



## **Training and Qualifications in the 21<sup>st</sup> Century**

The 1980s and 90s gave us a range of new qualifications and training initiatives. This decade is seeing the consolidation of some of these together with amendments, improvements and the introduction of new projects and ideas. There follows an outline of some of the major qualifications, initiatives and related organisations that affect the world of science and technology.

### **National Vocational Qualification (NVQ) and Scottish Vocational Qualification (SVQ)**

National Vocational Qualifications (NVQs) and Scottish Vocational Qualifications (SVQs) in Scotland, are qualifications offered specifically for people in work. They give people the opportunity to prove their competence in their work and gain official recognition for it. They offer a vocational route for individuals to gain nationally recognised qualifications within the National Qualifications Framework. NVQs/SVQs are based on National Occupational Standards, developed originally by the National Training Organisation (NTO) for each industry or occupational sector - from Hairdressing to Engineering. The NTOs are currently being amalgamated into Sector Skills Councils, SSCs. Awarding bodies work with Sector Skills Councils to design the NVQs/SVQs. *NVQs/SVQs for Laboratory and Associated Technical Activities at levels 1, 2, 3 and 4 are available. There are two pathways, at levels 2 and 3. One route is designed for technicians in education and one for technicians in industry.*

### **Vocationally Related Qualifications**

Vocationally-Related Qualifications are designed to provide candidates with relevant skills and knowledge of their chosen subject. They have been developed to meet the requirements of an agreed Framework and have been accepted for inclusion in the National Qualifications Framework from Level 1 to Level 4. They are assessed according to the approved specification, but may include practical assessments and/or externally-set and marked assessments.

VRQs exist as qualifications in their own right but can also be used to focus on the knowledge and understanding which underpins the NVQ competencies and additional knowledge to facilitate progression to HE or higher levels of working. They are a structured approach to teaching and assessment and are capable of being delivered through a taught programme of off-the-job learning as well as by other learning routes.

*The Certificate in Laboratory Technical Skills at Levels 1, 2 and 3 was developed by the IST and is awarded by PAAIVQSET.*

### **Apprenticeships**

Apprenticeships are supported by Government and industry as a high-level, high-quality technical qualification which will increase the technical skills base in the labour market. An Apprenticeship is a structured programme of training which gives young people the opportunity to work for an employer, learn on the job and build up knowledge and transferable skills that will be needed throughout a working life.

There are three routes into an Apprenticeship:

- through the Learning and Skills Council Apprenticeships Helpline;
- by contacting employers directly; or
- by talking to the local Connexions service.

There are no set rules to apply for an Apprenticeship although some employers may ask for certain qualifications. An apprentice will in most cases be classed as employed.

Traditionally an Apprenticeship is made up of Key Skills, NVQ and Technical Certificate. Key Skills are an important part of the Apprenticeship training and are usually completed at the same time as the NVQ. The Technical Certificate allows the Apprentice to acquire underpinning theoretical knowledge.

The Apprenticeship family, announced in May 2004, provides Apprenticeships for ages 14 to adulthood and creates a complete vocational ladder of opportunity:

- Young Apprenticeships for 14-16-year-olds
- Pre-Apprenticeships — based on the popular Entry to Employment programme (at level 1)
- Apprenticeships (at level 2)
- Advanced Apprenticeships (at level 3)
- Opening up of Adult Apprenticeships by lifting the age limit of 25

### **Young Apprenticeship**

Young Apprenticeships are a valuable addition to the range of vocational options at Key Stage 4. They are well suited to the needs of motivated and bright 14-16-year-olds to pursue industry-specific vocational programmes outside of school, in partnership with employers and involving extended work placements. This is an opportunity for 14-16-year-olds to combine the practical application of skills

and knowledge in a vocational context with the pursuit of qualifications that relate to particular occupational sectors. When the young person has completed their Apprenticeship they will have good career prospects and also a route into further studies and, where appropriate, to Foundation Degrees.

### Apprenticeship

Apprenticeships (formerly known as Foundation Modern Apprenticeships) have been developed by industry through Sector Skills Councils as a way of training young people to work effectively in their early careers. They are now highly valued by employers as they enable young people to achieve skills and vocational qualifications related directly to jobs.

