Gen2

A City & Guilds Business

Higher Education Prospectus

"Higher Education Solutions for Industry"

www.gen2.ac.uk

Contents

Welcome to Gen2 4

Academic Partners 6

Professional Institute Partners 7

Degree Apprenticeship Progression Pathway 8

Bridging Courses for Engineers, Scientists or Technicians

Level 3 Bridging Course 12

Level 5 Bridging Course 13

Level 4 Qualifications

Higher Education Progression Pathway 16

Introduction to Higher National Qualifications 18

Higher National Certificates (HNCs) 19

HNC in Electrical & Electronic Engineering 22

HNC in Mechanical Engineering 23

HNC in General Engineering 24

HNC in Operations Engineering 25

HNC in Manufacturing Engineering 26

Level 5 Qualifications

Higher National Diplomas (HNDs) 30
Delivery Programme 34
Foundation Degree in Plant Engineering (Electrical Engineering) 36
Foundation Degree in Plant Engineering (Mechanical Engineering) 38
Foundation Degree in Plant Engineering (Control & Instrumentation) .. 40
Foundation Degree in Plant Engineering (Quality Engineering) 42
Foundation Degree in Plant Engineering (Nuclear Plant and Process Technology) 44
Foundation Degree Apprenticeship - Nuclear Technician 46

Level 6 Qualifications

Degree Apprenticeship - Nuclear Scientist & Nuclear Engineer 50
BEng(Hons) Degree in Plant Engineering (Electrical Engineering) 52
BEng(Hons) Degree in Plant Engineering (Mechanical Engineering) 53
BEng(Hons) Degree in Plant Engineering (Instrumentation & Control) ... 54
BEng(Hons) Degree in Plant Engineering (Quality Engineering) 55
BEng(Hons) Degree in Plant Engineering (Nuclear Plant and Process Technology) 56
Degree Apprenticeship - Control / Technical Support Engineer 58
Degree Apprenticeship - Manufacturing Engineering 62
Degree Apprenticeship - Product Design & Development 65

Additional Courses and Schemes at Gen2

Additional Courses 70
Gen2 Customers 71

Please Note: The information contained within this prospectus is correct at the time of going to print. Course content may be subject to minor change. The Gen2 HE Department may be contacted for clarification at any time.

Welcome to Gen2

Foreword

Gen2 offer two main options for students to achieve Higher Education (HE) qualifications, namely an academic route and a degree apprenticeship route.

The purpose of this prospectus is to provide an overview of the range of HE programmes offered by Gen2. New programmes are continually being developed for our customers. Please feel free to contact us to discuss your requirements.

About Gen2

At Gen2 we work closely with our customers to combine their business priorities and values with our expertise and personal commitment to training and workforce development.

With training centres across Cumbria we are well equipped to meet the ever changing demands of business. We currently train over 1,250 apprentices, 100 adult learners, over 300 higher education students and provide over 10,000 days of delegate short courses.

The training programmes we offer include:

- Professional Engineering (Mechanical, Electrical, Electronic, Control and Instrumentation)
- Nuclear Related Technologies
- Business Administration and Customer Service
- Manufacturing,
- Health and Safety
- ICT
- Leadership and Management
- Project Management

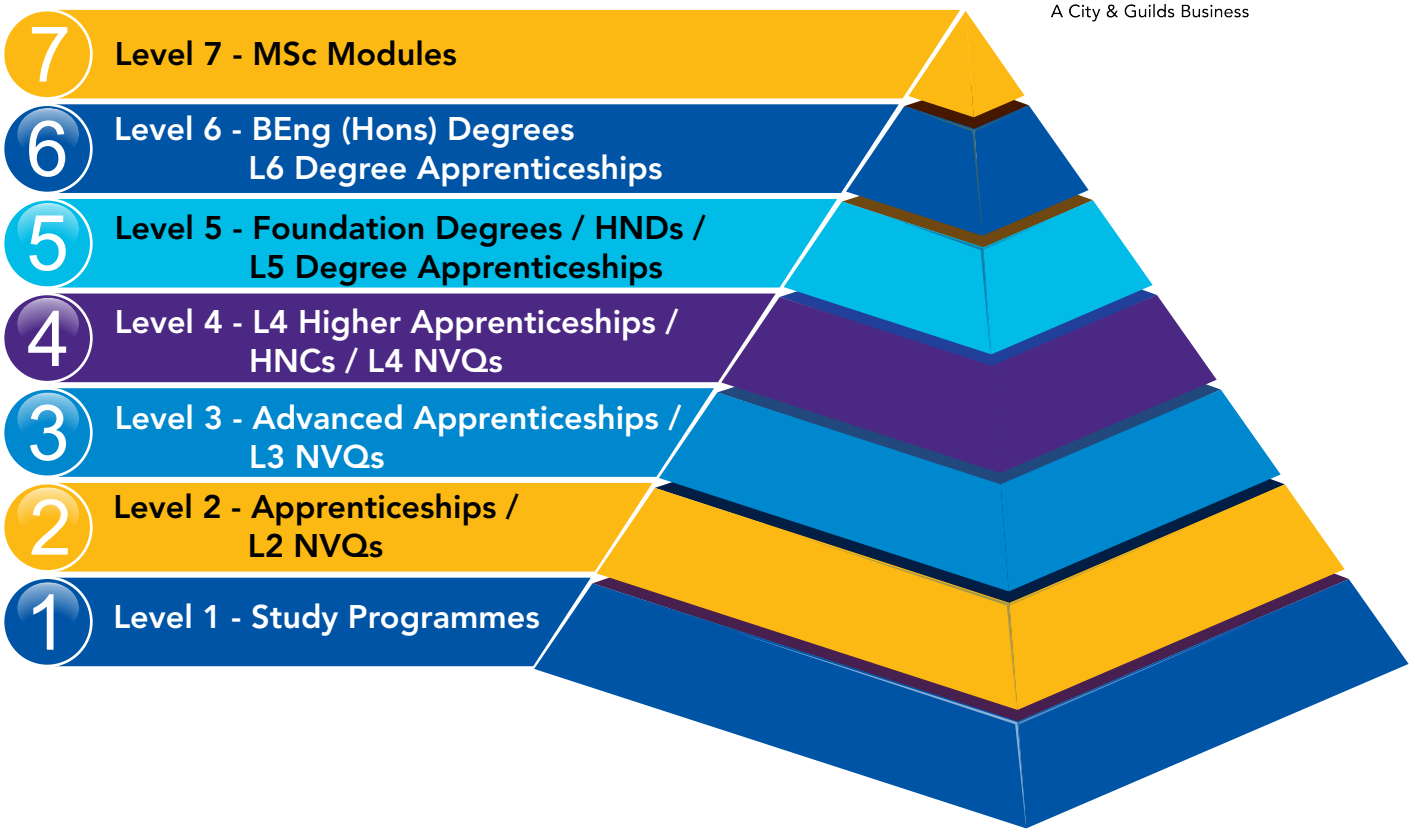
Our courses are rarely 'off the shelf' and we work closely with our customers to design a course that meets their exact business needs.

