Higher National Unit specification

General information

Unit title: Science Industry: Key Issues (SCQF level 7)

Unit code: H92K 34

Superclass: AA

Publication date: May 2015

Source: Scottish Qualifications Authority

Version: 01

Unit purpose

This Unit is designed to give learners the opportunity to appreciate and understand the key issues and problems, which industry encounters, which individuals are likely to experience when entering the science industry.

Outcomes

On successful completion of the Unit the learner will be able to:

1 Investigate and analyse a science industry and its related key issues.

Credit points and level

1 Higher National Unit credit at SCQF level 7: (8 SCQF credit points at SCQF level 7)

Recommended entry to the Unit

Entry is at the discretion of the centre. Experience operating in a science industrial environment would be valuable but not essential for a learner attempting this Unit.

Core Skills

Achievement of this Unit gives automatic certification of the following Core Skills component:

Complete Core Skill None

Core Skill component Critical Thinking at SCQF level 6

There are also opportunities to develop aspects of Core Skills which are highlighted in the Support Notes of this Unit specification.

Context for delivery

If this Unit is delivered as part of a Group Award, it is recommended that it should be taught and assessed within the subject area of the Group Award to which it contributes.

Equality and inclusion

This Unit specification has been designed to ensure that there are no unnecessary barriers to learning or assessment. The individual needs of learners should be taken into account when planning learning experiences, selecting assessment methods or considering alternative evidence.

Further advice can be found on our website **www.sqa.org.uk/assessmentarrangements**.

Acceptable performance in this Unit will be the satisfactory achievement of the standards set out in this part of the Unit specification. All sections of the statement of standards are mandatory and cannot be altered without reference to SQA.

Where evidence for Outcomes is assessed on a sample basis, the whole of the content listed in the Knowledge and/or Skills section must be taught and available for assessment. Learners should not know in advance the items on which they will be assessed and different items should be sampled on each assessment occasion.

Higher National Unit specification: Statement of standards

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Outcome 1

Investigate and analyse a science industry and its related key issues.

Knowledge and/or Skills

- History
- Products of business
- Technology
- Current size
- Growth prospects
- Key issues:
  - Impact on society
  - Ethical and legal issues
  - Threats to the industry
  - Environmental impacts

Evidence Requirements for this Unit

Learners will need to provide evidence to demonstrate an in depth investigation into one science industry. The body of the report will be the findings from the investigation and will cover all of the bullet points listed in the Knowledge and/or Skills and any relevant key issues.

- History — describe the formation of the industry, eg traditional industry company or a new start up.
- Products of business — describe the products of the industry.
- Technology — discuss technology, including information on the science behind the products of the industry.
- Current size — explain the current size of the industry and how the industry has reached its current position.
- Growth prospects — discuss growth prospects including any potential issues which may affect growth of the industry, such as the emergence of new technology or new findings in a particular area or the affect of government legislation on the impact of research.

Higher National Unit specification: Statement of standards (cont)

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- Key issues:
  - Impact on society — analysis on the impact on society. This may include economic impacts and the impacts on an individual or a community, including any moral and/or health issues.
  - Ethical and legal issues — discussion of ethical and legal issues, ie if there are any factors impinging on the potential growth of the business. This should be a balanced debate showing the positive and negative aspects.
  - Threats to the industry — analysis of threats. Learners should research all threats to the industry including competition, threats to growth.
  - Environmental impacts — analyse the environmental impacts of the industry, eg pollution, GM crops.

Assessment of this Outcome will be by an open-book, unsupervised assignment consisting of a report on a specific industry of approximately 3,000 words. Learners should analyse the industry in some depth, expressing views as to its impact on society, which may be considered from an environmental or an ethical standpoint, depending on the type of industry chosen.

Learners should also deliver a presentation on one key issue of their report. This presentation should be approximately 10 minutes long and should contain:

- Information about the key issue.
- Discussion on different sides of the debate.
- Detail on how the science industry has sought to overcome these issues.
- Evaluation, including the learner's own conclusion on the future of the industry.

Learners should also be questioned to ensure that the work is their own. An observation checklist should be retained as evidence of performance for each learner.

Higher National Unit Support Notes

Unit title: Science Industry: Key Issues (SCQF level 7)

Unit Support Notes are offered as guidance and are not mandatory.

While the exact time allocated to this Unit is at the discretion of the centre, the notional design length is 40 hours.

Guidance on the content and context for this Unit

It is expected that a substantial number of successful learners will embark upon a career in a science industry and this Unit exposes them to the types of problems and key issues which they are most likely to encounter in the science industry.

Learners should undertake a detailed investigation on one science industry. Learners should cover the industry as a whole and should express their own opinions in terms of the key issues that the industry faces.

Learners should be given or select a relevant industry in conjunction with their lecturer. It is important that one industry as a whole is covered, as an investigation on one company would not give learners an understanding of the key issues and problems that an industry would encounter.

It is expected that learners will research their chosen industry using a variety of sources and although all Knowledge and/or Skills must be covered, one key issue which may of interest to the learner should be developed further and be the topic of a ten minute presentation. In the presentation, learners should discuss the issue, showing both sides of the debate and delivering their own conclusion and findings on how this issue should be resolved.