Apprentices are normally employed by an organisation and undertake both on and off-the-job training throughout their apprenticeship, possibly including attendance at college on a day release basis.

Widely available throughout England and Wales, each Apprenticeship will probably last between 1½ and 2 years - although there is no time restriction.

The main features include:

- Employed status or a work placement from the outset
- A training plan which will set out the training to be undertaken
- High quality training leading to achievement of Level 2 NVQ or above and Key Skills including Communication and Information and Communication Technology
- A nationally recognised certificate on completion of the traineeship
- Improved career prospects and job security within the industry and the opportunity to progress to Modern Apprenticeship and higher education

*The Apprenticeship for laboratory technicians is available, Framework Code – 288, developed by SEMTA.*

### Advanced Apprenticeship

Advanced Apprenticeships (formerly known as Advanced Modern Apprenticeships) are developed by industry through Sector Skills Councils as a way of training young people to work effectively in their early careers. They are now highly valued by employers as they enable young people to achieve higher level skills and vocational qualifications related directly to jobs.

Advanced Apprentices are employed by an organisation and undertake both on and off-the-job training throughout their apprenticeship, possibly including attendance at college on a day release basis.

Widely available throughout England and Wales, each Advanced Apprenticeship will probably last between 2 and 3 years - although there is no time restriction.

The main features include:

- Employed status and wages from the outset
- A training plan which will set out the training to be undertaken
- High quality training leading to achievement of Level 3 NVQ or above, and Key Skills including Communication and Information and Communication Technology
- A nationally recognised certificate on completion of the Apprenticeship
- Improved career prospects and job security within the industry and the opportunity to progress to higher education

*The Advanced Apprenticeship for Laboratory Technicians is available, Framework Code – 288, developed by SEMTA.*

### Graduate Apprenticeships

Graduate Apprenticeships (GAs) were launched in 1998. The Government's consultation paper 'The Learning Age' described GAs as a means of enhancing the employment skills of new graduates. The sector-specific frameworks integrate study at degree or diploma level with structured work-based learning focused on National Vocational Qualification (NVQ) vocational and key skills units. The aim is to enhance graduate and diplomate entry into the labour market through a framework of learning incorporating:

- a higher education qualification;
- structured work-based learning;
- completion and accreditation of national key skills units;
- completion of a relevant NVQ or NVQ vocational units; and
- clearly articulated Quality Assurance arrangements.

There is no further government funding available for Graduate Apprenticeships. Institutions who wish to develop GAs are advised to consider alternative sources of funding. Some institutions have secured support from European Social Funds and through Sector Skills Councils.

<http://www.hefce.ac.uk/learning/GradApp/>



## **Technical Certificates**

Technical certificates are vocationally related qualifications identified by sector and awarding bodies that are able to deliver the underpinning knowledge and understanding relevant to the NVQ included in the particular MA framework and:

- are capable of delivery through a taught programme of off-the-job learning;
- permit a structured approach to the teaching and assessment of the underpinning knowledge and understanding of an NVQ (or a suite of related NVQs); and
- retain their original qualification title.

*The Certificate in Laboratory Technical Skills, developed by the IST and awarded by PAAIVQSET has been identified as a Technical Certificate in the Apprenticeship frameworks.*

## **Key Skills**

Key skills are generic, transferable skills that the government and much of industry consider to be essential for successful lifelong learning and a flexible workforce. The most widely used list of key skills is that developed by the Qualifications and Curriculum Authority. Each key skill is available at 5 levels.

The key skills are:

- Communication
- Information and Communication Technology
- Application of Number
- Working with others
- Improving own learning and performance
- Problem Solving

<http://www.keyskillsupport.net>

## **Foundation Degrees**

The foundation degree is a vocationally focused higher education qualification. It aims to increase the number of people qualified at higher technician and associate professional level (e.g. legal executives, engineering technicians, personnel officers, laboratory technicians, teaching assistants). It is located at intermediate level in the Framework for Higher Education Qualifications (FHEQ). Other intermediate level qualifications include NVQ level 4 and the HND. (The next level up is 'honours' level, which covers degrees with titles such as Bachelor of Arts, BA (Hons) or Bachelor of Science, BSc (Hons)).

All foundation degrees develop:

- work-specific skills, relevant to a particular sector of industry
- key skills, for example communication and problem solving
- generic skills such as reasoning, professionalism, and work process management.

