

Wakeham Review of STEM Degree Provision and Graduate Employability – Annexes B-H

Contents

Annex B - Wakeham Review Terms of Reference.....	3
Annex C - Accreditation case studies.....	5
Annex D - Additional information on the employment indicators used based on destinations data from the DLHE and (LDLHE)	9
Annex E - Discipline-specific focus groups.....	10
Annex F - Information on HESA/HEFCE groupings and JACS codes.....	12
Annex G - Additional data	13
Annex H - Wakeham Review Stakeholder survey.....	19

Annex B

Wakeham Review Terms of Reference

Summary

1. Evidence gathered as a result of a joint BIS-DfE review of Science, Technology, Engineering and Mathematics (STEM) skills provision has highlighted that STEM skills are vital to the UK's ability to compete in a rapidly changing global economy. Systems of higher education and continuous professional development have grown to support the provision of skilled graduates, but it is right to ask whether the current arrangements for provision of STEM skills are fit for the future.
2. In considering the future of STEM skills within higher education it is important to recognise the role played by accreditation regimes. Professional accreditation has a key role to play in setting minimum standards for degree courses and supporting continuing professional development. The Government is, therefore, commissioning an independent review to explore the provision of STEM skills and accreditation arrangements to determine if there are areas which warrant further investigation.
3. The review will focus on gaining a better understanding of the skills requirements of employers, how STEM graduates' skills and knowledge relate to and interact with labour market demand, and how existing accreditation systems support and enable this. The review will not seek to make explicit recommendations on specific accreditation regimes. Instead it will seek to identify options for future, more in-depth, exploration of specific STEM subjects and their associated graduate outcomes.
4. The review has links to a separate independent review that the Government has commissioned to look specifically at computer science degree accreditation in England. This, more targeted review, will lead to specific recommendations on how the degree accreditation systems for computer science could be strengthened to ensure that the subject keeps pace with the needs of private sector employers and the IT professions.

Scope

5. The review was announced as part of, and builds on, the Government's Science and Innovation Strategy which aims to ensure that building a knowledge-based economy is at the heart of economic growth. With this in mind, initially the review will include in its scope HE provision and accreditation mechanisms of those STEM subjects that are broadly judged to be of particular importance to the development of high-productivity economic growth led by the private sector. As the review progresses and further evidence is gathered, the scope of the subjects being covered may alter to accommodate emerging trends or findings.

6. Degree subjects that are related to the medical profession have been excluded from the review's scope. The labour markets for these types of professions are largely funded by the taxpayer and are, therefore, subject to a greater degree of scrutiny and planning at the national level.

Governance

7. The review will be led by Sir William Wakeham who will be supported by the Higher Education Funding Council for England (HEFCE). The review should also work as appropriate with a range of representative institutions for higher education, industry and the professions, including relevant academies and chartered bodies. Where appropriate, the review should take into account the findings of other reviews which may address similar issues.

Interdependencies

8. The review will have links to the more specific review of computer science degree accreditation. Where appropriate, links should be made between the two reviews, particularly where there might be trends or patterns common to the array of STEM degree subjects.

9. The review should also make links and cross-refer, where appropriate, to reviews being taken forward by the higher education funding organisations for England, Wales and Northern of the future arrangements for assessing quality in higher education. Professional accreditation has an important role to play in ensuring quality and the overlaps and shared learning between the review and wider work on quality assurance should be identified.

Timing

10. The review should report in the winter of 2015/16.

Annex C

Accreditation case studies

Royal Society of Chemistry

The Royal Society of Chemistry (RSC)¹ is the UK's professional body for chemical scientists, with over 50,000 members. It is a not-for-profit organisation and seeks to raise and maintain standards for chemical scientists, develop partnerships with and between industry and academia, and promote and support the development of science and innovation across the UK and the rest of the world.

