



The Sector Skills Council
for Science, Engineering and
Manufacturing Technologies

The Higher Apprenticeship (HA)

in

Engineering Technology

Contents	Page
Summary of Mandatory Outcomes	4
1 Overview of Higher Apprenticeship	5
1.1 Higher Apprenticeship Benefits	5
1.2 Introduction	5
1.3 Industry overview	6
1.4 Target Group	7-8
1.5 Higher Apprenticeship Partners	9-10
1.6 Higher Apprenticeship Framework Model	11
2 Initial Consideration and Planning	12-13
2.1 Foundation Degree	12-13-14
2.2 Accreditation of Prior Experiential Learning (APEL)	15
2.3 NVQs	15-16
2.4 Key Skills	17
2.5 Route to Engineering Technician & Incorporated Engineer Registration	18-19
2.6 Optional Outcomes	19
2.7 Additional Employer Outcomes	19
3 Implementation	20
3.1 Entry Requirements	20
3.2 Recruitment and Selection	21
3.3 Learning Agreement	22
3.4 Initial Assessment	22
3.5 Individual Learning and Assessment Plan	23
3.6 Induction	24-25
3.7 Learners Handbook	25
3.8 Initial Stage Learning	25-26
3.9 Work-Based Learning	27
3.10 Academic Learning	27
3.11 Further Learning Project	27-28
3.12 Learning Support / Monitoring and Review	28
3.13 Mentors / Assessors	28
3.14 Risk Assessment	29
3.15 Health and Safety	29
3.16 Equality and Inclusion	30
3.17 Equal Opportunities / Monitoring Procedures	30-31
3.18 Learners Complaint Procedure	31
3.19 Early Leavers / Termination of Apprenticeship	31

4	Achievements and Progression	32
4.1	Achievements	32
4.2	Progression	32-33
5	Other Information	33
5.1	Employed Status of Higher Apprenticeship Learners	33
Annexes		34
Annex A	Engineering Leadership NVQ Level 4	35-37
Annex B	IET Standards – Engineering Technician	38-39
Annex C	IET Standards – Incorporated Engineer	40-42
Annex D	Professional Registration UK – Spec	43
Annex E	Accredited Academic Programmes	44
Annex F	Sample Learning Agreement	45-46
Annex G	SEMTA HA Steering Committee	47
Annex H	NVQ Level 4 Reference	48-49

The Institution of Engineering & Technology Recommendation

IET is pleased to recommend the SEMTA Higher Apprenticeship in Engineering Technology Framework as one that may lead learners towards professional recognition and registration with EC^{UK} as Incorporated Engineer (IEng) or Engineering Technician (EngTech). IET invites all those wishing to provide a professional engineering apprenticeship under this Framework to get in touch with them.

Note: where the academic component is a Foundation Degree, HND or HNC, those aspiring to IEng will require Further Learning.

SUMMARY OF MANDATORY OUTCOMES

HIGHER APPRENTICESHIP	LEVEL
NVQ Options <ul style="list-style-type: none"> ▪ Engineering Leadership Full Qualification 	4
KEY SKILLS <ul style="list-style-type: none"> ▪ Communication ▪ Application of Number ▪ Information Technology ▪ Improving Own Learning and Performance ▪ Working With Others 	3 3 3 3 3
Optional outcomes	
<ul style="list-style-type: none"> ▪ Key Skills 	4
<ul style="list-style-type: none"> ▪ Key Skills 	5
VOCATIONALLY RELATED QUALIFICATION (VRQ) <p>The following qualifications have been approved for use within the HA framework at Level 4</p> <ul style="list-style-type: none"> ▪ HNC in an engineering discipline ▪ HND in an engineering discipline ▪ Foundation Degree in an engineering discipline ▪ First Degree in an engineering discipline 	4 5 5 6
INITIAL STAGE LEARNING <p>All learners must complete a minimum of 6 units from the Level 2 NVQ Performing Engineering Operations (PEO). These must include:</p> <p>Unit 1: Working safely in an engineering environment (U1053225)</p> <p>Unit 3: Using and communicating technical information (U1053572)</p> <p>Or, an alternative Initial Stage agreed in writing by SEMTA prior to commencement – See 3.9 for alternative initial learning</p> <p>Optional Outcomes</p> <p>IET Further Learning Engineering Technician Professional Registration Incorporated Engineer Professional Registration</p>	2 2

1. Overview of the Higher Apprenticeship

1.1 Higher Apprenticeship Benefits

The professional pathway

- Will provide the engineering and manufacturing sector with high grade technicians and engineers who possess practical skills combined with a higher education qualification
- The pathway will be recognised as meeting most of the professional requirements of Incorporated Engineer, and will clearly articulate the further development that is needed to achieve this status
- Will attract learners who wish to gain a higher education qualification while receiving a salary and avoiding personal debt incurred through the traditional academic route
- Will suit learners who want to pursue relevant work experience alongside academic learning
- Will provides accelerated entry into the workplace, saving costs associated with providing Advanced Apprenticeship and Foundation degree programmes back to back
- Will allow higher education, project, and work-based learning to be integrated as never before
- Will be user friendly and deliverable by both large companies and SMEs working in partnership with training providers, FE colleges and HEIs

1.2 Introduction

SEMTA, the Sector Skills Council (SSC) for science, engineering and manufacturing technologies covers the core science, engineering technology sectors across the UK economy. It has responsibility for science, technology and mathematics based occupations wherever they exist in the economy. The sectors covered include the main engineering manufacturing groups of basic metal manufacture, metal products, mechanical equipment, electronics, electrical equipment, motor vehicles, aerospace and other transport fields (SIC codes 27 to 35 inclusive, but excluding 27.1, 27.2, 27.3 and 28.4). There are also specific sub-sectors of the economy where the science, technology and mathematics occupations are of such importance, for example as in pharmacy, forensic science, meteorology, parts of the pharmaceutical industry, biotechnology, genetics, nanotechnology and the packaging industries that, although they are not easily defined in terms of SIC codes, have been identified as being central to the activities of the SSC. Maintenance activities and affiliated sub-sectors in support of all these areas of the economy are also covered.

Scope of the sector

It is estimated that, in the UK there are some two million people employed in about 90,000 establishments in the core science, engineering and technology sectors. These core sectors, as indicated above, cover the full range of engineering manufacturing sectors from traditional mechanical engineering sectors to very high technology sectors such as aerospace and electronics and highly scientific areas such as biotechnology, forensic science and research. Over 90% of engineering establishments employ fewer than 50 people and these account for 34% of total employment. Only about 1% of establishments employ more than 200 people, but these account for 40% of total employment.

Specific mathematical occupations such as actuaries and statisticians have been included within science and technology. Mathematical literacy is of growing importance to employers in the whole of the science, engineering and technology sector. The ability to apply a variety of skills within a given work environment goes beyond basic numeracy as one of the fundamental challenges facing industry.

Further information is available on SEMTA's website – www.semta.org.uk.

1.3 Industry Overview

As SEMTA is the Sector Skills Council for Science, Engineering and Manufacturing Technologies its footprint covers some 100,000 companies employing around two million people in the UK. Our companies provide 10% of UK Gross Domestic Product (GDP) - £74 billion every year – and accounts for more than one third of total UK exports. Led by the sector, for the sector, SEMTA is working closely with its Sector Strategy Groups (SSGs) to drive improvements in productivity, by transforming skills in the separate sectors within its footprint.

SEMTA has historically focused its activities on the technical/engineering occupations and can trace its' roots back to the Levy. Both these conditions have changed: - all the occupations in the sector fall within the work of SEMTA and the levy no longer exists

SEMTA is one of four pilots engaged in developing Sector Skills Agreements for five of its current sub-sectors. Three particular sub-sectors; Aerospace; Automotive and Electronics have identified a critical need for highly qualified technicians at level 4. It is predicted that these three sectors will require a total of 6,900 technicians over the next ten years. Currently SEMTA has no training programme available for meet this training need, hence the development of the Higher Apprenticeship Framework.

1.4 The Target Group

The Higher Apprenticeship Framework is designed to both widen and increase participation at level 4, and provides learners with clear pathways to NVQ Level 4, Key Skills Level 3 with options for Levels 4 and 5. Academic learning within a foundation degree at Level 5, and guidance to Engineering Technician and/or Incorporated Engineer Registration with The Institution of Engineering & Technology (IET).

The Higher Apprenticeship Framework is open to young people and adults who have various entry qualifications, A Level, Advanced VCE in Engineering, BTEC National Certificate / Diploma, Advanced Apprenticeship Certificate, and the option of accreditation of prior experiential learning for previously gained learning and experience.

The Higher Apprenticeship Framework will improve the supply of young people seeking to enter work-based learning via apprenticeships by offering structured high value learning and transferable skills / knowledge with professional Engineering Technician or Incorporated Engineer registration and provides opportunity for further progression.

The Higher Apprenticeship Framework offers clear pathways and outcomes that will help address the issues facing the industry as identified below.

