

Summary of BCS accreditation review workshop March 3rd 2015

This note gives a summary of the BCS accreditation review workshop held on March 3rd at BCS London office. The BCS accreditation review is:

- Chaired by Paul Martynenko, IBM Vice President and Technical Executive Europe and chair of BCS Professionalism Board.
- Helping with the review is Professor Jeff Magee, Principal of the Faculty of Engineering at Imperial College and Chair of the BCS Academy of Computing Board.

1. Workshop outcomes

This section summarises the majority consensus of opinions that emerged by the end of the workshop. Note this should not be taken as implying there was complete unanimity amongst all those present, a few individuals strongly disagreed with some of the points made in this summary¹.

There was a majority view that the following areas should be taken account of when considering if a degree course should be accredited:

- The right foundational computer science skills are developed during the course, including understanding of scientific and engineering principles and the ability to apply them in a wide range of appropriate contexts.
- Throughout the course, but with particular emphasis in the final year, students develop employer relevant skills that support progression towards a professional career, including technical and personal skills.
- The course actively promotes and provides extensive, in depth, professional engagement with employers. E.g. through professional internships, or employer-led final year projects, or opportunities for developing entrepreneurial experience, amongst other possibilities.

There was a majority view that:

- it would be of significant benefit if accreditation highlighted the different foci and purposes of different degree courses in a way that is relevant to students and employers, to achieve this
- accreditation should signpost the professional competencies that courses develop, making it clear what employer relevant skill-sets they provide.

There was also a view from some employers that:

- Consideration should be given to whether individual modules are accredited separately, in order to provide a finer level of granularity of the competencies degree courses develop.

¹ For example, one person stated the summary represented a “too-narrow view of what a University education is for, and a concomitant ignorance of what currently happens within a University degree”. None of the other reviewers raised such objections.

Signposting should take into account that degrees range from highly practical to highly academic. When looking at skill-sets, it is important to realise that different types of employers vary hugely in the skill-sets they require, including for example:

- Global corporations that are at the leading edge of scientific research.
- Companies that develop, build, deploy, run, and maintain innovative computing systems/services for other businesses.
- Companies that provide, run and maintain commoditised computing services in a highly competitive environment.
- Companies where IT underpins services that are vital to the success of the business, but the company does not provide IT products or services.
- Large companies that can invest the time to develop specific business skills in their staff and therefore can recruit graduates based on their potential; compared with small companies or start-ups who can only recruit employees who contribute to the bottom line from day one.

There was broad consensus amongst employers that BCS should consider using industry led requirements for the different professional skill-sets that courses will be accredited against, in order for employers to readily identify the skills graduates will have and therefore match them against job profiles. It was noted that care should be taken to make sure skill-sets do not become overly specific to a narrow range of employers. Accreditation should also pay particular attention to the level and quality of industrial engagement students have, which should be one of the key indicators for awarding accreditation. Finally, there was a strong consensus that employers should be regularly surveyed to test whether graduates they recruit from accredited degree programmes actually have the skill-sets those degrees were accredited as developing.

2. General flow of discussion during workshop

This section attempts to give a feel for the general flow of the discussion during the workshop. It is meant to be illustrative rather than comprehensive. Please note this section is meant to give a flavour of the range of views of some of those present at the workshop, based on notes that were taken at the time. It is not meant to represent a majority view, except where that is stated. Discussion at the workshop covered a wide range of topics including (not an exhaustive list):

Many felt that for students to value accreditation, they need to see the link between an accredited degree and a successful professional career. Universities need to see that employers value accreditation for them to buy into it, and employers need to see a link between accreditation and the skills that new graduates have for them to see the value of accreditation. Many agreed this implies the key to making accreditation of value to all three of these stakeholder groups is to ensure it is of value to employers. It was commented that if accreditation becomes something employers' greatly value, they then need to make it very clear to universities this is the case, who in turn need to clearly articulate this to prospective students on their courses.

This led many to consider the question: what is the right balance between providing business skills and academic skills in a degree course? This is harder than it sounds, because there are so many different types of employer all with different skill needs. Therefore understanding the makeup of the main employer groups and the various skill sets they need is important. Some employers felt computer science graduates should have much deeper 'hard core' coding skills, and felt that currently many graduates lack such skills. One employer commented that 'We see far too many applicants, many with first class degrees, who cannot complete a simple coding task'. Others pointed out that the emergence of joint degrees, such as ITMB or Business Computing degree courses for example, has created a new set of graduates that have mixed skill-sets that were not envisaged when accreditation first started.

At present it is hard for employers to understand the different skill-sets that different types of degree provide. This can lead to employers recruiting from universities they already know and trust, rather than recruiting from a much wider set of universities. Employers would ideally like to see clearly articulated the set of competencies a degree course develops, mapped against profiles for jobs those competencies match. There is a great deal of difference in the skills required by a Software Engineer, compared with a Data Scientist or someone who manages a massive IT infrastructure deployed over multiple countries. Employers and universities generally agreed that accreditation needed to articulate much better the skills developed by different degree types. Some employers thought BCS could act as an intermediary to help universities understand what graduate skills employers are looking for.

