or ICT activities, including personnel, health & safety, contracts, intellectual property rights, product safety and liability issues
• Awareness of risk issues, including health & safety and environmental risk

ENGINEERING PRACTICE
This is the practical application of engineering or ICT knowledge and skills. This can include:

• Know-how to use relevant materials, equipment, tools, processes, or products
• Knowledge of procedures and practices for industry standard operations and processes
• Know-how to use and apply information from technical literature
• Know-how to use appropriate codes of practice and industry standards
• Awareness of quality issues and the potential for continuous improvement
• Awareness of team roles and the ability to work as a member of an engineering or ICT team

ADDITIONAL GENERAL SKILLS
Technicians must have developed transferable skills, additional to those set out in the other learning outcomes, and that will be of value in a wide range of situations, including the ability to:

• Apply their skills in problem solving, communication, information retrieval, working with others and the effective use of general IT facilities
• Plan self-learning and improve performance, as the foundation for lifelong learning/CPD
• Plan and carry out a personal programme of work
  Exercise personal responsibility, as an individual or as a team member

EngTech Learning Outcomes Matrix
APPRENTICESHIP SCHEME: ASSESSOR’S REVIEW FORM - for personal use

Panel member: ________________________________

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<thead>
<tr>
<th>Company:</th>
<th>Visit Date</th>
</tr>
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ISSUES FOR DISCUSSION

1. TRACK RECORD
   The employer/scheme demonstrates a track record for training and development that indicates the standards for professional registration can be consistently met.

2. SCHEME CONTENT
   The content of the scheme is in alignment with the Trailblazer standards.

3. CANDIDATE COMPLETION
   On successful completion of the scheme, candidates are encouraged to become registered and are able to continue working in suitable professional roles.

4. LEARNING ENVIRONMENT
   The general environment in which the scheme operates is conducive to a successful outcome.
### 5. CANDIDATE SUPPORT
Every candidate on the scheme is provided with adequate support to ensure contribution of appropriate professional recognition.

### 6. CANDIDATE ASSESSMENT
The competence and performance of each candidate is effectively assessed and regularly monitored.

### 7. CANDIDATE RECORDS AND SCHEME DOCUMENTATION
The candidate records and scheme documentation are fit for purpose and up to date.

### 8. SCHEME COORDINATION AND QUALITY
The scheme is properly coordinated and there are effective monitoring, feedback, evaluation and quality assurance procedures in place.

### 9. CONDITIONS

### 10. RECOMMENDATION
Recommend accreditation for a period of:
RAeS Accreditation/Approval: A Handout for Apprentices

Introduction
Your company has invited the Royal Aeronautical Society to consider your Apprenticeship Scheme for accreditation. It is a key element of apprenticeship schemes that in addition to your Employer’s “sign off” of your competence, that completion of the apprenticeship is designed to be recognised by the relevant professional institutions as contributing towards the appropriate level of professional registration (EngTech or IEng. as applicable). However, it is recognised that additional experiential evidence may be required for full registration. Apprentices from approved schemes have a distinct advantage if they intend to register as an Engineering Technician (EngTech) or an Incorporated Engineer (IEng). Independent professional accreditation is well recognized both in the UK and internationally.

What is involved?
A team of up to three assessors, plus a member of RAeS staff, will visit the company for a day. They will have discussions with senior managers, line managers, mentors, visit the workplace and resources and most importantly, meet you. The team hopes to see apprentices from each year of the Scheme together with those who have already completed it.

The meetings are confidential – company staff are excluded. Discussions will cover the scheme, the resources and your overall learning and social experience. The team will take up, anonymously, with the company any appropriate issues that you would like them to raise.

What happens afterwards?
The team will report to the next meeting of the Society’s Accreditation Committee which will take the decision to approve the Scheme or otherwise. Once confirmed, approval is awarded for three years, unless specific circumstances apply, e.g. it’s a new Scheme.