They are offered by universities in partnership with higher education colleges and further education colleges. Flexible study methods make them available to people already in work, unemployed people, or those wanting to embark on a career change. Work-based learning is a major part of any foundation degree but higher level knowledge and understanding reinforces and supports the development of vocational skills.

*Newman College, Birmingham, Bourneville College of FE, the University of Leicester and Wyggeston Queen Elizabeth 6<sup>th</sup> Form College have launched a Foundation Degree for Science Technicians. The foundation degree will allow both existing science technicians and those wishing to enter the profession the opportunity to upgrade their skills and to broaden their expertise to cover new and emerging aspects of the job. The course includes aspects of science - from biology to the earth sciences - delivered across all years of study. This is supported by enhancement of study skills, school curriculum matters, and health and safety issues. The course also covers experimental design, equipment maintenance, and trends of science education.*

<http://develop.ucas.com/FDCourseSearch/Gateway.html>

[http://www.newman.ac.uk/Courses/Foundation/FD\\_TSL.asp](http://www.newman.ac.uk/Courses/Foundation/FD_TSL.asp)

<http://www.le.ac.uk/admissions/ugprospectus/courses/foundation/science.html>

## **Department for Innovation, Universities and Skills (DIUS)**

This new Government Department brings together functions from two former departments - science and innovation responsibilities from the Department of Trade and Industry and skills, further and higher education from the Department for Education and Skills.

The new Department is expected to draw together the nation's strengths in colleges, research, science and universities in order to build a dynamic, knowledge based economy.

To ensure the wider personal, community and cultural benefits of education and science are supported, the Department will work closely with other departments (including the Department for



Business, Enterprise and Regulatory Reform (BERR), Department for Children Schools and Families (DCSF), Department for Central and Local Government (CLG) and Department for Culture, Media and Sport (DCMS) and others).

### **UK Commission for Employment and Skills (UKCES)**

Launched on 1 April 2008, the UK Commission for Employment and Skills (UKCES) is a key recommendation in Lord Leitch's 2006 review of skills and aims to raise UK prosperity and opportunity by improving employment and skills.

It is responsible for the licensing process for the 25 Sector Skills Councils (SSCs).

<http://www.ukces.org.uk/>

### **Qualifications and Curriculum Authority (QCA)**

QCA is the accrediting body for England, Wales and Northern Ireland. The Education Act 1997 established QCA's role and functions. It is responsible for academic and vocational qualifications, including the national curriculum for 5-16 year olds, national tests for 7, 11 and 14 year olds, GCSEs, A levels, GNVQs, NVQs and higher level vocational qualifications. QCA accredits (formally recognises) NVQs and VRQs and monitors Awarding Bodies offering them.

<http://www.qca.org.uk/>

### **Scottish Qualifications Authority (SQA)**

The Scottish Qualifications Authority (SQA) is the national body in Scotland responsible for the development, accreditation, assessment and certification of qualifications other than degrees.

<http://www.sqa.org.uk/>

### **Sector Skills Councils**

A network of UK wide Sector Skills Councils (SSCs) has been charged to lead the skills and productivity drive in industry or business sectors recognised by employers. They bring together employers, trade unions and professional bodies working with government to develop the skills that UK business needs.

Sector Skills Councils (SSCs) are independent, UK-wide organisations developed by groups of influential employers in industry or business sectors of economic or strategic significance. SSCs are employer-led and actively involve trade unions, professional bodies and other stakeholders in the sector. SSCs give responsibility to employers to provide leadership for strategic action to meet their sector's skills and business needs. In return they receive substantial public investment and greater dialogue with government departments across the UK. This will enable sector employers to have a far greater impact on policies affecting skills and productivity, and increased influence with education and training partners.

Each SSC will agree sector priorities and targets with its employers and partners to address four key goals:

- Reducing skills gaps and shortages
- Improving productivity, business and public service performance
- Increasing opportunities to boost the skills and productivity of everyone in the sector's workforce, including action on equal opportunities
- Improving learning supply, including apprenticeships, higher education and national occupational standards

Sector Skills Councils include:

- SEMTA (Science, Engineering and Manufacturing Technologies Alliance)

Sectors represented by SEMTA include:

- Aerospace
- Biotechnology
- Electrical engineering
- Electronics, including semi- conductors
- Forensic Science
- Mathematics
- Mechanical engineering
- Meteorology
- Nanotechnology
- Optical manufacture
- Pharmaceuticals



It developed the occupational standards that the NVQs/SVQs for Laboratory and Associated Technical Activities are based on and is the owner of the Apprenticeship frameworks for Laboratory Technicians (Framework Code – 288).