- Provide young people with an alternative to staying in full-time education post-16/18 to gain pure academic qualifications without work-based learning.
- Address the deterioration in numbers of young people studying mathematics and science at 'A' level and the perceived (by employers) fall in the standard of mathematics at both GCSE and 'A' levels. (LMA, 2003)
- Help address:
 - The 11.8% fall in HE engineering students since 1996
 - The 18% fall in registered Engineering Technicians since 1994
 - The 16% fall in registered Incorporated Engineers since 1994
- Improve the coherence of vocational pathways to professional engineering technician / incorporated engineer registration.
- Lower the average age of Engineering Technicians and Incorporated Engineers. In 2003, 8% of all registered Technician Engineers and 13% of Incorporated Engineers were aged 65 and over.
- Improve the provision of personal development opportunities for adults in supervisory or craft occupations.

In the Engineering Manufacturing Labour Market Assessment (2002), it was noted that most science, technological and particularly engineering occupations are not seen as attractive to young people and particularly women.

Furthermore there has been a shift in the occupational balance towards higher-level skills and education requirements and this is expected to continue in the future.

Employment of professional engineers and higher-level technicians has been steadily increasing while employment in craft occupations has decreased. Changes in technology, increased quality requirements and the need to reduce costs have all been factors fuelling these trends.

The employment of supervisors has fallen due to changes in working practices, notably the considerable increase in the use of team and cell working and the move to batch production rather than mass production in major sectors such as motor vehicles and electronics. (LMA, 2002)

1.5 Higher Apprenticeship Framework Partners

In any partnership arrangement, responsibilities must be clearly understood and communicated to all parties. SEMTA works in partnership with employers (demand) and providers, (supply) to meet the skills requirements of the sector.

The idea of partnership and collaboration are central to the concept of this Higher Apprenticeship Framework. An effective partnership will help deliver broad acceptance of the framework, reinforce ownership among all stakeholders and establish the currency of the higher apprenticeship outcomes in their own right.

The contribution of a range of partners in the development and implementation of the Higher Apprenticeship Framework should keep it relevant, valid and responsive to the needs of employers and learners.

The main active participants involved in the development of the Higher Apprenticeship Framework are:

- Employers
- Foundation Degree Forward (fdf)
- FE Institutions
- HE Institutions
- Group Training Associations / Work-based Learning Providers
- SEMTA as the Sector Skills Council
- Professional Bodies

It is anticipated that the related experience and recommendations of learners will also feed into the quality assurance of the framework through evaluation and review.

Employer Partners

Employer involvement may include input into: the design and approval of the framework and programmes; including work-based learning; delivery of learning materials; assessment of learning outcomes; and provision of a supportive learning environment.

Foundation Degree Forward (fdf)

The primary objective of fdf is to support the development of high quality Foundation Degrees. fdf involvement in the Higher Apprenticeship development has been invaluable. SEMTA also works in partnership with fdf to develop Foundation Degree Frameworks; these frameworks will be used to development of effective Foundation Degrees that meet the needs of the sector.

HE, FE and Awarding Body Partners

The Higher Apprenticeship Framework demands effective partnership working between higher education and/or further education institutions and/or awarding bodies and all other stakeholders. This involves close collaboration in the design, development and delivery of the framework as well as the assessment of learning outcomes.

HE, FE will play a critical role delivering higher apprenticeship programmes by engaging with SME employers and giving support and guidance to learners.

SEMATA Partners

SEMATA 's role is to influence and support Government and other key agencies in initiatives which directly impact on employers' ability to compete in the world market – for example, tackling skills gaps, addressing lack of appropriate training provision and ensuring availability of fit for purpose qualifications.

The Higher Apprenticeship is a key initiative for the sector. In ensuring the currency and applicability of learning outcomes to the sector, SEMTA researches and maintains detailed labour market information on the Sector.

This is available in the form of a Market Assessment and the new Sector Skills Agreements are on the SEMTA website - www.semta.org.uk.

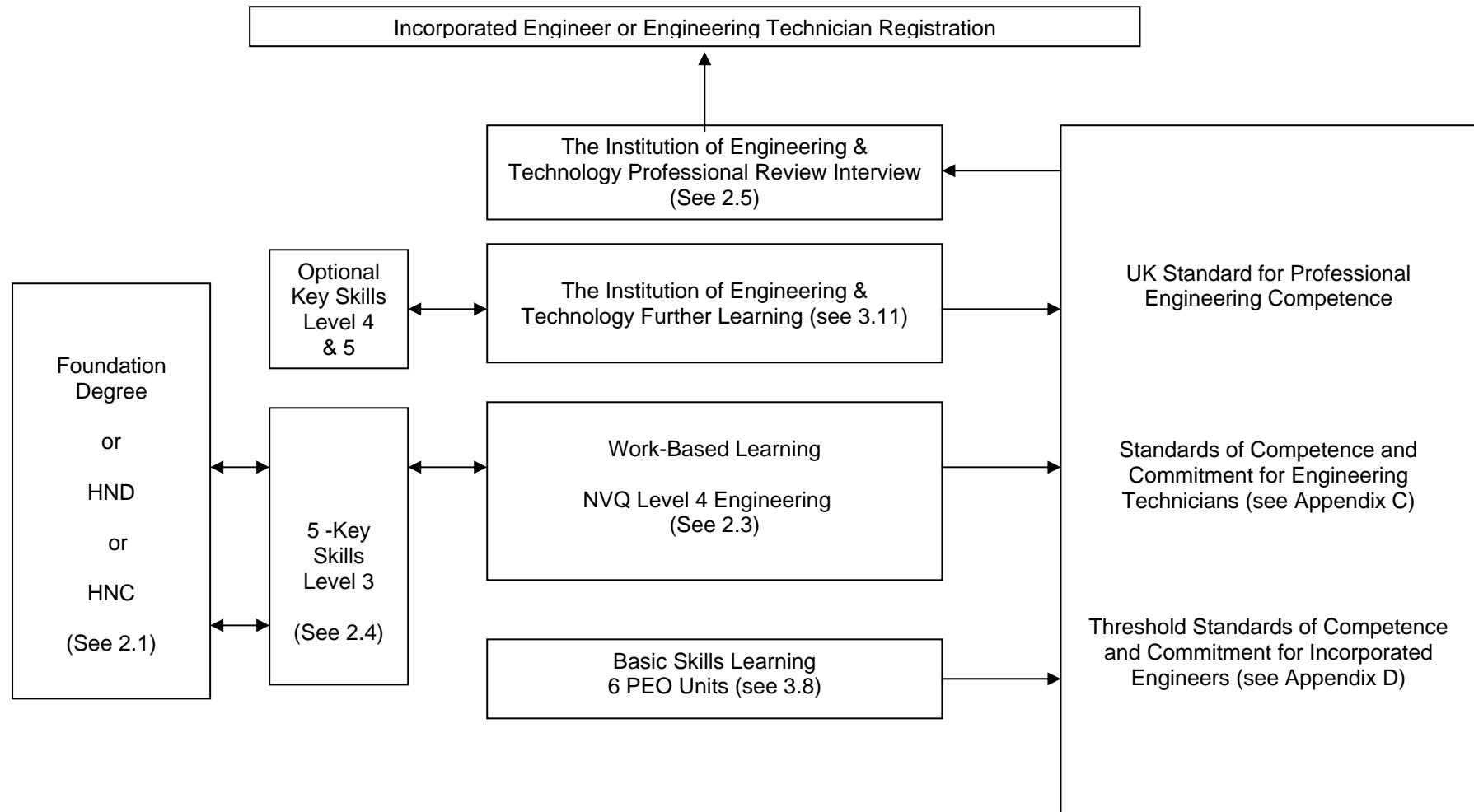
Group Training Associations / Work-based Learning Providers Partners

Learning providers have gained considerable knowledge and experience over many years delivering apprenticeship programmes to both large and small employers. Their involvement in the development of the Higher Apprenticeship is critical to its success. Learning providers and SEMTA have a long and successful record of partnership working.

Professional Body Partners

Professional bodies and in particular the Institution of Engineering & Technology along Engineering Council ^{UK} play a very important role in shaping science, engineering and technology education and training, and IET is working very closely with SEMTA to determine whether Engineering Technician and Incorporated Engineer Registration is feasible and achievable on completion of the Higher Apprenticeship Framework.

1.6 Higher Apprenticeship Framework Model



2. Initial Consideration and Planning

2.1 Foundation Degree

An appropriate Foundation Degree and Further Learning to bachelors degree academic level, provides underpinning knowledge for Incorporated Engineer competence under UK SPEC.

Foundation Degrees (www.fdf.ac.uk) in engineering are vocationally focused higher education qualifications and are core to the higher apprenticeship. They potentially increase the number of those qualified as Engineering Technicians and Incorporated Engineers. Foundation Degrees in engineering are placed at intermediate level in the framework of higher education qualifications (FHEQ). They are accredited by IET on the basis of providing entry, with advanced standing to the final years of IEng accredited bachelors degrees.

Foundation degrees develop:

- Work-based 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.

Work-based learning is a major part of the foundation degree but higher-level knowledge and understanding reinforces and supports the development of vocational skills. Foundation degrees are normally developed through a partnership between employers and awarding bodies, such as higher education institutions.

There are five features that make a foundation degree different from other qualifications or degree as listed below.

- Employer involvement
- The development of skills, understanding and knowledge (technical and work-specific skills, relevant to the sector).
- Application of skills in the workplace
- Credit accumulation and transfer (foundation degrees provide 240 credits, 120 at level 4 and 120 at level 5)
- There must be guaranteed articulation arrangements with a least one bachelor's degree with honours.
- Higher apprenticeship programmes must make clear the subsequent arrangements for progression to such degrees and to professional qualifications or higher-level NVQs

From a review of Foundation Degrees, The Quality Assurance Agency for Higher Education (www.qaa.ac.uk) (QAA) has developed the Foundation Degree qualification benchmark.