Membership of the RAeS
If you are not already a member, go to www.aerosociety.com and check out the benefits; you can join today as an Affiliate then you can apply for an upgrade in due course. The Society has a very dynamic Young Members network.

Registration as a Professional Engineer
For EngTech registration, you will need either an Advanced/Modern Apprenticeship or other work-based learning programme approved by a licensed professional engineering institution, or a qualification, approved by a licensed professional engineering institution in engineering set at Level 3 (or above) in the Qualifications and Credit Framework/National Qualifications Framework for England and Northern Ireland, or at Level 6 (or above) in the Scottish Credit and Qualifications Framework, or at level 3 (or above) in the Credit and Qualifications Framework for Wales, or equivalent qualifications approved by a licensed professional engineering institution.

For IEng Registration, you need either an accredited Bachelors degree in Engineering or Technology OR a Higher National Certificate OR Diploma OR a Foundation Degree in engineering or technology, and appropriate further learning to degree level.

Registration is open to everyone who can demonstrate competence to perform professional work to the necessary standards, and commitment to maintain that competence, to work within professional codes and to participate actively within the profession. Registration gives you status and recognition; further information can be found on our website.

mycareerpath - the Society’s Online Professional Development recording scheme
Your company should have a preferred recording scheme for professional development but you may wish to consider, for the future, mycareerpath, the Society’s online facility, to track your CPD against UK-SPEC competence requirements, your own or your company’s objectives. Visit: www.aerosociety.com/membership

Find out more from the Society’s website: www.aerosociety.com and on Twitter or Facebook:
www.twitter.com/aerosociety
www.facebook.com/royalaeronauticalsociety
EXAMPLE: DECISION LETTER TO A PROFESSIONAL ORGANISATION

Dear

[Name of scheme]

Further to the recent visit made by the Society, [IMechE, and the IEE], I write to inform you of our Accreditation Committee's decision. Before doing so, I would like to thank your company for a very enjoyable and productive visit.

I am pleased to let you know that the Committee has agreed to accredit the above Scheme at the ??? sites for three years, from [month] 20XX to [month] 20XX. I enclose the Certificate that confirms the decision.

The Committee noted the following commendable points:

- The Scheme has been designed so as to map its competences directly to those in UK-SPEC.
- The way in which the company actively encourages the progression of apprentices to professional registration.
- The strong support from senior management.
- The encouragement and training of mentors.
- The Scheme documentation that is exemplary.

The Committee made some observations that the next visit should follow-up:

- Copies of UK-SPEC should be distributed to mentors and mentees to ensure that they are aware of it and kept up to date with its requirements.

Also, the Society would be interested in the proposed new database as a good example of best practice.

If you have any queries regarding the Committee’s decision, please do not hesitate to contact Xxxxx, our Accreditation Officer, at Xxxxxx@aerosociety.com

Yours sincerely

xxxxxx
Membership and Accreditation Officer
Useful Website References

Royal Aeronautical Society  www.aerosociety.com
Engineering Council (EC)  www.engc.org.uk
EC – international information  www.engc.org.uk/international-activity/about-our-international-activity
Washington, Sydney & Dublin Accords  www.ieagreements.org
FEANI  www.feani.org
Engineering Accreditation Board (EAB)  www.engab.org.uk
QAA requirements (Scotland)  www.qaa.ac.uk/en/Publications/Documents/An-introduction-to-The-Scottish-Credit-and-Qualifications-Framework.pdf
Qualifications ND Credit Framework  www.gov.uk/government/collections/qualifications-and-credit-framework-requirements
UK-SPEC  www.engc.org.uk/professional-qualifications/standards/uk-spec
EC – accreditation information  www.engc.org.uk/education--skills/accreditation/information-for-universities
List of accredited qualifications  www.engc.org.uk/registration/acad/search.aspx
Engineering Gateways  www.engineeringgateways.co.uk
Open University degrees  www.open.ac.uk
Professional development  http://www.pd-how2.org/introduction/index.cfm
1. Introduction
Paragraphs 22 to 31 of the Engineering Council’s Registration Code of Practice (Registration Code) set out the requirements governing the accreditation of academic programmes by professional engineering institutions that are licensed to do so by the Engineering Council. This guidance note and its annexes complement the Registration Code and the ‘Accreditation of HE Programmes’ (AHEP) handbook. They reflect discussions since AHEP’s publication, especially within the Engineering Accreditation Board (EAB) and the Engineering Council’s Registration Standards Committee (RSC). This note does not introduce any new regulatory requirements.

