

**QAA consultation
on the revised Framework for Higher Education Qualifications (FHEQ)**

**Response
from the Mathematics, Statistics and Operational Research Benchmark Group**

May 2008

1. Background

This response is from the Working Group for revision of the QAA Benchmark Statement for undergraduate programmes in mathematics, statistics and operational research set up in 2006. Henceforth in this document, the acronym "MSOR" is used to represent this academic area.

The Group was convened by the Higher Education Academy Subject Centre for MSOR. It included representatives from the learned and professional societies in MSOR and from the committee of Heads of Departments of Mathematical Sciences in the UK. The Group had, in effect, been in existence for some time, in that many of its members had participated in writing the original MSOR Benchmark statement in 2002. Members had maintained contact, and continue to maintain contact, to pursue related matters of joint concern.

Though the Group has no formal authority within the MSOR community, the expertise of its members is widely acknowledged. Both the original 2002 Benchmark statement and its 2007 revision were very well received. Further, the Group has extended its work to consider master's level programmes. The Group believes that it can fairly claim to speak for the community at large.

2. MSOR and the FHEQ Qualifications Descriptors: Bachelor's level

Sections 1 and 2 of the 2007 Benchmark statement elaborate on the general nature of undergraduate programmes in MSOR. These make clear the structured and cumulative nature of MSOR.

It is at once clear that there is serious variance between some aspects of the Benchmark statement and some aspects of the qualifications descriptors in the FHEQ Framework.

In particular, it is simply not realistic to suppose that students working at bachelor's level in MSOR will normally be able to reach or work at the frontiers of the subject. The subject is too technical. Put simply, the frontiers are too far away – and are continually receding. To imagine that they can be reached in a mere three years from entry to a programme from school-level qualifications is out of tune with reality. It cannot be too strongly emphasised that this is not an issue that arises because of any slackness of academic standards in MSOR. On the contrary, it is a feature of the *robustness* of MSOR's academic standards – no attempt is made to glide over thorough treatments of early work in a misguided attempt to arrive at shallow understandings of later work. This is inherent in the academic nature of MSOR as a discipline.

It is however reasonable to describe some bachelor's level MSOR work as being "informed by" research at a frontier of the subject, in that students are typically taught by people whose research work is indeed at the frontiers. Overall programme design, as well as some aspects of the teaching of individual topics, is informed by current developments. But that is a very

different matter from expecting the students to actually engage directly with "frontier" work.

We note that the phrase "or informed by" appears in some places in the FHEQ descriptors but is omitted in others. We see no reason why it should not be universal.

We illustrate by considering the FHEQ Framework descriptor for a Bachelor's degree with honours, which is as follows.

Bachelor's degrees with honours are awarded to students who have demonstrated:

- a systematic understanding of key aspects of their field of study, including acquisition of coherent and detailed knowledge, at least some of which is at or informed by, the forefront of defined aspects of a discipline
- an ability to deploy accurately established techniques of analysis and enquiry within a discipline
- conceptual understanding that enables the student:
 - to devise and sustain arguments, and/or to solve problems, using ideas and techniques, some of which are at the forefront of a discipline
 - to describe and comment upon particular aspects of current research, or equivalent advanced scholarship, in the discipline
- an appreciation of the uncertainty, ambiguity and limits of knowledge
- the ability to manage their own learning, and to make use of scholarly reviews and primary sources (eg refereed research articles and/or original materials appropriate to the discipline).

Of these:

Bullet 1 could be considered acceptable within MSOR because of the inclusion of the phrase "or informed by". [As an editorial point, we note the grammatically incorrect unbalanced comma after this phrase.]

Bullet 2 is fine, as it refers to established techniques.

Bullet 3, sub-bullet 1: it is wholly inappropriate to suppose that such work within MSOR may be done "at the forefront of the discipline".

Bullet 3, sub-bullet 2: this is similarly inappropriate. Within MSOR, these are skills that are associated with PhD work, or possibly with some master's level work, certainly not with bachelor's level work.

Bullet 4 is fine, as it refers to an appreciation of these matters.

Bullet 5 is unacceptable if it is implied that the articles or materials must refer to *current* research. It may be acceptable if it is admitted that the work referred to may have been current some years ago (often a substantial number of years ago). It may also be acceptable within *some* parts of the overall MSOR subject area if it is admitted that the work referred to may be of case study or review type.

3. MSOR and the FHEQ Qualifications Descriptors: Master's level

Though the MSOR Benchmark statement as currently published refers only to undergraduate programmes, the Group has already prepared an extension to master's programmes of the integrated master's type (typically leading to the degree of MMath) and has also studied the

situation regarding taught master's programmes of MSc type.

Again we find that the FHEQ descriptors are far too ambitious to be realistic at this level. The important qualifier "or informed by" again appears in the first of the bullet points of the descriptor but not in the others. Much of the rest is simply beyond the reach of master's level work in MSOR.

4. MSOR and the FHEQ Qualifications Descriptors: other levels

The Group's work as a Benchmark Group has not covered the doctoral level (PhD) so it prefers not to make any comments about that level, except to point out that the over-ambitious setting of the bachelor's and master's levels in the descriptors must have a consequence for the doctoral level.

In similar vein, the Group's work has not directly addressed levels below that of the bachelor's degree with honours and it therefore prefers not to make any direct comment about those levels, except likewise to point out that an unrealistic honours level must have consequences for the lower levels.

5. Consequences of mis-match

We note with concern the following statements in the QAA document. Paragraph 7: "Higher education providers should be able to demonstrate that all students ... would gain, on successful completion, qualifications that were awarded in accordance with this FHEQ". Within paragraph 69: "The titles 'honours' (for example, bachelor's degree with honours), 'master' (for example, Master of Arts) and 'doctor' (for example, Doctor of Philosophy) should be used only for qualifications that meet, in full, the expectations of the qualification descriptors". Within paragraph 72: "The title 'degree' should be used only in respect of qualifications at levels 5, 6, 7 and 8, which are awarded for achievement, in full, of the outcomes set out in the relevant qualification descriptor". We especially note the use of the phrase "in full" in these.

Such a policy would be completely contrary to the collective professional and expert judgement of those who teach and assess students in MSOR and who conduct research in the area. Indeed, it would also be contrary to the expectations of employers who seek to use the services of MSOR graduates in serious MSOR-based work. FHEQ descriptors that are out of tune with a major discipline cannot be fit for purpose; attempts to impose them will ultimately bring discredit on the entire FHEQ.

6. Ways forward

We have already indicated that one way forward would be a very much wider use of the phrase "or informed by".

However, that is little more than a cosmetic editorial repair. It would be far better to create descriptors that were properly fit for purpose by virtue of their design.

Such descriptors already exist. Not only do they exist, but they are of international currency and are themselves referred to within the FHEQ document. We refer of course to the Dublin Descriptors, which are widely accepted as underpinning developments such as the Bologna Process. The Descriptors for first and second cycle qualifications (see pages 66 to 68 of http://www.bologna-bergen2005.no/Docs/00-Main_doc/050218_QF_EHEA.pdf) are, as they

stand, fit for purpose as MSOR descriptors. We urge the QAA to adopt them, either by actually incorporating them into the FHEQ document or by stating explicitly that they stand as equivalent descriptors within the QAA's documentation.