Key features of the RSC's accreditation framework:

- accredits degree programmes² in the chemical sciences at Bachelor's and Master's levels at universities worldwide
- based around peer review and founded on the judgement of professional chemists
- applies to individual degree programmes and not to a department or university overall
- provides a structured mechanism to assess, evaluate, and enhance the quality of degree programmes and demonstrates a commitment to continuous improvement
- focusses on learning outcomes which allows for diversity and modernisation in teaching methods

Requirements for accreditation

- Different requirements and criteria for accreditation of Bachelor (BSc) courses, discrete Master (MSc) courses and integrated Master (MChem) courses
- Requirements cover:
 - breadth and depth of knowledge
 - practical skills
 - project work
 - external placements
 - professional skills
 - assessment
 - programme title
 - quality assurance

¹ <http://www.rsc.org/about-us/>

² <http://www.rsc.org/membership-and-community/supporting-organisations/>

Three step process

1. HE provider seeking accredited status for its degree programme discusses with RSC, which provides advice on degree programme's potential for accreditation.
2. HE provider conducts a self-assessment demonstrating how the degree programme meets the stated criteria. This is submitted to the RSC's Committee for Accreditation and Validation for peer review, together with the following supporting evidence:
 - Module outline for each module
 - Exam papers and model answers for each module
 - Laboratory practical schedules
 - Sample report for final year projects or external placements if applicable
 - External examiners' reports for the last two years and university responses
3. RSC accreditation staff visit the HE provider to discuss the degree programmes with university staff and students and to look at the infrastructure and resources devoted to delivery.

Institution of Mechanical Engineers (IMechE)

The Institution of Mechanical Engineers (IMechE)³ is the UK's professional body for mechanical engineers, with 113,000 members across 140 countries. It seeks to represent and reflect the views of the mechanical engineering profession, encouraging professional registration and long-term career development. It is one of 35 professional engineering institutions that are licensed by the Engineering Council to assess candidates for inclusion on the national register of professional engineers and technicians, and to accredit academic programmes and professional development programmes.

Key features of the IMechE's academic accreditation framework:

- Accredits degree programmes in mechanical engineering and related subjects at Fd, BSc, BEng(Hons), MEng and MSc levels.
- Students completing an IMechE accredited degree are deemed to have met the academic requirements for registration as a Chartered (CEng) or Incorporated Engineer (IEng), titles that are protected by civil law under the Engineering Council's Royal Charter⁴.
- Focuses on the learning outcomes of the degree programme; the teaching and learning processes; the assessment strategies; resourcing; and industrial engagement.
- IMechE assesses individual engineering degree programmes against the UK benchmark standard and criteria, the Accreditation of HE Programmes (AHEP)⁵, set by the Engineering Council in collaboration with industry and academia.
- Involves a peer review with a typical IMechE visiting panel consisting of at least 2 x academics and 1 x industrialist.
- Awards a maximum of five years' accreditation for degree programmes.

Requirements for accreditation

To be accredited degree programmes are required to demonstrate that graduates from the programme will be able to achieve the published learning outcomes in six key areas of learning set out by the Engineering Council in AHEP (3rd edition, 2014) and contextualised by IMechE for its sector:

- Science and mathematics
- Engineering Analysis
- Design
- Economic, legal, social, ethical and environmental context

³ <http://www.imeche.org/about-us/our-vision>

⁴ <http://www.engc.org.uk/professional-registration/the-professional-titles/>

⁵ <http://www.engc.org.uk/AHEP>

- Engineering Practice
- Additional general skills

Multi-stage process

1. HE provider seeking accreditation of its degree programme(s) submits initial application form to IMechE at least 30 weeks before visit of accreditation panel. Initial application sets out summary of how degree programme delivers learning outcomes that meet the published learning outcomes.
2. HE provider schedules accreditation visit. Provider submits main application providing detailed information on the degree programme to be accredited and detailed assessment of how programme meets learning outcomes set out in. Information is required by IMechE within 12 weeks of accreditation visit.
3. IMechE accreditation panel visits provider and spend a day and a half with programme leader(s) and associated staff. Assessment undertaken of programmes, facilities and laboratories on basis of information on learning outcomes provided in submissions. Additional information may also be requested in advance to be available on the day including coursework, design reports, lab reports and assignments. Conversations are also held directly with students. Where HE providers are seeking accreditation of their programme(s) by more than one professional institution, joint accreditation visits can be arranged by the Engineering Council.
4. A comprehensive accreditation report is produced after each visit covering all of the programmes witnessed by the visiting panel; the recommendations made by the panel to accredit (or otherwise) the programmes; any Conditions of accreditation and any Recommendations to improve the programmes.
5. This accreditation report is checked for factual accuracy by the university before it is considered by the Academic Standards Committee (ASC). It is the ASC that grants accreditation of academic programmes on behalf of the Institution.