The annexes cover accreditation matters related to:
- Foundation Degrees (Annex A)
- Distance learning (Annex B)
- Engineering Doctorates (EngDs) (Annex C)
- Degrees offered outside the UK (Annex D)

This note and its annexes have been prepared for use by professional engineering institutions. They may wish to use these as a basis for their own guidance to academic institutions and to accrediting panels, and are encouraged to share these or elements of these with Higher Education Institutions (HEIs) seeking accreditation.

Information for professional engineering institutions about removal of accredited status from a programme and making a decision not to undertake an academic accreditation visit are covered in separate documents.

Accreditation plays a valuable role in maintaining and developing the relationship between the profession and higher education, and in ensuring appropriate standards. Part of its purpose is to stimulate and encourage programme innovation and development. The Registration Code, AHEP and this Guidance Note help to enable this.

Accreditation is not intended to be a prescriptive exercise, and the professional engineering institutions are encouraged to avoid introducing un-necessary prescription into their individual requirements. Accreditation should be viewed as a developmental process, with more of a continuing dialogue between universities and colleges and the accrediting institutions, rather than placing all the emphasis on the five-yearly visit. This approach helps to establish an understanding of the opportunities that accreditation brings and the value of the process, as well as encouraging the development of innovative provision. It also assists degree awarding institutions that are developing new programmes.

During accreditation exercises, licensed institutions may wish to draw on the specific technical expertise of smaller professional engineering institutions or Professional Affiliates of the Engineering Council that do not hold academic accreditation licences. Under such an arrangement, the overall process and outcome remain entirely under the control of the licensed accrediting institution. Any such input should be clearly recorded in the accreditation visit report, and universities should be encouraged to include reference to the specific input in their course literature.

This note covers the accreditation of academic programmes leading to the award of exemplifying qualifications for Incorporated Engineer (IEng) and Chartered Engineer (CEng) under the UK Standard
for Professional Engineering Competence (UK-SPEC): Bachelors and Honours degrees, integrated Masters (MEng) degrees, and other Masters degrees. The principles in this note are applicable to the accreditation of Foundation degrees, though the provider will be expected to provide additional information as outlined in the Statement on the Accreditation of Foundation Degrees (Annex A to this note).

Guidance for professional engineering institutions about further learning and HNDs is available on the Engineering Council’s Extranet. A definition of key terms used in the assessment of learning outcomes was produced by the Engineering Subject Centre: http://84.22.166.132/downloads/scholarart/learning_outcomes.pdf

2. Output Standards for Bachelors, Honours, Integrated Masters (MEng) and other Masters Degrees

The third edition of AHEP, published in 2014, sets out the requirements for graduates from accredited programmes in six key areas of learning: http://www.engc.org.uk/ahep

Does a degree programme have to deliver all the required learning outcomes as set out in the AHEP?
Yes. An accredited programme must deliver all the required learning outcomes, although as AHEP makes clear, the ‘weighting given to the six broad areas of learning will vary according to the nature and aims of each programme’.

Where are general transferable skills covered?
Previous editions of AHEP referred to general learning outcomes, which described the overall nature of the programme, and specific learning outcomes which should contribute to a greater or lesser extent to the delivery of the general ones.

In the third edition of AHEP, most of the previously published general learning outcomes have been incorporated into the five specific learning outcomes in order to strengthen their position, with the residual few forming a new sixth area ‘Additional general skills’ for each degree. Full implementation of the third edition of AHEP is expected from September 2016.