<http://www.semta.org.uk>

▪ **Lifelong Learning UK**

Lifelong Learning UK covers employers whose primary business is the delivery or support of lifelong learning, including higher education, further education, workbased learning, community-based learning and development, youth work, libraries, archives and other information services.

<http://www.lifelonglearninguk.org/>

▪ **COGENT**

Cogent is the Sector Skills Council (SSC) for the Chemicals and Pharmaceuticals, Oil and Gas, Nuclear, Petroleum and Polymer Industries.

<http://www.cogent-ssc.com/>

### **Alliance of Sector Skills Councils**

The Alliance is a new organisation (since 1st April 2008) comprising all 25 Sector Skills Councils (SSCs) which, as employer-driven organisations, together articulate the voice of 89% of the UK's employers on skills issues.

The full extent of the Alliance's scope will develop over time, but its core purpose is to:

- Promote understanding of the role of SSCs within the skills system across the four home nations
- Co-ordinate policy positions and strategic work on skills with stakeholders across England, Scotland, Wales and Northern Ireland
- Help build the performance capability of the Sector Skills Councils, to ensure they continue to work effectively on the employer-driven skills agenda

[www.sscalliance.org](http://www.sscalliance.org)

### **Learning and Skills Council (LSC)**

The Learning and Skills Council is responsible for funding and planning post-16 education and training for over 16-year-olds in England, other than in universities. Its mission is to raise participation and attainment through high-quality education and training which puts learners first. Its vision is that, by 2010, young people and adults in England will have the knowledge and productive skills matching the best in the world.

The Council operates through a national office in Coventry, 9 regional offices in England and a network of local partnership teams covering the whole country.

Established in April 2001 its work covers:

- further education
- work-based training and young people
- school sixth forms
- workforce development
- adult and community learning
- information, advice and guidance for adults
- education business links.

The Council has brought together the skills of the Training and Enterprise Councils and the Further Education Funding Council to work with partners, employers, learning providers, community groups and individuals to develop and implement strategies that meet the Government's aims set out in the White Paper 'FE – Raising Skills, Improving Life Chances'.

It works alongside the Employment Service, the Small Business Service, Connexions, the National Training Organisations, Sector Skills Councils, further education and sixth form colleges, and representatives of community groups, to understand, define and then meet training and education needs.

<http://www.lsc.gov.uk/>

### **Awarding Bodies**

Awarding bodies are jointly responsible with Sector Skills Councils for developing NVQs. They are also responsible for implementing particular NVQs. They approve assessment centres and send external verifiers to make sure all the centres assess candidates fairly and consistently. They award certificates for units and for full NVQs. In addition, they develop and offer Vocationally Related Qualifications.



The Awarding Bodies work with the Qualifications and Curriculum Authority (QCA) and the Scottish Qualifications Authority (SQA) to ensure quality in assessment. Awarding bodies that offer qualifications in science and technology include City and Guilds and PAA\QSET.

<http://www.paa-uk.org/>

<http://www.city-and-guilds.co.uk/>

### **The Leadership Foundation for Higher Education**

The Leadership Foundation was created in late 2003 and was formally launched in March 2004. It will draw on the best existing programmes and commission new material in order to offer world-class development in leadership governance and management to current and future leaders within higher education institutions.

<http://www.lfhe.ac.uk>

### **HEATED (Higher Education and Technicians Educational Development)**

This is a project is for all technical/specialist staff supporting core research and teaching activity in Higher Education.

Its goal is to establish a coherent, relevant and co-ordinated range of activities and services to address the skill needs of HE technical staff by delivering:

- development of a national continuing professional development framework and skills development programme
- development of a national online technical staff learning resource and web-site
- UK-wide networking facility through a series of regional and national events
- UK-wide survey on a biannual basis to measure improvements at an organisational and national level and enable participating HEIs to benchmark themselves.

