



## JOINT BOARD OF MODERATORS

### GUIDELINES FOR CHECKING OUTPUT STANDARDS OF DEGREE PROGRAMMES

#### 1. Introduction

1.1 These Guidelines are for higher education institutions (or other educational establishments) providing accredited IEng, BEng (Hons) and MEng programmes. Note that the title IEng refers to the professional qualification. The qualification to complete the educational base for an IEng is typically a BSc. The primary aims of these Guidelines are to:

- Provide information for the academic staff responsible for the development, management and delivery of JBM accredited engineering programmes and/or for non-accredited programmes where accreditation is being sought. This annex is intended to be of use when developing programmes and when preparing for accreditation visits.
- Provide guidance on the checking of output standards during accreditation visits.

1.2 The requirements for registration as an Incorporated Engineer or a Chartered Engineer in the UK are described by the Engineering Council UK (EC<sup>UK</sup>) in the UK Standard for Professional Engineering Competence (UK-SPEC). UK-SPEC states that accreditation decisions are to be based on the consideration of a range of indicators (Regulations for Registration, UK-SPEC, February 2004). One such indicator is whether or not an engineering programme delivers the learning outcomes defined by the JBM. EC<sup>UK</sup> requires that such learning outcomes are to be derived from its generic output standards for accredited engineering programmes (The Accreditation of Higher Education Programmes, UK-SPEC, Dec 2008).

1.3 The JBM has adopted the EC<sup>UK</sup> generic output standards for its accredited engineering programmes. This has been done for the following reasons:

- To provide a measure of continuity. The EC<sup>UK</sup> generic output standards were based on the engineering subject benchmark statements published by the Quality Assurance Agency for Higher Education in 2000. Experience gained from some of the JBM accreditation visits has indicated that the benchmark statements have been used by universities when reviewing their existing course provision and when developing new programmes.
- To avoid over-prescription. The JBM recognises that higher education institutions must be encouraged to continue to develop stimulating, relevant and challenging accredited engineering programmes within a framework of evolutionary change. The use of generic output standards should provide higher education institutions with sufficient freedom to develop programmes that help serve the changing demands of industry and make best use of the available academic expertise and the teaching and

learning support facilities, whilst at the same time ensuring that accredited programmes meet the educational requirements for registration.

- 1.4 Further details concerning output standards are given at point 2. Point 3 addresses the checking of output standards during accreditation visits.

## 2. Setting and Checking JBM Output Standards

- 2.1 As explained in 1.3, the JBM has adopted the EC<sup>UK</sup> generic output standards for its accredited engineering programmes. These are stated in the EC<sup>UK</sup> document “The Accreditation of Higher Education Programmes” (2004). A copy of this document can be obtained from: Engineering Council UK, 10 Maltravers Street, London, WC2R 3ER. The document is also available from the UK-SPEC website ([www.uk-spec.org.uk](http://www.uk-spec.org.uk)).
- 2.2 The EC<sup>UK</sup> generic output standards consist of General Learning Outcomes and Specific Learning Outcomes in Engineering. The General Learning Outcomes apply to all IEng, BEng (Hons) and MEng programmes; they cover knowledge and understanding, intellectual abilities, practical skills and general transferable skills. Additional enhanced General Learning Outcomes are stated for graduates from MEng programmes.
- 2.3 Separate Specific Learning Outcomes in Engineering are published for graduates from IEng, BEng (Hons) and MEng programmes. These outcomes cover underpinning science and mathematics; engineering analysis; design; economical, social and environmental context; and engineering practice. In accredited MEng programmes some of the EC<sup>UK</sup> generic output standards should be achieved at enhanced and extended levels (see also 2.4).
- 2.4 It is expected that the balance of the General and Specific Learning Outcomes achieved by graduates from JBM accredited programmes will vary from programme to programme. The balance of the learning outcomes and when they will be achieved during the programme of learning will depend on the aims and objectives of each programme. These will be defined by the programme provider, ie. the academic staff responsible for the design, development and management of the programme. The JBM does not wish to be prescriptive on how and when the learning outcomes should be achieved during an accredited programme of learning.
- 2.5 When developing, managing and delivering a JBM accredited engineering programme, it is expected that the provider will normally:
- **Design the programme curriculum.** JBM accredited programmes should comply with the Guidelines for Developing Degree and Further Learning Programmes.
  - **Set the target output standards.** During the development process, the provider will set the aims and objectives for each programme that are based on the type of exemplifying academic award (ie. IEng, BEng (Hons), MEng identified by the EC<sup>UK</sup> and the levels of achievement defined in the appropriate national qualifications framework (ie. the QAA in England, Northern Ireland and Wales, and the SCQF in Scotland). The inter-relation between these two is shown in Table 1.
  - **Check that the target output standards have been achieved.** For each programme, the programme provider will check that the graduates have achieved the majority of the EC<sup>UK</sup> generic output standards at the appropriate level (defined by the QAA or the SCQF). This check will normally be carried out by a rigorous quality assurance or management process that includes:

- Assessment of the student's work by academic staff in the delivery of the different elements of the programme.
- External verification (normally carried out by one or more external examiners appointed by the higher education institutions responsible for the programme).
- An annual review carried out by the programme team. Typically this will take into account feedback from students (eg. via staff-student liaison meetings and feedback questionnaires) and from the staff delivering the programme.
- The implementation (and subsequent monitoring) of any changes to the programme arising from the review.

**Table 1 EC<sup>UK</sup> Exemplifying Academic Awards and the National Qualifications Framework**

EC <sup>UK</sup> level of registration	Typical exemplifying academic award (see note 1)	National Qualifications Framework Level of Achievement (see note 4)	
		Quality Assurance Agency (QAA) Qualifications Framework for England, Northern Ireland and Wales	Scottish Credit and Qualifications Framework (SCQF)
Incorporated Engineer	BEng, BSc	<b>Level 6 4</b> (Intermediate)	<b>Level 9</b>
Incorporated Engineer	BEng (Hons) (see note 5) BSc (Hons) (see note 2)	<b>Level 6</b> (Higher)	<b>Level 10</b>
Chartered Engineer (see note 3)	BEng (Hons) (see note 2)	<b>Level 6</b> (Higher)	<b>Level 10</b>
Chartered Engineer	MEng, MSc, (see note 6)	<b>Level 7</b> (Masters)	<b>Level 11</b>

**Notes**

1. These qualifications will normally be in Civil Engineering or in a similar associated field of engineering and technology. They must satisfy the JBM Guidelines for Developing Degree and Further Learning Programmes.
2. Programme providers must specify whether Honours programmes which comply with QAA Level H or SCQF Level 10 are designed to satisfy the EC<sup>UK</sup> standards for CEng or IEng. All programme documentation, programme specifications, programme literature, promotional material and other associated documents must state clearly the level of accreditation (CEng or IEng) awarded by the JBM.
3. Honours degrees complying with QAA Level H or SCQF Level 10 that are accredited to CEng level will require an appropriate accredited or approved Masters degree, (see note 6) or appropriate Further Learning to Masters level to satisfy the EC<sup>UK</sup> requirements for Chartered Engineer.
4. The QAA levels of achievement can be found at [www.qaa.ac.uk/crntwork/nqf/ewni2001/contents.htm](http://www.qaa.ac.uk/crntwork/nqf/ewni2001/contents.htm) and the SCQF levels of achievement can be found at [www.qaa.ac.uk/crntwork/nqf/scotfw2001/contents.htm](http://www.qaa.ac.uk/crntwork/nqf/scotfw2001/contents.htm)
5. Graduates who hold an accredited BEng (Hons) degree from the CEng listing will meet the educational requirements for an Incorporated Engineer subject to demonstrating at the appropriate Professional Review the practical application of engineering principles. The evidence for this will be an appropriate period of practical experience.
6. From 2007, Postgraduate Diplomas are no longer accredited by the JBM and are subject to individual assessment by the relevant member institution.