Are there any other reference points for accreditation?
These reference points are crucial in determining whether the programme is delivering knowledge, understanding and skills at the appropriate level.

The competence statements for IEng and CEng which professional engineering institutions have adopted under UK-SPEC may also be a useful reference point: http://www.engc.org.uk/ukspec

Which should take priority – programme or module learning outcomes?
The decision to accredit should be based on programme learning outcomes. Thus the expectation is that accrediting panels will look at learning outcomes at the programme level.

Consideration of learning outcomes at the module level may prove to be useful if further information is required but these should not be the prime source of evidence.

Does a degree programme have to deliver all the bullet points included under the six areas of learning in AHEP?
Yes. The bullet points describe the learning outcomes. They represent different aspects of the capabilities which graduates from accredited programmes should possess, rather than curriculum content. They therefore serve as indicators for accreditors when looking at student achievement from the programme as a whole.
Can combined degrees (e.g., Engineering with French) be accredited and is a stipulated amount of engineering content required in these?
Yes, they can be accredited. In discussion at the EAB, most institutions felt that generally around two-thirds of the total programme would be required to deliver the required engineering outcomes. However, this is not a fixed requirement; whether a course holistically delivers the required learning outcomes is still the ultimate criterion in awarding accreditation.

Is it a requirement for accreditation that an MEng or any other Masters degree includes a group project?
No, not if the programme delivers all the learning outcomes. AHEP has always emphasised outcomes rather than how these are achieved. There are aspects of the six areas of learning to which a group project might make a major contribution. In the absence of a group project, the accreditation panel would need to be confident that the outcomes were being achieved by some other means.

Can a degree be accredited for both IEng and CEng registration?
Yes. The Engineering Council’s RSC agreed in 2009 that all Honours degrees accredited as partially meeting the academic requirements for Chartered Engineer registration meet the requirements for Incorporated Engineer registration and Sydney Accord recognition, and so should be accredited for both CEng and IEng. This arrangement is backdated to cover all such degrees accredited from intake year 1999.

The learning outcomes specific to those degrees for which IEng accreditation only is being sought are described in AHEP.

Is a visit required?
Yes. Paragraph 27 of the Registration Code states that a visit to the awarding institution must take place and this applies to all degrees. From 2014, there is some limited flexibility where some of the programme is delivered by other provider(s). However, there are strict parameters and accrediting institutions must refer to the Registration Code before deciding not to visit.

Further guidance on this matter for accrediting institutions is available on the Engineering Council’s Extranet.

Can a visit be coordinated with the university’s periodic review process?
Yes, and this is beginning to happen, and is encouraged.

What is meant by accreditation being viewed as a developmental process?
Licensed institutions are encouraged to provide assistance at an early stage to a degree awarding institution that is planning a new programme or that is new to the accreditation process. This approach is more likely to lead to the development of programmes that meet the required standard. After accreditation is conferred, continuing dialogue may take the form of annual reports or the sharing of notable or innovative practice. Universities and colleges should be encouraged to contact the engineering accrediting institution(s) for advice when considering the development of existing programmes.

Can someone who only follows the final year of an accredited programme get an accredited degree on graduation?
Yes. Historically, students had to spend at least two years on an accredited programme, but this rule does not exist under UK-SPEC. A university will have made the decision to admit someone to the final year of a programme on the basis that their previous academic experience enables them to achieve the necessary outcomes. However, accrediting institutions may ask universities to demonstrate how those graduating after one year would actually achieve the required learning outcomes, and decide whether to limit accreditation in the light of the response.

This arrangement would therefore apply, for example, to holders of an HND or graduates from Foundation degree programmes who wish to follow the final year of a Bachelors or Honours programme.