Annex D

Additional information on the employment indicators used based on destinations data from the DLHE and (LDLHE)

DLHE respondents who were self-employed/freelance, in voluntary or unpaid work (including on a placement or internship) or who were creating a professional portfolio, all count as being in employment.

Unemployment rates show DLHE respondents who responded that at the time of the survey they were unemployed and seeking work as a proportion of all DLHE respondents. Those who were in employment and/or further study, or were unavailable for employment (on account of caring responsibilities, taking time out to travel etc.), do not count towards the unemployment rate.

Non-graduate jobs are those that fall outside of the three Standard Occupational Classification (SOC2010) major groupings of 'managers and senior officials', 'professional occupations' and 'associate professional and technical occupations'. Proportions shown are based on qualifiers who reported that they were in employment (only).

Low' salaries are defined as those less than £20,000. Proportions shown throughout the report exclude qualifiers with unknown salaries from the calculation and are based on qualifiers who reported that they were in full-time paid employment (only) in the UK.

Annex E

Discipline-specific focus groups

1. The focus groups built on work earlier in the review to interrogate data available from the Destinations of Leavers from Higher Education (DLHE) survey and Longitudinal DLHE (LDLHE) survey, and which sought to identify those STEM disciplines that suffer from particularly poor graduate employment outcomes.
2. Based on the initial analysis of the DLHE and LDLHE survey – which measured outcomes against three main indicators: graduate unemployment rate; proportion of graduates in ‘non-graduate’ roles; and proportion of graduates earning low salaries – three headline disciplines were identified as being of particular concern:
 - Biological Sciences;
 - Earth, Marine and Environmental Sciences; and
 - Agriculture, Animal Sciences and Food Sciences.
3. The objectives of the focus groups were to gather together a body of interested HEIs, relevant employers, professional bodies and students, to explore in more detail the potential reasons for each discipline’s poor outcomes, and to come to a view on whether the discipline in question warranted further investigation through future, targeted work. Discussion was not intended to come to definitive conclusions about solutions to problems in these areas, but where examples of good practice or ideas were put forward these were captured.

Composition of the focus groups

4. For each focus group, invitations were extended to HEIs, employers in the relevant sectors, professional bodies that were relevant to the discipline in question and students.

A summary of the organisations that attended each focus group is below:

Biological Sciences	Earth, Marine and Environmental Sciences	Agriculture, Animal Science and Food Science
Royal Society of Biology Science Council BBSRC Royal Statistical Society University of Exeter University of Brighton University of York University of Nottingham UCL UCLAN University of Southampton Vulpine Science ABPI AGCAS Cogent Skills GSK AGR NCUB QAA	Science Council The Geological Society University of Southampton UWE University of Sunderland University of Portsmouth Keele University University of Birmingham British Geological Survey ENERGUS Atkins Rio Tinto Expro North Sea Ltd. QAA	Harper Adams University Royal Agricultural University University of Reading Institute of Food Science and Technology IAgRE GS-Fresh Sainsbury's NCUB QAA
Total number of organisations represented: 19	Total number of organisations represented: 15	Total number of organisations represented: 9

Annex F

Information on HESA/HEFCE groupings and JACS codes

Group	Sub-group	JACS
STEM	Anatomy and physiology	JACS subject line B1 - Anatomy, physiology and pathology
	Biological sciences	JACS principal subject group C - Biological sciences, excluding subject lines C6 - Sports science and C8 - Psychology, JACS subject line D7 - agricultural sciences, JACS subject line F4 - Forensic and archaeological sciences
	Chemistry	JACS subject lines F1 - Chemistry and F2 - Materials science
	Computer sciences	JACS principal subject group I - Computer sciences (2012-13 onwards), JACS subject lines G4 to G7, G02, G92
	Earth, marine and environmental sciences	JACS subject lines F6 - Geology and F7 - Ocean sciences and F9 - Others in physical sciences
	Engineering and technology	JACS principal subject groups H and J
	Mathematical sciences	JACS principal subject group G (2012-13 onwards), JACS subject lines G1 to G3, G01, G91
	Pharmacy and pharmacology	JACS subject line B2 - Pharmacy, toxicology and pharmacology
	Physics	JACS subject line F3 - Physics and F5 - astronomy
Agriculture and forestry	Agriculture and forestry	JACS principal subject group D, excluding subject line D1, D2 - Veterinary sciences and D7 - Agricultural sciences