Their document will act as an external reference point and will:

- Assist those directly involved to design and validate foundation degree programmes;
- Provide general guidance for describing the generic learning outcomes associated with the foundation degree;
- Support internal quality assurance;
- Assist reviewers to make judgements about foundation degree provision;
- Help other interested parties to understand the purpose, generic content and outcomes of foundation degree programmes.

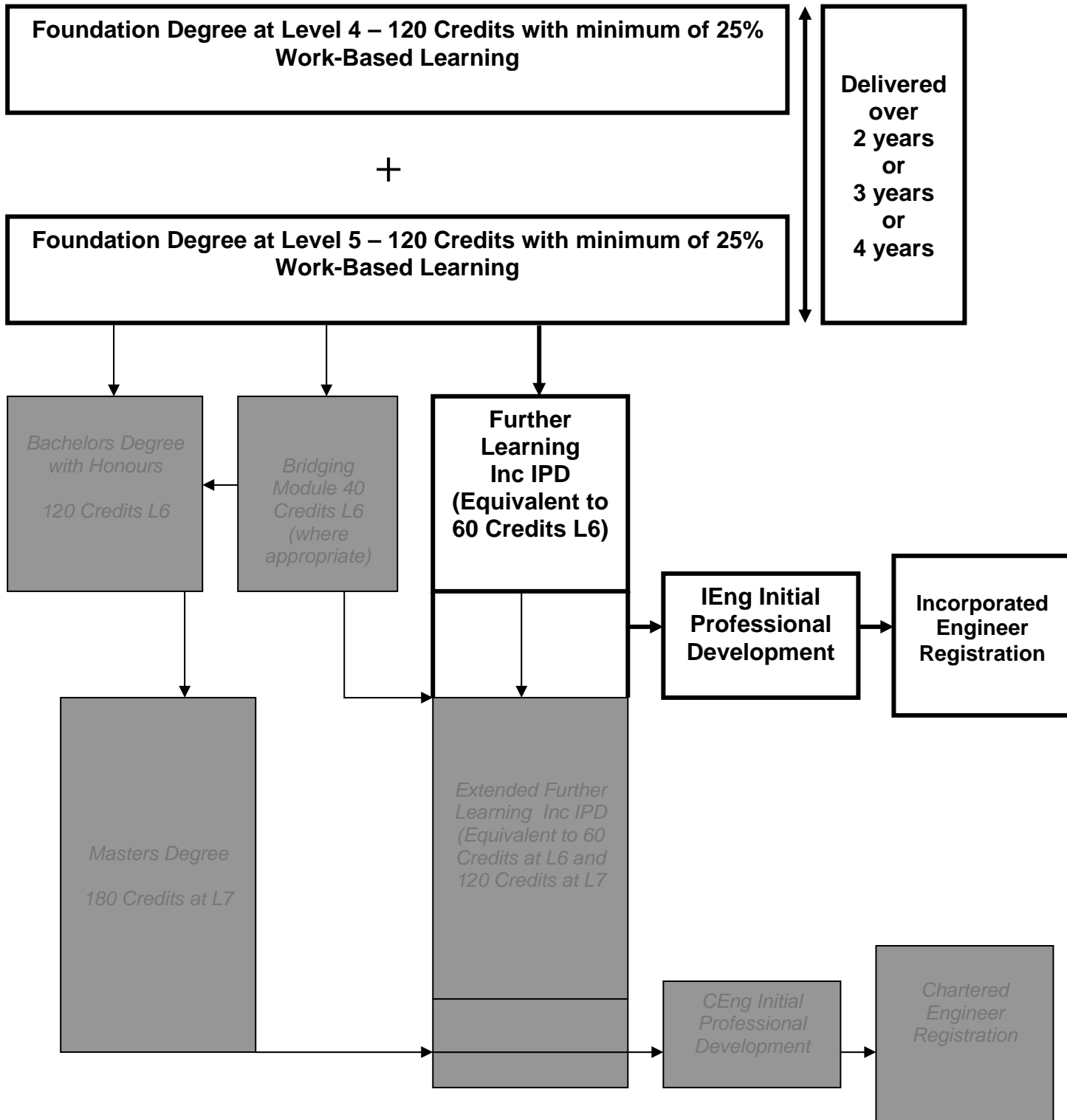
Foundation degrees represent an integration of these clear characteristics in a single award supported by work based learning: accessibility; articulation and progression; employer involvement; flexibility; partnership and specialist skills such as project management, engineering management. Foundation degrees allow learners to study full-time, part-time or via e-learning.

Progression to bachelor degree with honours

Foundation degrees are a qualification in their own right, but a key aim is that they encourage lifelong learning (www.lifelonglearning.dfes.gov.uk). Progression routes to bachelor's degrees with honours need to be established for those learners that choose this path. The current qualification framework requires that foundation degrees should have 240 credits of learning of which 120 credits are at higher education level 5. Those learners who complete the foundation degree will be well placed to progress to bachelor's degree with honours.

However, the balance between academic skills, and practical vocational skills in a foundation degree, may mean that some learners need a bridging course to strengthen the academic, research-related skills required by a bachelor's degree with honours.

Foundation Degree Model with Progression Routes



2.2 Accreditation of Prior Experiential Learning (APEL).

Where learners have evidence of relevant existing skills and knowledge credit can be given for this, which may shorten the period of time needed to obtain the foundation degree qualification, complete the Higher Apprenticeship and help focus learners study specifically on new learning. Effective APEL and credit awarding systems depend on;

- A proper understanding of the learning outcomes from the foundation degree
- An accurate understanding of the skills, qualifications and abilities of the learner and evidence they can supply to support their claim.

An understanding of how the two items above relate to each other.

2.3 NVQs

SEMTA works closely with industry to identify and define the skills and knowledge requirements for the various occupations within the sector. These competences are mapped to the overarching set of Engineering Competence Standards managed by OCSEng (Occupational Standards Council for Engineering), which are used as a platform to develop the National Occupational Standards.

The main use of the National Occupational Standards is for the development of nationally recognised qualifications such as N/SVQs. For this purpose, further work is undertaken with industry to group the appropriate units into qualification structures.

These qualification structures are made up of a number of units that everyone taking the qualification must do, together with a range of optional units to give the qualification sufficient breadth and to cover the variations across industry for a given occupation or range of related occupations.

The Higher Apprenticeship has one NVQ Level 4 route for learners.

6 - Mandatory NVQ Level 2 (Performing Engineering Operations (PEO) - See 3.9 for alternative initial learning) Units for initial learning;

1 - NVQ Level 4 (Engineering Leadership, Project Management) dependent on their entry route and prior experiential learning.

Higher Apprenticeship

The different NVQ mix for three entry routes into the Higher Apprenticeship is explained below.

For 18 year + school / college leavers, the NVQ requirements are as follows - 6 PEO Units, 1- NVQ Level 4 Engineering Leadership.

For Advanced Modern Apprenticeship achievers the NVQ requirements are as follows, 1- NVQ Level 4 Engineering Leadership.

For mature learners the NVQ requirements will depend on their prior experiential learning. They may however suit one of the following NVQ routes,

6 - NVQ Level 2 PEO or PMO Units, 1- NVQ Level 4 Engineering Leadership

or

1- NVQ Level 4 Engineering Leadership.

Please note that equivalent SVQs would also be acceptable. It must be noted that if SVQs were used within the framework then they would not be funded by the LSC.

2.4 Key Skills

The Key Skills levels identified below state the minimum level required to complete the Higher Apprenticeship. Learners should be encouraged and given the opportunity to achieve higher level Key Skills if appropriate to their needs and abilities.

- Application of Number Level 3
- Communication Level 3
- Information Technology Level 3
- Working With Others Level 3
- Improving Own Learning and Performance Level 3

Key Skills are essential skills which learners need in order to function effectively as members of a flexible, adaptable and competitive workforce. However, those learners who have previously achieved good grade qualifications in literacy, numeracy and/or computer skills need not be asked to attempt Key Skills in accordance with the regulatory bodies guidelines. Please see the following statements below.

Proxy qualifications are those qualifications that have been agreed to assess the same knowledge and skills aspects as the Key Skills. Because of this overlap, learners can claim exemption from all or part of particular Key Skills qualifications for up to three years from the date of the award of the specific accredited proxy qualifications. For full details of accredited proxy qualifications, please visit the QCA website: www.qca.org.uk

Success in key skills qualifications attracts UCAS (www.ucas.ac.uk) Tariff points: 20 points for each key skill of Communication, Application of Number, and Information Technology at level 3. Universities take a variety of approaches to recognising these Tariff points for offer purposes, this will help learners progressing from foundation degree to bachelors degree.

The undergraduate development of key skills may be added as “Entry Profiles” in the university course database. Each profile includes listing of skills that are essential to the field of study and the aim is to include these profiles in all university courses, around 50,000 in all. As well as signalling the value of key skills to university course applicants, this process also encourages admissions tutors and course teams to consider the importance of underpinning skills.

The arrangement for proxy qualifications, identified by QCA, is available to higher apprenticeship learners at key skills level 3. For further details on queries relating to proxy qualifications, please refer to the Key Skills Policy and Practice: Your Questions Answered document available from QCA.