Can a student who fails a project first time, then passes, be awarded an accredited degree?
The Engineering Council is not prescriptive about this. Accrediting institutions are encouraged to
avoid introducing unnecessary prescription into their individual accreditation requirements. Their requirements must be clearly communicated to degree awarding institutions and students, and correctly entered on the Engineering Council’s accreditation database.

**What is the position of someone who, on completion of an accredited MEng programme, is awarded a BEng rather than the MEng degree?**
The person concerned will hold a non-accredited degree and any application for registration would be individually assessed. However, a BEng programme which is specifically designed as an exit point for MEng students who decide not to complete the MEng may be accredited if the accrediting institution is satisfied that it delivers the required learning outcomes for IEng or CEng as appropriate.

**If an MEng programme is only slightly deficient, can it be accredited with a requirement for further learning?**
No. The award of accredited status to an MEng programme means it fully meets the published requirements.

**Can someone with an accredited Masters degree but without an accredited Honours degree be considered for registration?**
Yes, but not as a Standard Route applicant. It is important that professional engineering institutions encourage universities to inform students correctly about the status of graduates from accredited Masters programmes in relation to Engineering Council registration requirements.

**Many Masters degrees have a mixed intake with not everyone having an accredited Honours degree in engineering. Can such programmes be accredited?**
Yes. The requirements for accreditation apply equally to the accreditation of Masters degrees. Paragraph 23 of the Engineering Council’s Registration Code requires accrediting institutions to consider a range of evidence, including “entry to the programme, and how the cohort entry extremes will be supported.” A judgement has to be made in the light of this.

Accreditation of a Masters degree confirms only that it provides the further learning to Masters level component of the education requirement for CEng registration.

**Can Postgraduate Diplomas be accredited?**
Postgraduate Diplomas are not exemplifying qualifications under UK-SPEC and should not be accredited as such. They may be accepted on an individual basis as meeting part or all of the further learning requirements, or as part of an integrated package of further learning and professional development. Postgraduate Diplomas accredited before 1 February 2007 retained accredited status until the end of their accreditation period.

3. Compensation

In all universities, examinations boards may decide that a strong performance by a student in one part of the programme may compensate for under-performance elsewhere. Paragraph 23 of the Registration Code requires accrediting institutions to consider the awarding institution’s regulations regarding progression. They may impose constraints on an accreditation decision as a result of this.

The following guidelines on compensation have been formulated following discussion in EAB:

- Compensation should be allowed
- Major projects should not be compensated
- Normally only up to 20 out of 120 credits, in the final year, could be compensated
- Compensation should not undermine the overall learning outcomes of the programme(s)

Degree programmes include varying sized modules and therefore the reference to ‘normally 20 credits’ is indicative; the key consideration is the final bullet point. In their accreditation decision letters, professional engineering institutions must ask for notification should the compensation requirements change during the period of accreditation.

4. Coordinated visits
What is the basis for carrying out a joint accreditation visit with another institution?
Joint accreditation visits bring considerable advantages, for example in terms of there being a single point of contact and one submission document, visit and visit report.

The EAB organises joint visits involving several professional engineering institutions. For a joint visit, there should be sufficient commonality amongst the programmes being put forward. Therefore, in general, EAB visits may not be appropriate for programmes that span a range of departments or for very large numbers of programmes, unless the commonality can be clearly defined. Further information about EAB is available at: http://www.engab.org.uk

5. Accreditation Decisions

Paragraph 28 of the Registration Code sets out four possible outcomes of an accreditation assessment.

Qualifying phrases such as ‘provisional accreditation’ and ‘partial accreditation’ are not used.

Does this mean that we cannot provisionally accredit new programmes?
Paragraph 29 of the Registration Code states that programmes which do not have an output cohort at the time of accreditation may be accredited. This would be on the basis of their anticipated output standards. Institutions undertaking the accreditation must however monitor the output and review their accreditation accordingly, and they may accredit a new programme for a shorter period. Should they decide to withdraw the accreditation, the first graduates and those students already on the programme would still have accredited degrees. This maintains the previous practice; it is simply the term ‘provisional accreditation’ which has been withdrawn.