Annex G

Additional data

Unemployment rates at six months by student group: 2013-14 leavers	All HE	All STEM	Biological sciences (not including forensic and archaeological science)	Earth, marine and environmental sciences	Agriculture, food and animal sciences (not including forestry)
Mature (21 and over on commencement of study)	7.7%	11.8%	13.1%	14.9%	9.2%
Young (under 21)	6.4%	7.8%	7.9%	7.8%	6.0%
White ethnic background	5.6%	7.0%	7.1%	8.2%	6.4%
Asian ethnic background	10.5%	11.6%	13.5%	11.0%	12.6%
Black ethnic background	11.0%	12.7%	12.6%	19.4%	17.8%
Other ethnic background (not including unknown ethnicity)	8.5%	11.3%	8.3%	10.1%	8.7%
POLAR3 quintile 1	7.2%	9.4%	10.4%	6.4%	7.4%
POLAR3 quintile 2	7.2%	9.5%	8.3%	7.8%	5.4%
POLAR3 quintile 3	7.1%	8.6%	8.9%	9.4%	9.5%
POLAR3 quintile 4	6.4%	8.0%	6.9%	11.2%	6.2%
POLAR3 quintile 5	6.1%	7.4%	8.7%	6.6%	5.5%
Total	6.6%	8.3%	8.4%	8.5%	6.7%

Unemployment rates at six months by student group: 2010-11 leavers	All HE	All STEM	Biological sciences (not including forensic and archaeological science)	Earth, marine and environmental sciences	Agriculture, food and animal sciences (not including forestry)
Mature (21 and over on commencement of study)	11.7%	15.4%	17.6%	12.9%	11.1%
Young (under 21)	9.1%	10.1%	10.5%	9.2%	6.1%
White ethnic background	8.2%	9.3%	9.5%	9.2%	6.8%
Asian ethnic background	14.4%	14.6%	16.2%	19.9%	21.9%
Black ethnic background	17.3%	18.9%	19.0%	33.3%	21.3%
Other ethnic background (not including unknown ethnicity)	12.6%	12.5%	14.0%	9.9%	13.6%
POLAR3 quintile 1	11.3%	13.9%	15.3%	11.2%	9.2%
POLAR3 quintile 2	10.2%	11.8%	12.2%	7.2%	5.8%
POLAR3 quintile 3	10.2%	11.6%	12.2%	14.0%	7.8%
POLAR3 quintile 4	9.3%	10.3%	10.9%	9.5%	7.5%
POLAR3 quintile 5	8.6%	9.4%	9.6%	8.2%	6.9%
Total	9.6%	10.8%	11.3%	9.8%	7.3%

UK domiciled leavers from full-time first degree study in 2010-11 by outcome and subject area of study

Subject area of study	Cohort size: qualifiers who provided a response to the LDLHE	Unemployment rate: 2010-11 graduates	Cohort size: qualifiers who reported to the LDLHE that they were in employment	Proportion of employed leavers in non-graduate jobs: 2010-11 graduates	Cohort size: qualifiers who reported to the LDLHE that they were in full-time paid UK employment and provided their salary	Proportion of employed leavers earning 'low' salaries: 2010-11 graduates
Agriculture, forestry and food science	365	2.7%	300	44.8%	120	43.6%
Anatomy, physiology and pathology	300	0.9%	230	8.9%	160	13.6%
Biological Sciences	1,670	3.1%	1,085	19.4%	600	31.0%
Chemistry and Material Science	295	3.5%	185	12.6%	125	16.1%
Computer Sciences	1,400	5.0%	1,245	13.4%	805	16.8%
Earth, Marine, and environmental sciences	415	3.9%	325	19.1%	165	32.0%
Engineering and technology						
Chemical, process and energy engineering	120	1.4%	90	4.2%	70	2.0%
Civil Engineering	300	1.6%	280	6.1%	220	7.7%
Electronic and electrical engineering	365	4.6%	320	21.6%	225	15.5%
General Engineering	205	1.6%	185	9.1%	145	8.2%
Mechanical, Aero, production	670	2.5%	590	11.9%	475	6.0%
Minerals, metallurgy and materials engineering	125	4.8%	100	32.4%	40	34.8%
Others in engineering and technology	200	1.0%	185	23.6%	90	35.4%
Overall Engineering and technology	1,990	2.6%	1,755	14.5%	1,260	12.2%