Please note that the Key Skills external test is no longer compulsory in Wales.

2.5 Route to Engineering Technician and Incorporated Engineer Registration

An important outcome from this Higher Apprenticeship Framework is for learners to gain recognition as professional Engineering Technicians or Incorporated Engineers. Therefore the framework has been designed under guidance from The Institution of Engineering & Technology (IET) to give learners clear pathways to either Engineering Technician or Incorporated Engineer registration.

The IET see all components of the framework as necessary to contributing to learners' development of the necessary skills, knowledge, competence and commitment. Starting with basic skills learning of NVQ Level 2 (PEO / PMO), a Foundation Degree with its work-based learning, Key Skills Level 3, NVQ Level 4, and through Further Learning. This leaves HA learners with their professional Review (and interview) with IET to present their professional competence and demonstrate commitment to achieve registration.

IET Professional Review

The IET Professional Review is the assessment procedure for registration with the Engineering Council^{UK}. Following the submission of an application form, the Professional Review comprises of an assessment of academic qualifications, the proposer's forms and the evidence summary. For applicants seeking Chartered or Incorporated Engineer registration the process is then completed by an interview. Applicants seeking EngTech registration may be called for interview if the details on the application form do not provide sufficient evidence for a decision to be made.

IET PR Interview

The Professional Review Interviewers make a holistic assessment of professional competence and provide applicants an opportunity to expand on the information within their applications. Applicants are given opportunity to demonstrate their commitment to the profession, to Continuing Professional Development (CPD) and other codes of conduct. Following the PR interview, a report is sent to the IET's Membership Committee for final assessment.

IET Assessment

The Membership Committee carries out the final stage of the assessment. Representatives are drawn from a cross section of engineering industry and consider a large number of applications. They review evidence from statements describing the applicants' current position, professional experience, the qualifying report on professional development, the interview report and reports from supporters.

New Higher Apprenticeship learners will be encouraged to become Associate Members of IET when they start their apprenticeship, in order to gain from IET's help and support for learners during their journey to registration.

What is an Incorporated Engineer (IEng)

Incorporated Engineers are specialists in the development and application of today's technology, managing and maintaining applications of current and developing technology at the highest efficiency. With their detailed knowledge and understanding of current engineering applications, they have the skills and know-how to make things happen and often have key operational management roles. They have a detailed understanding of a recognised field of technology and exercise independent judgement and management in that field. They add substantial value, independently and as leaders, to any organisation where technology is a core activity or supports the business.

What is an Engineering Technician (Eng Tech)

Engineering Technicians are creative and skilled engineering practitioners, often with responsibility for operational engineering and other staff. They apply knowledge and proven techniques and procedures to the solution of practical problems in a wide variety of contexts. They carry a measure of supervisory and technical responsibility and are competent to exercise creative aptitudes and skills within defined fields of technology. They make a key contribution to a range of functions, including design, development, manufacture, commissioning, operation and maintenance of products, equipment, processes and services. They apply safe systems of work.

2.6 Optional Outcomes

During the IET Further Learning learners may wish to undertake Key Skills at Level 4 and 5.

2.7 Additional Employer Requirements

Employment Responsibilities and Rights

Employment Responsibilities and Rights (ERR) include material covering:

- The responsibilities and rights of workers (including Equal Opportunities and in Wales, Welsh Language legislation)
- The organisation, disciplines and representative structures of the industries concerned
- The impact on the sector of public law and policies.

For this framework, our industry steering group has recommended that ERR is included in the induction and subsequent phases of the industrial period, and to this end SEMTA have produced ERR workbooks both for learners and trainers.

ERR must be completed by the end of the Higher Apprenticeship. On completion, the trainer or training provider must fill in the 'Confirmation of Completion' form contained within the ERR workbook. This has to be signed by the trainer and by a director or senior manager of the employing organisation.

In order to obtain the final Higher Apprenticeship certificate, the form must be submitted with the Certificate Request Form, alongside all other corresponding evidence required.

3 Implementation

This section explains the key processes that employers and providers need to follow to ensure that learners are recruited fairly. It outlines the learning and other support processes learners' need to complete their apprenticeship, safely and within the timescales set down in the individual learning plan.

3.1 Entry Requirements

This framework does not impose any restrictions to entry such as minimum levels of qualification. However for entry, learners' must be able to demonstrate the potential to achieve NVQ level 4, and have sufficient knowledge and ability to undertake learning to achieve Key Skills at level 3 and a vocational education qualification at level 4 (HNC minimum).

Typically, this framework would be ideally suited to a young person coming into the industry with suitable A Levels, AVCE (vocational A level) or perhaps a National Certificate /Diploma in an engineering discipline. This framework may also attract individuals who have completed the Advanced Modern Apprenticeship in Engineering and are looking for progression, or mature employees looking for personal development and progression.

The prime responsibility for selection and recruitment of the learners lies with individual employers and providers who will have a clear idea of their own requirements. The framework embraces a wide range of levels, types of job and different career paths and therefore the broad principles of selection must be sufficiently flexible to allow employers to tailor them to meet their particular requirements.

As a general guide, learners should have the following skills and attributes:

- Self motivation to succeed within the industry
- A demonstration of numeracy and literacy capability
- Self discipline and enthusiasm
- Willingness to learn and apply that learning in the workplace
- Willingness to work with due regard to Health & Safety of self and others
- Willingness to communicate effectively with a range of people
- Willingness to work flexibly, encompassing both on and off job environments
- Willingness to observe the employer's terms and conditions of employment.

3.2 Recruitment and Selection

Learners may be recruited through a number of routes, for example:

- Referred to employers by local providers
- Referred by Connexions/Careers Service or local Employment Service Agency
- Recruited directly by employers and providers through their normal recruitment and selection procedures
- Already employed by the company.

Employers / Providers are responsible for the recruitment and selection of learners, based on clear Equal Opportunity policies and procedures. Where employers do not have formal Equal Opportunity policies and procedures, providers will be able to advise.

Employers / Providers will be expected to use a range of evidence to recruit learners, typically this may include:

- Formal or recognised qualifications
- C.V.
- Initial assessment
- Interview
- Key Skills diagnostic tests
- Observation/assessment
- Psychometric tests
- References
- Trainability tests.

The recruitment process is also an opportunity for the learner to find out about the employing organisation and how he/she might fit in. Employers will want, therefore, to provide clear information about their organisation's business, culture, structure and learning and development opportunities they provide.

Learners assessed as having additional learning and/or social needs but who, with the appropriate support, are capable of achieving the Higher Apprenticeship outcomes, may be able to attract additional funding from the local LSC/ELWa.

3.3 Learning Agreement

The learners need to understand what they can expect. A learning agreement is a useful way of setting out what has been agreed between the learner and Higher Apprenticeship employer / provider. Learning agreements have a number of benefits, including:

- Helping learners develop a greater sense of ownership of their learning.
- Help to clarify the roles and responsibilities of everyone involved.
- To clarify the learning goals and outcomes.
- To explain the methodology being used to achieve the learning goals and outcomes.
- To explain the resources being made available to learners.
- To explain how learners will be assessed and the level of credit being sought and awarded.

The employer, provider, learner and funding agent are encouraged to sign a Learning Agreement, normally within four weeks of starting the apprenticeship. This agreement lays down the commitment and responsibility of each party to the apprenticeship. A sample Learning Agreement is provided in Annex F. SEMTA is happy for these arrangements to be used, as long as they meet the requirements laid down in this framework.

3.4 Initial Assessment

Learners will need to be assessed before, or where this is not possible, immediately upon entry to the Higher Apprenticeship. This is in order to ensure their suitability for the demands of learning, the occupational sector and their potential to achieve the mandatory outcomes. The details of the assessment carried out must be in writing and must be kept. Initial assessment needs to be carried out by experienced personnel. The funding agent or provider should be able to advise employers.

Learners who are assessed as suitable for a Higher Apprenticeship and are shown to need additional support will receive relevant extra help to enable them to progress towards completion of their apprenticeship.

3.5 Individual Learning and Assessment Plan

At the start of the Higher Apprenticeship each learner should be given an individual learning and assessment plan, which has been agreed between the employer, provider, learner and local LSC/ELWa.

The plan should include:

The outcomes of the planned apprenticeship including (where not already achieved):

- Initial Stage Learning
- The work-based learning NVQ Level 4
- Key Skills at level 3
- An appropriate vocational education course – Foundation Degree (HNC/D minimum)
- Additional outcomes (specified by the employer)
- Employment Rights and Responsibilities

A broad outline of the skills and knowledge to be covered, including how Health and Safety is incorporated into the apprenticeship.

The structure of the planned apprenticeship including:

- Formal vocational learning
- Work-based skills development
- Appropriate vocational education

The delivery of the planned apprenticeship including:

- Who will be responsible for providing each aspect of the content
- Where the learning will take place
- How progress will be reviewed and performance assessed
- How the responsibility for Health and Safety in each delivery location
- Approximate time scales for achievement of outcomes

Review of progress including:

- The form of the formal review procedure
- Who will take responsibility
- Who else will be involved
- How frequently

The assessment of the outcomes:

- How competence will be assessed and by whom
- Expectations of learners in providing portfolio evidence

3.6 Induction

A formal induction process is a mandatory requirement of the Higher Apprenticeship. The work-based elements of induction are the responsibility of the employer. The employer or provider undertakes other elements.