RSC encourages professional engineering institutions to work with degree awarding institutions during new programme development, offering on-going advice and support to help to ensure that UK-SPEC requirements are understood and that innovative provision is encouraged.

What should accreditation decision letters include?
Under Paragraph 29 of the Registration Code, the awarding institution must be required to inform the accrediting institution of any major changes during the period of accreditation that affect the delivery of the specified programme outcomes. Examples are changes to compensation regulations, change of title, substitutions of modules, discontinuation of a module or loss of a critical resource.

Clear information about the registration opportunities for graduates from the accredited programmes should be included, and that all honours degrees accredited for CEng registration from intake year 1999 also meet the education requirements for standard route IEng registration and Sydney Accord recognition.

Awarding institutions should be informed that they may use the Engineering Council’s accredited programme logo (downloadable from: http://www.engc.org.uk/accrediteddegreelogo) and alerted to the availability of a EUR-ACE® label (http://www.engc.org.uk/education--skills/accreditation/european-accreditation).

Are programmes still able to be ‘partially accredited’?
The term was discontinued some time ago. Programmes may be accredited as partially meeting the requirements. This means that a programme delivers the learning outcomes required of it (for example an Honours degree for CEng) but that a further qualification is required to meet the full requirements for registration.

What are the consequences for students and graduates of a decision not to award accreditation?
It is an accepted principle across the profession that individuals who embark on a programme that is accredited should not be disadvantaged by a future decision to remove accreditation before the end of the original accreditation period. This also applies to graduates, should a decision to remove accreditation be back-dated.
Professional engineering institutions should:
- Remind universities that public information about the accredited status of their degree programmes must be correct
- Inform universities that the publication of inaccurate information can be referred by the Engineering Council to the QAA under its ‘Cause for Concern’ procedure

Professional engineering institutions must:
- Check the accuracy of statements about accredited status and registration as part of the periodic accreditation exercise.

A professional engineering institution that is considering the removal of accreditation before the end of the original accreditation period is directed to a separate document covering this matter.

Can programmes be accredited for EngTech?
No. Accreditation is on the basis of delivering specific learning outcomes derived from the statements in AHEP. AHEP deals specifically with programmes accredited for IEng and CEng, and there are no specified learning outcomes for EngTech programmes.

Paragraphs 19 and 32-37 in the Registration Code deal with the approval of programmes for EngTech registration.

What is the situation regarding the accreditation of HNDs?
There is no requirement for HNDs to be accredited as such accreditation confers no advantage for an individual seeking registration, and accredited HNDs are not recorded on ACAD. Further details are in a guidance note for institutions on the extranet: [http://www.engc.org.uk/extranet](http://www.engc.org.uk/extranet)

Do HEIs have to advise of changes to accredited programmes during the accreditation period?
Yes. However, it is expected that programmes will change over time. Significant and therefore notifiable changes are mentioned above (decision letter contents).

Is there a minimum requirement about professional qualification of academic staff?
The Engineering Council is not prescriptive about this. However, professional engineering institutions are encouraged to support engineering departments and their staff to increase the levels of professionally qualified engineering academics. This provides role models for their students and provides a mechanism for active engagement with the profession.

6. Charging for accreditation

There is no common policy on charging. The Engineering Council believes that it is a matter for an individual professional engineering institution to decide whether or not to make a charge for accreditation, in accordance with its own business plans. Should a decision to charge be made, the Engineering Council’s Registration Code requires this to be specified in an institution’s accreditation procedures, and made clear to a university at an early stage. Up-to-date charging details are collated annually by the EAB Secretariat. If an institution wishes to introduce charging, an EAB working group has recommended an annual affiliate scheme as best practice.
Qualifications accepted for EngTech registration

Normally the qualifications accepted for Engineering Technician (EngTech) registration are not subject to the accreditation process at the institution. This means that each application for registration will be assessed on its own merits, dependent on the type and level of qualification attained, regardless of supplier. The following provides guidance on whether a qualification fulfils the registration requirements *in full* or *in part*. For qualifications fulfilling the requirement *in part* refer to The Engineering Council: EngTech EBook.