Subject area of study	Cohort size: qualifiers who provided a response to the LDLHE	Unemployment rate: 2010-11 graduates	Cohort size: qualifiers who reported to the LDLHE that they were in employment	Proportion of employed leavers in non-graduate jobs: 2010-11 graduates	Cohort size: qualifiers who reported to the LDLHE that they were in full-time paid UK employment and provided their salary	Proportion of employed leavers earning 'low' salaries: 2010-11 graduates
Mathematical sciences	710	2.1%	575	14.4%	430	12.9%
Pharmacology, Toxicology and pharmacy	310	3.2%	240	5.2%	155	11.3%
Physics and astronomy	250	2.3%	150	11.7%	115	9.8%
STEM (including agriculture and forestry)	7,705	3.2%	6,090	16.2%	4,865	19.0%
All HE subjects	36,855	2.9%	30,795	23.2%	23,560	26.0%

HEFCE analysis of the HESA standard qualifiers population and Longitudinal Destination of Leavers from Higher Education survey, both 2010-11. UK-domiciled qualifiers from full-time first degree qualifications registered at publicly-funded English HEIs only. Qualifiers who provided a valid response to the 2010-11 Longitudinal DLHE survey. All percentages based on fewer than 22.5 qualifiers are not considered to be statistically robust and are suppressed and included under a grouping labelled "Too small".

* Non-graduate jobs are those that fall outside of the three Standard Occupational Classification (SOC2010) major groupings of 'managers and senior officials', 'professional occupations' and 'associate professional and technical occupations'. Proportions shown are based on qualifiers who reported that they were in employment (only) 40 months after leaving HE.

* 'Low' salaries are those less than £20,000. Proportions shown exclude qualifiers with unknown salaries from the calculation and are based on qualifiers who reported that they were in full-time paid employment (only) in the UK 40 months after leaving HE.

UK domiciled leavers from full-time first degree study in 2008-09 by outcome and subject area of study

Subject area of study	Cohort size: qualifiers who provided a response to the LDLHE	Unemployment rate: 2008-09 graduates	Cohort size: qualifiers who reported to the LDLHE that they were in employment	Proportion of employed leavers in non-graduate jobs: 2008-09 graduates	Cohort size: qualifiers who reported to the LDLHE that they were in full-time paid UK employment and provided their salary	Proportion of employed leavers earning 'low' salaries: 2008-09 graduates
Agriculture, forestry and food science	240	4.1%	190	38.4%	145	43.4%
Anatomy, physiology and pathology	465	1.1%	345	9.2%	285	12.8%
Biological Sciences	1,285	3.6%	795	19.6%	650	28.9%
Chemistry and Material Science	180	3.2%	105	17.7%	85	22.4%
Computer Sciences	1,180	5.7%	1,020	17.4%	785	23.5%
Earth, Marine, and environmental sciences	305	2.5%	230	19.7%	170	30.3%
Engineering and technology						
Chemical, process and energy engineering	85	5.1%	60	2.6%	45	8.2%
Civil Engineering	230	3.1%	205	7.0%	165	3.5%
Electronic and electrical engineering	310	4.9%	270	18.4%	210	20.2%
General Engineering	115	3.8%	85	11.3%	70	9.8%
Mechanical, Aero, production	535	4.2%	450	13.0%	350	10.9%
Minerals, metallurgy and materials engineering	110	3.1%	90	25.5%	70	26.4%
Others in engineering and technology	115	3.1%	100	25.7%	70	34.3%
Overall Engineering and technology	1,500	4.0%	1,265	14.5%	980	14.2%

Subject area of study	Cohort size: qualifiers who provided a response to the LDLHE	Unemployment rate: 2010-11 graduates	Cohort size: qualifiers who reported to the LDLHE that they were in employment	Proportion of employed leavers in non-graduate jobs: 2010-11 graduates	Cohort size: qualifiers who reported to the LDLHE that they were in full-time paid UK employment and provided their salary	Proportion of employed leavers earning 'low' salaries: 2010-11 graduates
Mathematical sciences	595	2.8%	445	15.4%	360	11.4%
Pharmacology, Toxicology and pharmacy	340	2.0%	260	5.2%	215	9.1%
Physics and astronomy	175	2.0%	105	11.5%	85	13.8%
STEM (including agriculture and forestry)	6,270	3.7%	4,765	16.4%	3,760	20.1%
All HE subjects	29,015	3.5%	23,705	21.4%	18,025	27.5%

HEFCE analysis of the HESA standard qualifiers population and Longitudinal Destination of Leavers from Higher Education survey, both 2008-09. UK-domiciled qualifiers from full-time first degree qualifications registered at publicly-funded English HEIs only. Qualifiers who provided a valid response to the 2008-09 Longitudinal DLHE survey. All percentages based on fewer than 22.5 qualifiers are not considered to be statistically robust and are suppressed and included under a grouping labelled "Too small".