Induction should be seen as an ongoing process, rather than a one-off event and employers and providers will need to select the most appropriate method and timescales for inclusion in the Individual learning Plan.

Health and Safety is of fundamental importance and must be an integral and explicit component of all parts of the apprenticeship, including induction, off-the-job learning, vocational education and work-based learning. The content of the induction will vary according to the employers' requirements. However, by the end of the induction process, every learner must:

- Understanding and application of Health and Safety policies and procedures (including fire, accident and emergency)
- Have an awareness and understanding of Equal Opportunity and anti-discriminatory policies
- Understand their own and others responsibilities, including the procedure for making a complaint
- Have an overview of the employers' business, the sector within which it operates, its structure, personnel and terms and conditions
- Be familiar with the physical working environment
- Be introduced to the key people who will be involved in their learning, assessment and supervision
- Have an awareness and understanding of the employers' policies, procedures and values
- Understand the purpose and requirements of the apprenticeship, including NVQ and Key Skills learning and assessment.
- Understand Foundation Degree learning and assessment.
- Understand and have agreed an Individual learning Plan and contract of employment, which will be signed by the learner, employer, provider and funding agent
- Understand and have agreed and signed a Learning Agreement
- Understand there is a process of professional registration operated by IET and possess a basic understanding of the professional requirements for recognition and how to apply for associate membership of IET

For this framework, the industry steering group has recommended that Employment Responsibilities and Rights (ERR) is included in the induction and subsequent phases of work-based learning, and to this end SEMTA have produced ERR workbooks both for learners' and trainers'. ERR must be completed by the end of the apprenticeship.

Should the learner change employer during the apprenticeship, the induction process should be repeated to ensure all relevant information concerning the new employer (or provider) has been provided. Where a learner moves around within a large employer, or a work-based placement with another employer, or is working with a provider as well as an employer, additional induction learning covering each situation is required.

3.7 Learners Handbook

The employer / provider should make a higher apprenticeship handbook available to learners with the minimum requirements as listed below.

The purpose of the handbook is to help learners with key documents and processes. It should contain the foundation degree syllabus and learning outcomes, NVQ and Key Skills standards together with evidence guides. The handbook should demonstrate to learners how mentors and assessors guide and support them through the higher apprenticeship.

The handbook should include:

- a) The Learning Agreement, signed by all parties.
- b) The Individual Learning Plan with agreed targets, milestones and signed by all parties.
- c) The induction process.
- d) The guidance and support procedures from the employer / provider.
- e) Copy of the Foundation degree syllabus and learning outcomes.
- f) Copies of NVQ and Key Skills standards and evidence guides.
- g) Copies of relevant health and safety procedures and documents.
- h) Copies of other key document, policies and procedures

3.8 Initial Stage Learning

Initial Stage Learning is intended to equip learners with a broad base of basic engineering skills, knowledge and understanding. It is intended as a firm basis on which further work-based skills can be developed. Learners entering the industry straight from school or college may require a substantial period of structured off-the-job training, under close supervision, before any work-based learning can be undertaken.

The outcomes for Initial Stage Learning are defined as 6 Units Performing Engineering Operations NVQ Level 2. These must include:

- Unit 1 Working safely in an engineering environment
- Unit 3 Using and communicating technical information

Alternative Initial Stage Learning may be acceptable if agreed with SEMTA, in writing, prior to commencement of apprenticeship.

For those learners 25 years of age and over, then 6 Units of Performing Manufacturing Operations (PMO) NVQ level 2, is acceptable as an alternative to achieving 6 Units from PEO NVQ level 2.

PATTERN OF DELIVERY FOR INITIAL STAGE LEARNING

It is not a requirement of the framework that the Initial Stage Learning (PEO) must take place entirely off-the-job. However, it is extremely unlikely that all the components could be satisfactorily delivered during work-based learning. Acceptable patterns are:

- A continuous block of off-the-job training
- A series of shorter blocks of the off-the-job training together with periods of work-based learning in-company
- '3-days off, 2-days work-based learning' pattern (or vice versa)
- Continuous work-based learning (only if the employer has a previous track record of successful initial stage learning delivery and is fully aware of all health and safety and welfare considerations).

It should be noted that some employers (especially SMEs) are reluctant to offer learners off-the-job learning because of commitment. Therefore a pattern of '3-days off-the-job, 2-days work-based learning' or some other pattern of delivery whereby the learners spends a reasonable proportion of the Initial Stage Learning in the company may be more successful in encouraging this type of employer to participate.

Initial Stage Learning is intended to be just that, i.e. a broad base of learning on which to build further skills development. It is not appropriate that the Initial Stage Learning extends or overlaps to any great extent with the work-based development of the skills required for the NVQ Level 4. Therefore, a pattern, which extended the Initial Stage Learning to two years or more, on perhaps a one-day-a-week basis, would not be acceptable.

The minimum time guide for completion of Initial Stage Learning is 450 hours. However, as with any NVQ, it is the achievement of competence that is the important factor.

Off-the-job learning is defined as learning that takes place within the workplace, but away from the normal day-to-day work responsibilities, for example, using a computer or

Higher Apprenticeship

distance learning materials in a separate room or office away from the workplace at the premises of a learning centre or local college.

MINIMUM PERIODS OF TRAINING

The average length of stay for the Higher Engineering Apprenticeship is specified as between 3 and 4 years, i.e. 42 months. In practice, this is considered indicative only as the learners' progress will depend on the achievement of the required apprenticeship outcomes.

3.9 Work-Based Learning

Periods of work-based learning will need to be well planned and understood by learners, employers, providers and all associated personnel. For learners to achieve NVQ, Key Skills and Foundation Degree learning outcomes, projects of work will need to be well planned and organised. Mentors can guide and support learners during periods work-based learning. Assessors can develop effective assessment plans with learners to ensure no opportunity for collecting evidence and demonstrating competence is lost. Throughout the Higher Apprenticeship the links between work-based learning and academic study must remain strong, as learning outcomes will be the same. Work based skills development as previously stated should be delivered largely on-the-job in the workplace, integrated with periods of off-the-job learning where necessary. In some circumstances, the nature of the employers business may mean that such learning will need to be delivered in a simulated situation in a training centre.

3.10 Academic Learning

During periods of academic learning employers, providers, mentors, assessors and other associated personnel should keep in contact with learners to support and encourage them through these periods of intense study. HEI and FE establishments have support processes to help learners achieve the learning outcomes and to overcome problems that may arise. The vocational education component should be delivered in a centre approved by one of the recognised Awarding Bodies for delivery of engineering programmes or at a higher or further education institute.

The actual time taken to complete various aspects of the learning for each individual will vary depending on the knowledge and skill of the person on entry, and his or her ability to learn and the actual components required in each case.

The pattern of formal learning, education and work based skills development should be that which is most appropriate for the circumstances of the employer, the needs and capabilities of the learner and the centre for education.

3.11 Further Learning

The IET further learning should be carried out during the last year or so of the Higher Apprenticeship to demonstrate that additional knowledge and understanding has been gained so indicating the final academic attainment is equal to that of a three-year bachelors degree.

The further learning must be based on real work and be independent of the NVQ Level 4; however the work undertaken during completion might be used as the basis of the further learning evidence. The Institution of Engineering & Technology (IET) will carry out assessment of the further learning. Learners are invited to send an outline of their further learning to IET for confirmation of suitability of their proposed work if they so desire.

3.12 Learner Support / Monitoring and Review

The Individual Learning Plan and the progress of learners should be reviewed regularly, at a minimum of every 3 months. Reviews should take place more frequently where lack of progress or other factors are causing concern. Any changes to the Individual Learning Plan must be agreed with the learner. Where the need for additional help has been identified, the review will include the extent to which extra support is successfully addressing those needs.

It is ultimately the LSC/ELWa's responsibility to ensure that the employer and/or provider reviews the individual learners progress on a regular basis and the mechanisms need to be agreed at the start of learning with all parties concerned.

Reviews should include:

- The provider of formal learning (if any)
- The provider of the vocational education
- The supervisor/line manager / trainer involved in the work based skills development
- The mentor
- The Assessor
- The Learner

Reviews should be carried out **at least every 3 months**, and more frequently if required.

3.13 Mentors / Assessors

Learners often benefit from having someone to whom they can discuss their progress, learning and problems. Mentoring increases the chances of learners successfully completing their apprenticeships. Employers / providers gain because they are able to retain learners and can find this a useful way of offering personal development to experienced members of staff who would like to develop their listening, coaching and feedback skills. A member of staff who fills this role is generally called a 'mentor'. Whilst having a mentor is optional, however, it is good practice for all learners to have access to mentors and it is expected by IET.

The NVQ competencies must be carried out in line with relevant Awarding Body assessment and verification procedures. For NVQ Level 4, Approved Assessment

Higher Apprenticeship

Centres' must have assessors possessing current occupational competence to assessor at level 4.