- Modern Apprenticeship engineering programmes leading to an NVQ level III qualification; considered for meeting the requirement *in full*.
- BTEC ND programmes in Aerospace Engineering and/or Aircraft Maintenance Engineering; considered for meeting the requirement *in full*.
- BTEC HNC engineering/aerospace engineering programmes leading to an NQF level IV qualification; considered for meeting the requirement *in full*.
- Aircraft maintenance engineering programmes leading to a category A Licence; considered for meeting the requirement *in part*.
- City & Guild aerospace/aircraft engineering programmes leading to level III or higher C&G qualifications; considered for meeting the requirement *in part*. 
Appendix 30

Guidance on Integrating Work-Based Education in an Accredited Programme

1. Overview
- It is possible to accredit work-based education that is designed as part of an accredited degree programme.
- Work-based education in a degree programme can include work placements, for example, a fulltime sandwich course, full time vacation employment, and work placements as part of a module.
- A degree programme is made up of periods of learning which are assigned credits. An undergraduate year (usually thirty weeks of formal education) is equivalent to 120 credits. The credits for work-based education are different because the student is developing professionally while acquiring knowledge in the work place.
- Work-based education has to be assessed in a manner that is comparable to the assessment of work in a university. Assessment shall be carried out by an academic and by the industrial supervisor provided they have had training approved by the Institutions.
- Work based education includes a period of private study
- The benefits to an individual are
  ✓ The opportunity to acquire knowledge whilst applying that knowledge in the work place.
  ✓ The opportunity to develop critical thinking and research skills that are considered highly beneficial for engineers.
  ✓ The time to chartership is reduced because of the elements of work placement contribute to the Development Objectives.
  ✓ An individual’s knowledge is broadened because of education in the workplace
- The benefits to the employer are
  ✓ The development of the individual – i.e. what benefits the individual is returned as benefit to the employer
  ✓ The benefit of the research or development work undertaken by the student that is the assessed work. This might be the case if this work is directed by the employer; it might also be the case if the student attends courses that are of interest to the employer.
- The benefit to the university is engagement with industry and the development of the student.

2. Introduction
Work based learning is normal; recognising that learning through continuing professional development and annual reviews is normal; accrediting that learning as part of a programme leading to a qualification is not that common in engineering but can be found in many other sectors particularly the medical sector.

Work based learning or education is:-
- Performance related as it is based on completed tasks in the workplace
- Problem based as it tackles complex engineering problems. Problem based learning is increasingly recognised as a key to meeting the learning outcomes of degree programmes
- Autonomously managed with the student taking responsibility for their learning
- Team based requiring the student to effectively cooperate with people from different backgrounds who have different roles and expertise
- Innovative since it exposes the student to new techniques requiring a different approach to learning.

There are numerous methods to support work based education including workplace simulation, seminars, problem solving, scenario and enquiry based learning, case studies, networking, action research and learning, discussions, reflection, reporting, presentations, conceptual and detailed design, site supervision, e learning and courses.

Work placed education includes personal development planning, identification of the learning outcomes, learning contract and plans, action research and recognition of a priori learning. It is important to recognise that this is about
educating the student in the workplace to meet the excepted learning outcomes. Therefore, support for the student, which includes workplace and academic supervision, has to be clearly identified.

3. Work-based education as part of an accredited degree programme
This deals with work-based education that is integrated into an accredited degree programme. It includes part time placements that are part of a module, full time sandwich placements and full time vacation employment; other forms of industrial engagement can be included provided they meet the principles of work-based education described in the sections on Process, Assessment and Learning Plan and take place after the end of the second year of academic teaching (year three in Scotland).