Some employers felt that accreditation currently focuses on what were termed 'commoditised' skills rather than 'emergent' skills, which meant accreditation did not help employers identify students with skills that were going to be valuable over the long term and in some sense future proof. Some employers and academics felt that accreditation should support innovation in degree courses and encourage them to develop 'emergent' skills, whilst others thought that although this is desirable, it would be too hard to achieve via accreditation, and is an unrealistic expectation. Complementary to that, accreditation needs to be sufficiently light touch in terms of process so that new degree courses can quickly be accredited and existing courses can be rapidly reaccredited whenever they innovate. Accreditation should also actively identify and promote good practice where universities are successfully developing such 'emergent' skills. Some employers and some universities, although not all, questioned whether the current QAA benchmark made it easier or harder to identify the appropriate 'emergent' skills.

Generally employers and universities agreed that it was not the job of universities to produce 'oven ready' graduates and it is important for all computing graduates to know a core set of computer science principles and how to apply them. Some employers agreed that the high-level skills defined by the Engineering Council AHEP criteria generally provided a good basis for a set of generic skills that all degrees should provide. They also agreed that it was important accreditation supported scientific rigour as well as developing professional skills.

The opportunity for students to have meaningful engagement with employers was considered by all to be essential, preferably through an extensive industrial placement over an academic year. Although it was also recognised there are many forms of employer engagement that are also valuable to students' professional development. For example, employer-led final year projects can prove to be extremely effective at developing an extensive range of professional skills that make a student highly employable. Employers felt that ideally employer engagement should be provided in such a way that students also start to develop an entrepreneurial ethos.

Accreditation validates courses, but by implication it also validates the skills and knowledge of the individual. At present there isn't a strong link between obtaining an accredited degree and progression towards Chartered IT Professional status. Employers and academics thought this should be addressed. This was also felt to be important for students in order for them to see the link between accreditation and professional development throughout their career.

Employers and academics agreed it is important to regularly survey employers to compare graduate skill-sets against those signposted by accreditation. Such a feedback loop would provide a useful indicator to help determine whether accreditation for a course should be continued, and in keeping the accreditation process itself up to date.

Some employers felt accreditation should take into account the level of academic achievement students must reach in order to be accepted onto a degree course. For example, what level of Maths do students have in order to be accepted for a course? Many employers at the workshop agreed that mathematical ability is highly desirable in graduate recruits, and would like to easily understand the true extent of the mathematical skills students have by the end of their course.

Some felt that a major recommendation should be to consider how to enable finer granularity of accreditation. For example considering how to accredit individual modules against predefined levels of competencies with clear learning outcomes, rather than just full degree courses. Some employers felt this would allow provision of content to be opened to industry rather than just universities.

Some employers felt accreditation should not aim to define a minimum standard as it does at present, but rather aim to raise standards even if that meant some institutions that are currently accredited did not continue to be. These employers felt accreditation should be hard to achieve, so that they could be sure accredited courses would produce high quality graduates. Some employers felt there should be a league table of universities, which would be aimed at employers. The intention would be to create a market that employers could shop from. For example, this might help to identify which set of universities create the best set of software engineers whereas another set produce better network engineers.

3. Reviewers

We gratefully acknowledge the help and support of all those who attended the workshop and also those who subsequently helped to review this document.

Alastair Irons	Head of Department, University of Sunderland, Chair of Academic Accreditation Committee
Bill Mitchell	BCS Director of Education, HEFCE/BIS Steering group on computing graduate employment
Bob Fraser	Senior Director of Technical Evangelism Microsoft
Carsten Maple	Professor, University of Warwick, HEFCE/BIS Steering group on computing graduate employment
Clive Partridge	Senior Manager, Metaswitch
Dame Wendy Hall	Professor, Southampton University, chair Cabinet Office roundtable on computing graduate employment
Dave Robertson	Chair UKCRC, Professor, University of Edinburgh
David Duce	CPHC, Professor, Oxford Brookes University
David Evans	Director of Membership, BCS
Deborah Seddon	Head of Policy and Standards, Engineering Council (observer)
Hugh Milward	Corporate Affairs Director for Microsoft UK
Iain Phillips	CPHC, Senior Lecturer, Loughborough University
James Evans	BP Director of Enterprise Architecture
Jane Tory	Digital Skills Team, Digital Economy Unit, BIS and DCMS (observer), HEFCE/BIS Steering group on computing graduate employment
Jeff Magee	Professor, Imperial College London, Chair of BCS Academy of Computing
Khaled Benkrid	Worldwide University Programme Manager, ARM Ltd.
Kevin Gaughan	BT Director of Workforce Management & Technical Faculty
Liz Bacon	President BCS, Professor, University of Greenwich
Liz Jones	Technology Partner in Deloitte
Mark Ellis	HM Government
Mike Warriner	Google Director of Engineering
Sir Nigel Shadbolt	Professor, University of Southampton

Paul Clarke	Ocado, Director of Technology
Paul Martynenko	Chair of BCS accreditation review, IBM Vice President and Technical Executive Europe and chair of BCS Professionalism Board
Peter Seddon	Senior HE Policy Adviser, HEFCE/BIS Steering group on computing graduate employment, HEFCE (observer)
Ray Long	Director at Department of Work and Pensions
Ron Perrott	Visiting Professor, University of Oxford
Sally Fincher	CPHC, Professor, University of Kent
Sally Smith	Chair of CPHC, Professor, University of Napier
Sharon Hurd	BCS Head of Education
Shaun Williams	Director of IT, SSE
Steve Pettifer	Reader, University of Manchester
Steve Baron	IS Resourcing Manager at Whitbread
Susan Bowen	HP Chief of Staff (UK and Ireland)