Outcome 1

The learner will be expected to describe and analyse the type of business, its history, commercial activities, products and also the key issues affecting a particular industry. It is expected that learners will complete an investigation on one industry.

The report could be drawn from the following sectors of the science industry:

- Pharmaceutical industry
- Biotechnology industry
- Chemical engineering industry
- Life Science industry
- Microbiology industry

A learner may attempt an investigation on any science industry with agreement of the lecturer.

Information for the report could be obtained from the following sources:

- Literature eg books, journals, etc
- Internet
- Discussion groups formed from friends, fellow learners and lecturers to elicit views on the ethics of a particular biotechnological development
- Site visits
- Interviews
- Media
- Interest groups
- Government sources

Guidance on approaches to delivery of this Unit

This Unit is likely to form part of a Group Award, from the HN Science framework. This Unit is primarily designed to provide learners with much wider knowledge of the industry, enabling them to be better prepared for employment in positions such as laboratory, pilot-plant or process technicians. They would also be expected to progress to first-line management or team leader posts in the science industry.

It would be preferable that the Unit is delivered towards the end of the course, by which time learners should have a good appreciation of scientific techniques, processes and products. The nature of this Unit lends itself to site visits and invited speakers as well as self-directed study. Lecturer input could be by a range of methods, including group discussion, direct input and presentations from the learners themselves.

Guidance on approaches to assessment of this Unit

Evidence can be generated using different types of assessment. The following are suggestions only. There may be other methods that would be more suitable to learners.

Assessment of this Outcome will be by an open-book unsupervised assignment consisting of a report on a specific industry of approximately 3,000 words. Learners should analyse the industry in some depth, expressing views as to its impact on society, which may be considered from an environmental or an ethical standpoint, depending on the type of industry chosen.

Learners should also deliver a presentation on one key issue of their report. This presentation should be approximately 10 minutes long and should contain:

- Information about the key issue.
- Discussion on different sides of the debate.
- Detail on how the science industry has sought to overcome these issues.
- Evaluation, including the learner's own conclusion on the future of the industry.

Learners should also be questioned to ensure that the work is their own. An observation checklist should be retained as evidence of performance for each learner.

Higher National Unit Support Notes (cont)

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The industry chosen for the case study should reflect the science the learner is studying. Given the range of science industries, it should be possible for each learner to research a different industry. This will minimise the possibility of plagiarism.

The presentation does not have to be a formal group presentation and could be a one to – one with the lecturer.

An exemplar instrument of assessment with marking guidelines has been produced to indicate the national standard of achievement at SCQF level 7.

Centres are reminded that prior verification of centre-devised assessments would help to ensure that the national standard is being met. Where learners experience a range of assessment methods, this helps them to develop different skills that should be transferable to work or further and higher education.

The report of the investigation can be done using a variety of formats, eg an audio diary, site visits and interviews with the public.

Opportunities for e-assessment

E-assessment may be appropriate for some assessments in this Unit. By e-assessment we mean assessment which is supported by Information and Communication Technology (ICT), such as e-testing or the use of e-portfolios or social software. Centres which wish to use e-assessment must ensure that the national standard is applied to all learner evidence and that conditions of assessment as specified in the Evidence Requirements are met, regardless of the mode of gathering evidence. The most up-to-date guidance on the use of e-assessment to support SQA's qualifications is available at **www.sqa.org.uk/e-assessment**.

Opportunities for developing Core and other essential skills

This Unit has the Critical Thinking component of Problem Solving embedded in it. This means that when candidates achieve the Unit, their Core Skills profile will also be updated to show they have achieved Critical Thinking at SCQF level 6.

There may also be opportunities to gather evidence towards other Core Skills in this Unit, in particular *Problem Solving* and *Working with Others*.

History of changes to Unit

Version	Description of change	Date

General information for learners

Unit title: Science Industry: Key Issues (SCQF level 7)

This section will help you decide whether this is the Unit for you by explaining what the Unit is about, what you should know or be able to do before you start, what you will need to do during the Unit and opportunities for further learning and employment.

This is a 1 credit HN Unit at SCQF level 7 and is intended for learners undertaking a Science related qualification. This Unit is designed to provide you with an opportunity to describe a science industry in some detail as well as its associated technology. You will also be asked to investigate an industry and present the information in the form of a report and presentation.

In order to complete this Unit successfully, you should be able to:

1 Investigate and analyse a science industry and its related key issues.

The Knowledge and/or Skills to be covered are:

- History
- Products of business
- Technology
- Current size
- Growth prospects
- Key issues:
  - Impact on society
  - Ethical and legal issues
  - Threats to the industry
  - Environmental impacts

Tackling this Unit will be challenging and will draw upon your knowledge of the science industry and its associated technology obtained in other HN Units. When problems or issues arise in the science industry, readily available solutions are not often available and these must be sought by obtaining the information via journals, textbook, internet, site visits or interviews. You will be given access to a variety of sources of information.

In tackling the report, your knowledge of a particular industry and its technologies will be assessed.