3.14 Risk Assessment

Employers / providers as part of their statutory responsibilities under the Management of the Health and Safety at Work Regulations 1999, are required to:

- Assess the risk to the individual before they start work
- Take account of their inexperience and lack of awareness of existing or potential risks
- Address specific factors in the risk assessment
- Take account of the risk assessment in determining whether the individual should be prohibited from certain work activities, except where it is necessary for their training
- Ensure risks are reduced as far as reasonably practicable
- Ensure proper supervision is provided by a competent person

Check their employer's liability insurance to ensure that no exclusions apply

3.15 Health and Safety

Health and Safety is a formal part of the induction process and every learner should understand their responsibilities to protect themselves and other people. All partners involved in the implementation this apprenticeship must adhere to their statutory responsibilities for Health and Safety as follows:

- A safe working environment for learners must be provided whilst they are at work or in formal learning
- Appropriate learning on Health and Safety in the workplace must be given to each learner
- Awareness of, and compliance with, legislation relating to the Health and Safety at Work Act 1974, the Working Time Regulations 1998 and any other relevant legislation must be demonstrated
- Certain engineering processes require additional Health and Safety learning and the use of protective equipment. Learners should not be exposed to these processes without appropriate Health and Safety learning and close supervision
- Learners must be aware of and comply with their statutory responsibility for Health and Safety at work. This relates to their own safety and to the safety of others in the work place. They must also be aware of, and comply with, any additional Health and Safety procedures laid down by their employer/provider
- Local LSCs/ELWAs are responsible for monitoring the compliance of providers to their statutory Health and Safety obligations and will carry this out through their quality assurance procedures
- Providers will monitor the compliance of employers with Health and Safety statutory requirements

3.16 Equality and Inclusion

The LSCs/ELWa has a statutory duty (Learning and Skills Act 2000, section 14) to have due regard to the need to promote equality of opportunity between people from different racial groups, men and woman, people with a disability and people without.

Whilst Equal Opportunities has been identified here under a separate heading, the principles relate to all those systems and procedures which have the potential to discriminate against apprentices at any point during the programme - from recruitment and selection and induction, through to successful completion.

There should be “open recruitment” of learners to the programme, which is available to anyone over the age of 18, regardless of gender, ethnic origin, religion/belief, sexual orientation or disability who meet the stated selection criteria.

All partners involved in the delivery of the Higher Apprenticeship - local LSCs/ELWa, providers, assessment centres and employers - must be committed to a policy of Equal Opportunities and must have a stated Equal Opportunities policy and procedures.

Employers / providers must be able to demonstrate that there are no overt or covert discriminatory practices in selection and employment. All promotional, selection and learning activities must comply with relevant legislation, such as:

- The Sex Discrimination Act, 1975 (and 1986) and Code of Practice
- The Race Relations Act, 1976 and Code of Practice
- The Disability Discrimination Act, 1995 and Code of Practice
- EU Equal Treatment Framework Directive (2000/78)
- Race Relations (Amendment) Act 2000
- Special Educational Needs & Disability Act 2001 and Code of Practice
- Equal Pay Act 1970 and Code of Practice

Learners’ knowledge about Equal Opportunity policies and procedures can be used as evidence for the Employment Responsibilities and Rights component of this framework.

3.17 Equal Opportunities / Monitoring Procedures

Employers / providers will monitor Equal Opportunities policies and procedures and take positive action when necessary. It is also recommended that employers / providers conduct an exit interview if learners leave the apprenticeship before completion.

SEMTA has developed an on-line National Learner Feedback system (www.apprentice-feedback.com). Its purpose is two fold: firstly, to give employers, providers and others the means by which to gather feedback from their learners on

Higher Apprenticeship

the quality of their learning and how it might be improved and, secondly, to provide sector-wide data on levels of learner satisfaction with the apprenticeship process.

The funding agent has overall responsibility to monitor Equal Opportunities practice to ensure that employer / providers meet the criteria specified in their quality management systems. This includes monitoring the representation of learners in terms of gender, ethnicity and disability to ensure that it reflects, as far as possible, the levels of representation within the local community.

SEMTA will retain responsibility for the development of the Higher Apprenticeship framework and for monitoring Equal Opportunities, primarily by the analysis of statistical returns. Where questions arise concerning policy and practice, SEMTA will work closely with the funding agents concerned to identify causes and to implement positive action where appropriate

3.18 Learner Complaint Procedure

Occasionally learners may wish to make a formal complaint or grievance during their apprenticeship.

All learners:

- Have the right to complain
- Have the right to investigation of genuine complaints
- Must be informed of the complaints procedure by their provider
- Must be informed of the outcome of their complaints.

Where a learner has a complaint against their employer regarding employment issues, this is a matter for the employer and employee where employment law provides appropriate remedies.

Providers must ensure that learners are fully informed of the complaints procedures and are given every support throughout the complaints process.

3.19 Early Leaving / Termination of Apprenticeship

The processes outlined in this framework have been designed to ensure that the right person is matched to the right occupation and at the right level. The monitoring, review and support mechanisms will reduce the chances of learners leaving before completing the full apprenticeship.

In the case of employed learners, if the employer is not able to continue with the apprenticeship, either through redundancy or where the relationship between the learner and employer has broken down, the employer's terms and conditions of employment will apply. The funding agent and provider will apply all reasonable endeavors to help the learner find an alternative apprenticeship.

4. Achievements and Progression

4.1 Achievement

The successful learners will receive a Higher Apprenticeship completion certificate from SEMTA. This is separate from, and in addition to, those certificates awarded for the achievement of the individual components of the framework e.g. NVQ, Key Skills and Vocational Qualification.

Providers are responsible for claiming the completion certificate from SEMTA and for providing evidence of completion of the mandatory outcomes. They are also responsible for ensuring that learners receive the completion certificate when awarded by SEMTA.

SEMTA's requirements for claiming the completion certificate:

- A Certificate Request Form can be obtained from the SEMTA website: www.semta.org.uk under the heading 'Useful Documents' within the 'Training Frameworks and Development' section.
- The Certification Request Form must be completed (please refer to the guidance document which accompanies the Certificate Request Form) and signed by the centre coordinator (applicable to EAL centres) or main centre contact, and returned for each individual learner, together with supporting evidence verifying that all mandatory outcomes have been met. It is the providers' responsibility to ensure that all relevant documentation is submitted.

If the above procedures are adhered to, certificates should be received within 15 working days from receipt of the application form.

Note: Please ensure that learners registered onto the Higher Apprenticeship at commencement of learning not only with the local LSC/ELWa but also with SEMTA. The Registration Request Form is available from the SEMTA website: www.semta.org.uk under the heading 'Useful Documents' within the 'Training Frameworks and Development' section.

4.2 Progression

The Higher Apprenticeship provides good preparation towards professional Engineering Technician or Incorporated Engineer registration. It may also, where appropriate, provide positive progression to a higher degree, NVQ Level 5 and possibly Chartered Engineer registration.

Early progression can be to job roles in a variety of technical functions to assist the work of technologists, assist in the design, development and maintenance of electronic systems, perform technical quality assurance related tasks, support the work of technical teams, and perform various other technical support roles. Job titles such as electronics engineer, quality assurance technician, commissioning engineer, validation of prototype technician, design for manufacture engineer, simulation engineer and customer target sign off technician would be typical in the sectors of automotive, shipbuilding, manufacturing, materials, aerospace and electrical / electronics sectors.

The terms Engineering Technician and Incorporated Engineer are the UK's benchmark for professionally recognised engineering skill and experience that entitles a person to registration with the EC^{UK}. SEMTA has formed a strategic partnership with the Institution of Incorporated Engineers. Employers and providers should encourage learners to become Associate Members of the IET and progress to full membership and registration when apprenticeship is complete. Further progression to Chartered status may be possible for those that undertake appropriate further academic qualifications (degree programmes, BEng and MEng, plus additional working experience and learning as necessary).

5. Other information

5.1 Employed status of Higher Apprenticeship learners

The Sector view is that employed status should be the norm in the Higher Apprenticeship.

Annexes

Annex A Engineering Leadership NVQ Level 4

Annex B IET Standards - Engineering Technicians

Annex C IET Standards - Incorporated Engineers

Annex D Professional Registration: UK-Spec

Annex E Accredited Academic Programmes

Annex F Sample Learning Agreement

Annex G SEMTA Higher Apprenticeship Steering Committee

Annex H NVQ Level 4 Reference

ANNEX A

ENGINEERING LEADERSHIP LEVEL 4

The candidate is required to complete a total of 12 assessment routes including two mandatory assessment routes and 10 optional assessment routes from the groups A – C (at least two should be from Group A and one from Group B).