* Non-graduate jobs are those that fall outside of the three Standard Occupational Classification (SOC2010) major groupings of 'managers and senior officials', 'professional occupations' and 'associate professional and technical occupations'. Proportions shown are based on qualifiers who reported that they were in employment (only) 40 months after leaving HE.

* 'Low' salaries are those less than £20,000. Proportions shown exclude qualifiers with unknown salaries from the calculation and are based on qualifiers who reported that they were in full-time paid employment (only) in the UK 40 months after leaving HE.

Annex H

Wakeham Review Stakeholder survey

1. Introduction

Science, technology, engineering and mathematics (STEM) skills are vital in delivering UK economic growth and in strengthening the UK's ability to compete in a rapidly changing global economy. It is right, therefore, to ask whether the current arrangements in higher education for provision of STEM skills are fit for the future. Part of this picture relates to professional accreditation, which has a role to play in setting minimum standards for taught degree courses, ensuring that these standards remain relevant and providing a mechanism for universities to assess, evaluate and improve the quality of their programmes. The Government has therefore commissioned an independent review to explore the provision of STEM skills and accreditation arrangements to determine whether there are areas which warrant further investigation. Sir William Wakeham is leading the Review, further details and the Terms of Reference for which can be found [here](#).

At this stage of the review we are inviting stakeholders, including universities and colleges; professional, statutory and regulatory bodies; and those from business and industry to complete this survey to provide their perspective on employability and accreditation systems in STEM subjects in which they have an interest. We will begin with some general questions to gather your views on the suitability of graduate skills in STEM subjects to the needs of UK business and graduate employability. We will then ask specific questions related to some preliminary investigation which has been undertaken separately. Finally we will ask a few questions related to your organisation's perspective.

The review seeks to investigate graduate employability - whether graduates meet the needs of employers and are considered employable. Sometimes measures of employment such as unemployment levels may be used as an indicator of employability. However, these are only indicators: for example students may have all the knowledge and skills required by employers but not be able find employment because of some other factor.

The review has links to a separate independent review that the Government has commissioned to look specifically at computer science graduate employability and degree accreditation in England. A separate questionnaire focused specifically on the computer science review will be launched in July. If you have input specifically relating to that review, then we strongly recommend you complete that survey.

If you have any questions regarding the survey or the Review in general then please contact [Duncan Shermer](#) and [Joe Garrod](#).

2. Completing the survey

The survey should take around 15 to 20 minutes to complete and we would be grateful if you could respond by 17 July 2015.

In completing the survey you should answer in relation to graduates from the STEM subjects that you feel your organisation best represents or seeks to recruit from: for example, for universities and colleges, disciplines in which the organisation graduates students; or for business or industry, the disciplines from which the organisation is likely to employ graduates. You may wish to consult with colleagues in order to provide a response on behalf of your organisation or department. If you or your organisation have no strong opinion on any of the questions asked, then please select the N/A option or leave it blank.

As far as possible your response should be based on your experience and supported by concrete examples or evidence. We have conducted some initial investigation of data collected by the Higher Education Statistics Agency and these data are available on HEFCE's [website](#). You may wish to review these data to help inform your response to the survey or alternatively you may wish to rely on your own sources of evidence.

3. Demographic information

Please provide some details of your organisation and your role within it. This will help us to analyse responses to this questionnaire from particular sectors.

We will take account of all responses in the final report, but responses will remain anonymous. You will be given an opportunity to indicate whether you are happy to be contacted regarding your response to the questionnaire and whether you would be interested in being involved in any follow-up events.

Your name

Your role or job title

Name of your organisation

Name of your department (if applicable)

Broadly which option best represents your type of organisation?

University or college

Business or industry

Professional, statutory or regulatory body

Other (please specify)

Does your response represent your personal view, the view of your department or division, or the view of your whole organisation?