Work-based education has to meet the principles described in sections on Process and Assessment, and have an individual Learning Plan for each student. The learning outcomes and the appropriate level of competency have to fit within the accredited degree programme.

The assessment is based on a portfolio of evidence including an explanation to place the evidence in context, and how the key learning outcomes were achieved, a number of assignments that test the knowledge and understanding and the ability to apply that knowledge, oral presentation and a reflective statement on what has been learnt and how.

4. Process
The workplace is the place of education. It provides the opportunity to acquire further knowledge. The learning process is experiential, the assessment is based on evidence of progress, and achievement through problem based projects. It provides a spectrum of activity which places the formal education in context.

It is a partnership between the student, the university and the organization in which the learning takes place. Therefore there has to be a learning contract which clearly identifies the responsibilities of all those involved.

An assessor could be an academic or someone from the organization in which the learning is taking place who has received appropriate training and is recognized by the relevant PEI as professionally qualified.

The mode of delivery is flexible and reflects the opportunities to learn within the organisation. It can be supported by e-learning and distance learning. It must be relevant hence the need to approve a Learning Plan that includes learning outcomes that meet the PEI guidelines and how they integrate within the degree programme taking into account the student's prior knowledge and experience.

It is expected that the industrial supervisor has more contact with the student during the placement but formal meetings between the student, industrial supervisor and academic supervisor must take place to discuss progress and performance and ensure that the student has the opportunity to and will achieve the learning outcomes. This is particularly important as the learning opportunities will change through the placement.

5. Assessment
The assessment shall be based on four pieces of work:

- The student shall assemble a portfolio of evidence with an introduction to explain the context of the evidence and the key learning outcomes achieved. This portfolio of evidence can include design calculations, feasibility reports, forensic reports, ground investigation reports, environmental reports, option analyses, and risk analyses.
- There shall be sufficient assignments to test the student’s knowledge and understanding of their learning placed in the work place context, and the skills they have developed. The mastery of those skills will be used to assess the level of competency. It is important to assess the student's critical thinking skills. These assignments shall be phased through the programme of learning to ensure that progress is satisfactory. These assignments can take the form of tests, design exercises, reports, application of solutions in an alternative environment and interviews. They are in addition to the normal day to day work.
- The assessment shall include an oral assessment to ensure that the student fully understands the outcome of their learning. This could take the form of a presentation to the assessor followed by questions or an interview by the assessor.
- The student shall reflect on what has been learnt and how it could have been improved to assess whether the student understands the learning process.
6. Learning Outcomes and Competency Levels
The learning outcomes and competency levels must meet the PEI guidelines.

7. Learning Plan
The learning plan is a student-centred programme of learning and assessment.

The learning plan must include-

- A statement of the learning outcomes the student has already achieved and at what level of competency (can be produced by the HEI).
- A specification of the learning outcomes the student is expected to achieve and at what level of competency.
- A statement on the evidence required to demonstrate that the outcomes have been achieved.
- A statement on the methods of assessment, both formative and summative.
- Agreed milestones of assessment.
- The support the student will have from the organisation in which the learning takes place and the support within the university.
- The names of the industrial supervisor and assessor, either an academic or the industrial supervisor.
- Agreed dates of formal meetings of the student and supervisory team

8. Credit bearing work placement
Degree programmes are designed so that learning outcomes are achieved at a certain levels of competency. Degree programmes are a form of formal education that is built up from credits of learning. A credit is notionally ten hours of work including formal and informal learning.

The number of credits assigned to work based education will depend on the type of work being undertaken by the student and the opportunity to acquire knowledge. For example:

- A structured work based module that forms part of an accredited degree programme could last for three months and would be equivalent to 25 credits (compared to fifty credits for a formal education). In this case the student is focused on acquiring knowledge;
- A three month, full time placement, which has less structure than a module, would be equivalent to 15 credits. In this case the student is acquiring knowledge as part of their degree programme and undergoing training as part of their initial professional development.

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