Mandatory Assessment Routes

ENL4/001 Complying with statutory regulations and organisational safety requirements

ENL4/002 Manage your own resources and professional development

Optional Assessment Routes

Plus at least two from Group A:

Group A

ENL4/003 Identify engineering design requirements of clients

ENL4/004 Produce engineering specifications

ENL4/005 Identify and define areas of engineering research

ENL4/006 Develop a research methodology for engineering

ENL4/007 Propose and specify engineering research

ENL4/008 Undertake engineering research

ENL4/009 Evaluate the results of engineering research

ENL4/010 Establish an engineering design brief

ENL4/011 Develop a strategy for the engineering design process

ENL4/012 Create engineering designs

ENL4/013 Evaluate engineering designs

ENL4/014 Determine the requirements for engineering activities

ENL4/015 Specify methods and procedures to achieve engineering requirements

ENL4/016 Schedule activities for engineering methods and procedures

- ENL4/017 Obtain resources for the implementation of engineering activities
- ENL4/018 Implement engineering processes
- ENL4/019 Solve engineering problems
- ENL4/020 Monitor and evaluate engineering processes
- ENL4/021 Commission engineering products, processes or facilities
- ENL4/022 Configure engineering products, processes or facilities
- ENL4/023 Transfer control of engineering products, processes or facilities
- ENL4/024 Propose decommissioning of engineering products, processes or facilities
- ENL4/025 Decommission engineering products, processes or facilities
- ENL4/026 Analyse the risks arising from engineering activities
- ENL4/027 Specify risk reduction methods and procedures
- ENL4/028 Investigate accidents relating to engineering activities
- ENL4/029 Implement quality assurance methods and procedures
- ENL4/030 Improve the quality of engineering products or processes
- ENL4/031 Producing detailed drawings using computer aided techniques

Plus at least one from Group B:

Group B

- ENL4/032 Develop and implement operational plans for your area of responsibility
- ENL4/033 Provide leadership in your area of responsibility
- ENL4/034 Ensure compliance with legal, regulatory, ethical and social requirements
- ENL4/035 Promote equality of opportunity and diversity in your area of responsibility
- ENL4/036 Encourage innovation in your area of responsibility
- ENL4/037 Implement change
- ENL4/038 Develop productive working relationships with colleagues and stakeholders
- ENL4/039 Recruit, select and keep colleagues

ENL4/040 Allocate and monitor the progress and quality of work in your area of responsibility

ENL4/041 Manage finances for your area of responsibility

ENL4/042 Ensure your own actions reduce risks to health and safety

ENL4/043 Manage business processes

ENL4/044 Monitor and solve customer service problems

ENL4/045 Work with others to improve customer service

Group C

ENL4/046 Develop strategic objectives for the project R/102/0523

ENL4/047 Prepare a project brief H/102/0526

ENL4/048 Establish requirements of the project management team M/102/0545

ENL4/049 Develop operational objectives for the project Y/102/0555

ENL4/050 Develop a work breakdown structure for the project D/102/0573

ENL4/051 Specify activities for project schedules T/102/0529

ENL4/052 Recommend the means of procuring resources for the project R/102/0568

ENL4/053 Develop a detailed schedule for the project H/102/0557

ENL4/054 Select and agree a procurement strategy and procedure(s) A/102/0550

ENL4/055 Recommend and agree the type and conditions of contract F/102/0551

ENL4/056 Co-ordinate, monitor and control project schedules H/102/0560

Annex B

STANDARDS OF COMPETENCE AND COMMITMENT FOR ENGINEERING TECHNICIANS	
THE STANDARD	HOW YOU MIGHT DEMONSTRATE YOU MET IT
Engineering Technicians must be competent throughout their working life, by virtue of their education, training and experience, to:	Tell us about your career and the education and training you have received. Explain how the experience you have gained has made you more competent.
A Use engineering knowledge and understanding to apply technical and practical skills. <i>This includes the ability to:</i>	The reviewers will be looking for evidence that you have the know-how to do the job, and were able to go beyond the immediate requirements and use your experience to solve a problem or improve a process.
A1 Review and select appropriate techniques, procedures and methods to undertake tasks;	Describe something in your work you were involved in which didn't quite work and explain why.
A2 Use appropriate scientific, technical or engineering principles.	Drawing from your direct experience this might be an explanation of how a piece of equipment, system or mechanism works.
B Contribute to the design, development, manufacture, construction, commissioning, operation or maintenance of products, equipment, processes, systems or services. <i>In this context, this includes the ability to:</i>	Explain how you contribute to one or more of these activities.
B1 Identify problems and apply diagnostic methods to identify causes and achieve satisfactory solutions;	Show an example of how you have used measurement, monitoring and assessment to identify the source of a problem.
B2 Identify, organise and use resources effectively to complete tasks, with consideration for cost, quality, safety and environmental impact.	Illustrate how you make decisions about what material, component, people or plant to use or how to introduce a new method of working.
C Accept and exercise personal responsibility. <i>This may include the ability to:</i>	Describe an experience or instance where you have had to accept personal responsibility foreseeing a process through to completion within agreed targets.
C1 Work reliably and effectively without close supervision, to the appropriate codes of practice;	Your evidence should show how you personally identified and agreed with what had to be done and to what standards on a typical project.
C2 Accept responsibility for work of self and others	Minutes of meetings; site notes and instructions; Variation Orders; programmes of work; specifications, drawing and reports; appraisals. Voluntary work not associated with your job can contribute evidence.
C3 Accept, allocate and supervise technical and other tasks.	
D Use effective communication and interpersonal skills. <i>This includes the ability to:</i>	You will need to show you can: contribute to discussions; make a presentation; read and synthesise information; write different types of documents.
D1 Use oral, written and electronic methods for	Letters, faxes, reports, drawings, advice,

	the communication in English of technical and other information;	minutes, including of progress meetings, appraisals, work instructions and other planning and organising documents. Certificated by colleagues, clients, customers or management. Your application itself will be relevant.
D2	Work effectively with colleagues, clients, suppliers and the public.	Examples of how this has occurred, and your role at the time.
E	Make a personal commitment to an appropriate code of professional conduct, recognising obligations to society, the profession and the environment. <i>In order to satisfy this commitment they must:</i>	Your commitment will be to become part of the profession and uphold the standards to which all members subscribe. You need to show that you have read and understood your Institution Code of Conduct.
E1	Comply with the Codes and Rules of Conduct of their Licensed Institution or Professional Affiliate;	You will need to sign a personal undertaking. The professional review involves demonstration of, or discussion of, your position on typical ethical challenges.
E2	Manage and apply safe systems of work;	Evidence of current safety requirement - examples of good practice you adopt in your work. Will need to show that you have received a formal safety instruction relating to your workplace, such as a CSCS safety test, or an update on statutory regulations such as COSHH requirements.
E3	Undertake their engineering work making and utilising risk assessments, and observing good practice with regard to the environment;	Examples of methodical assessment of risk in specific projects; actions taken to minimise risk to health, safety or the environment.
4	Carry out continuing professional development, including opportunities for this offered by their Institution, to ensure competence in areas and at the level of future intended practice.	This means demonstrating that you have actively sought to keep yourself up to date, perhaps by studying new standards or techniques, and made use of magazines, Branch meetings, and other opportunities to network in order to keep abreast of change

Annex C

INCORPORATED ENGINEERS...	
...	
<p>Incorporated Engineers must be competent throughout their working life, by virtue of their education, training and experience, to:</p>	
A	<p>Use a combination of general and specialist engineering knowledge and understanding to apply existing and emerging technology.</p>
A1	<p>Maintain and extend a sound theoretical approach to the application of technology in engineering practice. <i>This could include an ability to:</i></p> <ul style="list-style-type: none"> o Identify the limits of own personal knowledge and skills o Strive to extend own technological capability o Broaden and deepen own knowledge base through new applications and techniques.
A1	<p>Maintain and extend a sound theoretical approach to the application of technology in engineering practice. <i>This could include an ability to:</i></p> <ul style="list-style-type: none"> o Identify the limits of own personal knowledge and skills o Strive to extend own technological capability o Broaden and deepen own knowledge base through new applications and techniques.
A1	<p>Maintain and extend a sound theoretical approach to the application of technology in engineering practice. <i>This could include an ability to:</i></p> <ul style="list-style-type: none"> o Identify the limits of own personal knowledge and skills o Strive to extend own technological capability o Broaden and deepen own knowledge base through new applications and techniques.
B1	<p>Identify, review and select techniques, procedures and methods to undertake engineering tasks. <i>This could include an ability to:</i></p> <ul style="list-style-type: none"> o Select a review methodology o Review the potential for enhancing engineering products, processes, systems and services, using evidence from best practice o Establish an action plan to implement the results of the review.
B2	<p>Contribute to the design and development of engineering solutions. <i>This could include an ability to:</i></p> <ul style="list-style-type: none"> o Contribute to the identification and specification of design and development requirements for engineering products, processes, systems and services o Identify problems and evaluate possible engineering solutions to meet client needs o Contribute to the design of engineering solutions.
B3	<p>Implement design solutions and contribute to their evaluation. <i>This could include an ability to:</i></p> <ul style="list-style-type: none"> o Secure the resources required for implementation o Implement design solutions, taking account of cost, quality, safety, reliability, appearance, fitness for purpose and environmental impact o Identify problems during implementation and take corrective action o Contribute to the evaluation of design solutions o Contribute to recommendations for improvement and actively learn from feedback on results.

C Provide technical and commercial management.

C1 Plan for effective project implementation.

This could include an ability to:

- o Identify the factors affecting the project implementation
- o Prepare and agree implementation plans and method statements
- o Secure the necessary resources and confirm roles in project team
- o Apply the necessary contractual arrangements with other stakeholders (client, subcontractors, suppliers, etc.).

C2 Manage the planning, budgeting and organisation of tasks, people and resources.

This could include an ability to:

- o Operate appropriate management systems
- o Work to the agreed quality standards, programme and budget
- o Manage work teams, coordinating project activities
- o Identify variations from quality standards, programme and budgets, and take corrective action
- o Evaluate performance and recommend improvements.

C3 Manage teams and develop staff to meet changing technical and managerial needs.

This could include an ability to:

- o Agree objectives and work plans with teams and individuals
- o Identify team and individual needs, and plan for their development
- o Manage and support team and individual development
- o Assess team and individual performance, and provide feedback.

C4 Manage continuous quality improvement.