Personal opinion

Opinion of department or division

Organisational opinion

Other (please specify)

4. STEM disciplines

To what extent do you agree that recent graduates from the STEM disciplines below meet the employability requirements of employers? Please answer for all disciplines you feel able to speak for. For those disciplines you feel unable to speak for, please tick N/A.

In considering your answer, some possible indicators of issues with employability might be:

- * Graduates in the disciplines struggle to find employment
- * Unemployment in the disciplines is higher than you would expect
- * Graduates in the disciplines are paid lower than average salaries
- * Business or industry have difficulty recruiting graduates with the knowledge and skills they require

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	N/A
Aeronautical and aerospace engineering						
Agricultural and food sciences						
Aquatic and marine sciences						
Biological sciences						
Chemical engineering						
Chemistry						
Civil engineering						
Computer sciences						
Earth sciences						
Electrical or electronic engineering						
Environmental sciences						
Geology						
Materials science						
Mathematical sciences						
Mechanical engineering						
Physics						
Other (please specify below)						

Other:

You will be given the opportunity to expand on your response on the next page.

5. General questions

<p>Please describe up to three difficulties around graduate employability in the STEM disciplines you have identified on the previous page.</p> <p>We are seeking your views and the views of your organisation disaggregated by discipline. For example, do graduates in the disciplines lack certain knowledge (such as adequate preparation in mathematics)? Do graduates in the disciplines lack general 'work ready' skills or business awareness?</p>	<p>What concrete evidence is available or could be provided to support each of the difficulties you have identified in the previous question?</p> <p>You may wish to arrive at your view using your own sources of information, for example reports, data sets, or analyses carried out either by your organisation or by a third party; or by analysis of the information available through HEFCE's website.</p>
1	1
2	2
3	3

6. Specific questions

Thinking about university and college courses in STEM discipline, to what extent do you agree with the following statements?

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	N/A
Student placements in business or industry lead to better employability for the student.						
Institutional or departmental engagement with industry leads to enhanced employability (for instance staff placements, guest lectureships, research concordats, strategic partnerships).						
Different course syllabuses have significantly different employability outcomes.						
Integrated masters degrees lead to better employment outcomes than bachelors degrees						
Institutional reputation has a significant effect on employability outcomes.						
Student characteristics (such as economic background or ethnic origin) have a significant effect on employability outcomes.						

Any further comments?

7. Specific questions for universities and colleges

The following questions are specific to respondents who have identified themselves as universities or colleges.

To what extent do you agree with the following statements?

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	N/A
Entry requirements or qualifications when entering higher education have a significant effect on employability outcomes.						

There is no capacity to include employability topics in curricula.

The resource requirements on higher education institutions for accreditation by professional bodies are appropriate for the benefits of the process.

Does the Pro -Vice Chancellor for education (or equivalent) have a background in a STEM discipline?

Y N

To what extent do you agree that the following systems or processes have an impact on graduate employability?

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	N/A
Professional accreditation systems						
Subject benchmark statements						
External quality assessment processes - Higher Education Review						
Internal processes						
External examiner processes						

Any further comments?

8. Specific questions for business and industry

The following questions are specific to respondents who have identified themselves as business or industry.

To what extent does your organisation engage with higher education delivery?

For example, does your organisation support internships or student placements? Do people from your organisation participate in delivery of course materials? Do members of your organisation sit on advisory panels for courses?

Strongly engaged Could be more engaged No formal engagement exists N/A

To what extent do you agree with the following statements?

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	N/A
Graduates have all of the subject knowledge required.						
Graduates have all the practical subject specific skills required.						
Graduates have the required 'work ready' skills or business awareness.						
Industrial experience of graduates leads to enhanced employability (for instance sandwich placements, other placements, general work experience).						
Graduates have necessary experience of modern scientific equipment.						

Any further comments?

10. Thank you

Thank you for participating in this questionnaire.

Your responses will be treated in confidence and will be used to develop agendas for a programme of focussed workshops in the autumn. We may use aggregate data from the questionnaire in the final report.

Would you be happy to be contacted regarding your response to the questionnaire?

Yes

No

Would you be interested in being involved in a workshop related to this review?

Yes

No

Your email address:

Your phone number:

Please feel free to pass on the details of the survey to anyone who you feel would be interested in providing input:

www.hefce.ac.uk/kess/stemreview