### 3. Checking of Output Standards During Accreditation Visits

- 3.1 The JBM has gained many years experience of conducting accreditation visits. During such visits it has become accepted practice to carry out a check of standards by reviewing:
- The stated aims and objectives of each accredited programme. These statements must be included in the submission made to the JBM in advance of the accreditation visit. Comparisons are made with the requirements for IEng and CEng as defined in the JBM Guidelines for Developing Degree and Further Learning Programmes.
  - The programme provider's quality assurance procedures. This includes a review of external examiners reports and the minutes of staff-student liaison committees.
  - The output from all stages of each accredited programme. Typically this involves the inspection of a representative sample of student work including examination question papers, examination scripts, group-based design project work, individual research project work, laboratory reports and various other forms of assessed work submitted by the students during the programme of learning.
- 3.2 To satisfy the accreditation requirements of UK-SPEC, during accreditation visits made from the start of the 2005/06 academic session (see 1.5) the JBM will check that:
- The students completing an accredited programme have achieved the output standards set by the programme provider; and
  - The programme's output standards are based on the EC<sup>UK</sup> generic output standards and the national qualifications framework appropriate for the level of accreditation sought.
- 3.3 To facilitate the checking of output standards, each higher education institution is required to submit to the JBM a clear statement explaining how the output standards set for each accredited programme have been achieved by the students completing the programme. This statement will form part of the submission made to the JBM in advance of the accreditation visit. It should make reference to the aims and objectives of each accredited programme, the EC<sup>UK</sup> generic output standards and the appropriate national qualifications framework.
- 3.4 During the accreditation visit, the JBM will check that the output standards have been achieved by carrying out the reviews described in 3.1 and 3.2. It is recommended therefore that two years of the most recent assessed work completed by the students is retained for inspection during the accreditation visit.
- 3.5 The statement made in support of the accreditation submission by the higher education institution, referred to in 3.3, may take any form. It may be helpful to complete an Output Standards Statement linking the programme aims, objectives and subject (or module) learning outcomes to the EC<sup>UK</sup> generic output standards and the evidence to be submitted during the accreditation visit. A template for such a statement is provided overleaf. The use of such a template is not a compulsory requirement of an accreditation submission. The higher education institution must be prepared to demonstrate to the visiting JBM team how any of the output standards have been achieved.

<b>Output Standards Statement for a JBM Accredited Engineering Programme</b>			<b>Higher Education Institution:</b>	
<b>Title of Course</b> (e.g. BEng(Hons) in Civil Engineering)		<b>Level of Accreditation</b> (IEng, BEng (Hons) or MEng)		<b>QAA or SCQF Level</b> (e.g. QAA Level H or SCQF level 10)

<b>EC<sup>UK</sup> Output Standard</b>	<b>Programme Objective(s) and/or Principal Modules in Support of the Output Standard</b> (list 1 or more programme objectives or module codes from the module descriptors included in the accreditation submission)	<b>Evidence of Achievement</b> (e.g. examination script, design report, dissertation, lab. report, etc.)
<b>GENERAL LEARNING OUTCOMES</b>		
<b><i>Knowledge and Understanding</i></b>		
<b><i>Intellectual Abilities</i></b>		
<b><i>Practical Skills</i></b>		
<b><i>General Transferable Skills</i></b>		
<b>SPECIFIC LEARNING OUTCOMES IN ENGINEERING</b>		
<b><i>Underpinning Science and Mathematics</i></b>		
<b><i>Engineering Analysis</i></b>		
<b><i>Design</i></b>		
<b><i>Economic, Social and Environmental Context</i></b>		
<b><i>Engineering Practice</i></b>		