This could include an ability to:

- o Ensure the application of quality management principles by team members and colleagues
- o Manage operations to maintain quality standards
- o Evaluate projects and make recommendations for improvement.

INCORPORATED ENGINEERS MUST BE COMPETENT THROUGHOUT THEIR WORKING LIFE BY VIRTUE OF THEIR EDUCATION, TRAINING AND EXPERIENCE, TO:

D Demonstrate effective Interpersonal Skills.

D1 Communicate in English with others at all levels

This could include an ability to:

- o Contribute to, chair and record meetings and discussions
- o Prepare letters, documents and reports
- o Exchange information and provide advice to technical and non-technical colleagues.

D2 Present and discuss proposals.

This could include ability to:

- o Prepare and deliver appropriate presentations
- o Lead and sustain debates with audiences
- o Feed the results back to improve the proposals.

D3 Demonstrate personal and social skills.

This could include an ability to:

- o Know and manage own emotions, strengths and weaknesses
- o Be aware of the needs and concerns of others
- o Be confident and flexible in dealing with new and changing interpersonal situations
- o Identify, agree and work towards collective goals
- o Resolve conflicts and create, maintain and enhance productive working relationships.

E Demonstrate a personal commitment to professional standards, recognising obligations to society, the profession and the environment.

E1 Comply with relevant codes of conduct.

This could include an ability to:

- o Comply with the rules of professional conduct of own professional body
- o Work constructively within all relevant legislation and regulatory frameworks, including social and employment legislation.

E2 Manage and apply safe systems of work.

This could include an ability to:

- o Identify and take responsibility for own obligations for health, safety and welfare issues
- o Ensure that systems satisfy health, safety and welfare requirements
- o Develop and implement appropriate hazard identification and risk management systems
- o Manage, evaluate and improve these systems.

E3 Undertake engineering activities in a way that contributes to sustainable development.

This could include an ability to:

- o Operate and act responsibly, taking account of the need to progress environmental, social and economic outcomes simultaneously
- o Use imagination, creativity and innovation to provide products and services which maintain and enhance the quality of the environment and community, and meet financial objectives
- o Understand and encourage stakeholder involvement

E4 Carry out continuing professional development necessary to maintain and enhance competence in own area of practice.

This could include an ability to:

- o Undertake reviews of own development needs
- o Prepare action plans to meet personal and organisational objectives
- o Carry out planned (and unplanned) CPD activities
- o Maintain evidence of competence development
- o Evaluate CPD outcomes against the action plans
- o Assist others with their own CPD

ANNEX D

Professional Registration

UK-SPEC A New Standard for Professional Engineering

On 1st December 2003 EC^{UK} launched UK-SPEC the "UK Standard for Professional Engineering Competence". A new standard for Professional Engineers and Engineering Technicians, it replaces SARTOR 3 (Standards and Routes to Registration). EC^{UK} anticipates that implementation by the engineering institutions will begin on 1st March 2004.

The EC^{UK} wants to ensure that full backwards compatibility is achieved by ensuring that no one who has started studies or professional development under SARTOR 3 will be disadvantaged by this new standard. No one should delay his or her application as a result of the introduction of the new standards unless specifically advised to do so.

The key developments within UK-SPEC are as follows:

- "Competence" will be a key measure of the Professional Engineer.
- Greater transparency and flexibility of approach in the routes to Registration.
- CEng - the accredited BEng (Hons) degree plus further learning to Masters level or Accredited MEng will become the "benchmark" to provide the necessary knowledge and understanding.
- IEng - the exemplifying qualification will be an Accredited Bachelor degree. Popular and well-regarded qualifications such as HNC and HND will be recognised if suitable further learning contributes to necessary knowledge and understanding.
- EngTech - a range of qualifications will be recognised, of which the most popular is likely to be the National Certificate or Diploma.

The use of A-level entry grades, Scottish Highers, SVQ's, etc, as a major criterion for accreditation of degrees has been replaced by an Output Standards framework.

Annex E

ACCREDITED ACADEMIC PROGRAMMES **JANUARY 2005**

The IET, as a Licensed Body of the Engineering Council (UK), has accredited the following programmes as meeting the academic requirements for IEng registration. Please note Higher National programmes partially meet IEng academic requirements and Further Learning is required to meet the full educational base.

Annex F

Sample Learning Agreement

This Agreement between:	
Employer	_____
Learner	_____
Parent/Guardian (If aged under 18)	_____
Provider	_____
Made	_____ On Date _____

1. The Employer's Responsibilities
 - 1.1 To employ, or sponsor, and pay the Learner in accordance with agreed terms and conditions.
 - 1.2 To agree jointly with the Provider and Learner, an Individual Learning Plan ensuring that satisfactory progress is maintained. Any changes to the plan to be agreed at review stages.
 - 1.3 To provide, as far as is reasonably practical, the experience, facilities and learning necessary to achieve the learning objectives specified in the Individual Learning Plan without loss of wages / salary and to treat the Learner fairly and reasonably as an employee would be treated.
 - 1.4 If the Apprenticeship is terminated due to redundancy, to attempt, with the assistance of relevant organisations, to arrange employment for the Learner, for the duration of the Apprenticeship, with another employer.
 - 1.5 To undertake legal and contractual responsibilities for the Health and Safety of the Learner.
 - 1.6 To ensure conformity with the employer's Equal Opportunity policy.
2. The Learner's Responsibilities
 - 2.1 To work for the Employer to the best of his / her ability and in accordance with the Employer's policies and procedures.

- 2.2 To observe the Employer’s terms and conditions of employment.
- 2.3 In both working and learning, to be diligent and punctual and to attend courses, keep records, take part in and contribute to the review process, undertake assessments in order to achieve Individual Learning Plan objectives and keep the employer informed of progress towards those objectives.
- 2.4 At all times to behave in a safe and responsible manner and in accordance with the requirements of Health and Safety legislation relating to the individual’s responsibilities and to promote and act in the Employer’s best interests.
- 3. The Provider’s Responsibilities
 - 3.1 To check that the contents of Individual Learning Plans fulfil the nationally and industry/sector agreed criteria for the Higher Apprenticeship.
 - 3.2 To ensure that the learning meets the requirements set out in the Contract between the Training Provider and the LSC/ELWa in particular in relation to Quality Assurance process including Health and Safety obligations required of local LSCs and their suppliers.
 - 3.3 If Employers are unable to complete Apprenticeships, then the Providers shall use their best endeavours to ensure that Learners are offered the opportunity to transfer other employers that can provide an Individual Learning Plans substantially similar to existing Individual Learning Plans.

I understand the responsibilities as defined above and agree to this undertaking.

Signed _____ **Employer**

Date _____

Signed _____ **Learner**

Date _____

Signed _____ **Parent/Guardian (if aged under 18)**

Date _____

Signed _____ **Provider**

Date _____

Copies to **Learner, Employer and Provider**

Annex G – SEMTA Higher Apprenticeship Steering Committee

Ian Carnell	SEMTA
Professor Al-Tai	Staffordshire University/ Engineering Professors' Council
Rob Atkinson	Jaguar Cars Ltd
Alan Bainbridge	Newcastle College
Roger Bates	AEEU
Claire Donovan	Engineering Employers Federation
Ian Dunn	Coventry University
Janet Firmin	IET
Mick Fleming	Airbus
John Gomersall	Skills Solution
Gary Griffiths	Airbus
Warwick Hall	Automotive Academy / BMW
John Harris	SEMTA (Chair)
Dr Keith Holmes	Bolton Institute
Nigel Jones	Rolls Royce
Nadarajah Sivakumaran	Edexcel
John Lockey	NEMI
Martin Lovell	BMW
Bob Clark	NFEC
Hastings McKenzie	North East Wales Institute of Higher Education
Bob Millington	City College Coventry
John Male	BAE Systems
Peter Mason	Kingston University
Bill Nicholls	EEF West Midlands Association
Bob Parry	North East Wales Institute of Higher Education
Charles Pickford	Foundation Degree Forward
John Redfurn	Land Rover
Alistair Scott	City College Coventry
Sandy Shaw	EAL
Wendy Staples	HEFCE
Peter Swindlehurst	NFEC/FD Task Force/UK Inter Professional Group
Joseph Tatler	North East Wales Institute of Higher Education
Chris Taylor	HEFCE
Roger Tingey	Marshall Aerospace
Cath Walsh	Manchester Enterprises

Higher Apprenticeship

Annex H (Level 4)

Higher Apprenticeship in Engineering Technology

Implementation date: 1st July 2005

Framework Code

Issue number: 1

3	3	6
---	---	---

NVQ

Title of NVQ	Level	Qualification reference number	Awarding body	<i>Occupational sector (to be completed by LSC national office)</i>	<i>Qualification funding category (to be completed by LSC national office)</i>
Engineering Leadership	4	500/3754/7	EAL		

Key Skills

Title of Key Skill	Level	<i>LSC funding rate (to be completed by LSC national office)</i>	
Application of Number	3		
Communication	3		
Information Technology	3		
Working With Others	3		
Improving Own Learning and Performance	3		

Technical certificates

Title of qualification recognised as a technical certificate	Level	Qualification reference number	Awarding body	Number of Guided Learning Hours (GLH)*	Funding rate 16-18 (to be completed by LSC national office)	Funding rate 19+ (to be completed by LSC national office)
Higher Education qualifications at level 4 have not been approved by QCA as Technical Certificates.						