All our courses are fully-accredited by appropriate professional bodies and range from Foundation level through Honours Degrees to Masters level (QCF Levels 2 – 6) - see Skills & Education Pyramid below.

To find out more contact Gen2 on 01900 701300 / 01228 599890 or email info@gen2.ac.uk.

Skills & Education Pyramid

Gen2
A City & Guilds Business



About the Department

Gen2 formed the Higher Education Department in September 2005 to meet industry demand for high level accredited and personalised educational programmes. The primary functions of the department are developing, accrediting and delivering academic programmes for commercial clients, graduates and technicians.

Our lecturers combine both educational and industrial experience to deliver programmes in key skills shortage areas. These include, Instrumentation & Control, Quality, Nuclear Science, Electrical and Mechanical Maintenance and Engineering.

To support the delivery of our degree and higher level technology courses, we have made significant investments to ensure our laboratories and classrooms are equipped with state of the art technology. This includes, control and measurement, radiological, electrical and mechanics laboratories, FE and HE Learning Resource Centre and an Industrial Process Rig.

Gen2 Higher Education:

- delivers training for over 300 higher education students per annum;
- delivers training from one of four Gen2 training centres across Cumbria (images below), as well as on customer sites;
- gains outstanding student success rates – well above the national average;
- offer programmes that allow staff to reach their full academic potential;
- provides a full portfolio of Higher Education courses including Higher Nationals, Foundation Degrees and BEng (Hons);
- delivers both nuclear and non-nuclear degree apprenticeships;
- can develop bespoke higher education programmes to meet industry demands;
- has university partnerships;
- has accreditation with professional institutes.

Gen2 Head Office, Lillyhall

Gen2 Carlisle Skills Centre

Gen2 Furness Skills Centre


Gen2, Energus

Academic Partners

Academic Partners

Gen2 works with academic partners on the delivery of degree and post-graduate level qualifications and bespoke specialist courses for industry.

Gen2 currently has a number of academic partners which include:

- The University of Cumbria (UoC)
- The University of Manchester (UoM)
- Nuclear Technology Education Consortium (NETC)

Our current suite of Foundation Degree and BEng(Hons) programmes are delivered entirely by Gen2 and have been validated by UoC. The validation process ensures that our delivery meets the rigorous academic and quality standards of the partner institution and students successfully completing our programmes graduate with a recognised university degree.

We also work in partnership with the UoM on the delivery of post-graduate level programmes leading to a Postgraduate Certificate and an MSc in Nuclear Technology as part of the Nuclear Technology Education Consortium (NETC).

University of CUMBRIA www.cumbria.ac.uk

MANCHESTER 1824 The University of Manchester www.manchester.ac.uk

Professional Institute Partners

Institute of Measurement and Control

The Gen2 Plant Engineering degrees have been accredited by the Institute of Measurement and Control providing successful students with the academic requirements for registration with the Engineering Council. This is re-accredited every 3 years.

About the InstMC - Founded in 1944 and incorporated by Royal Charter in 1975, The Institute of Measurement and Control is committed to promoting the professional excellence of engineers and technologists at all levels in the automation, instrumentation, control and related industries. Its aims are to advance the science and practice of measurement and control technologies and their various applications, to foster the exchange of views and the communication of knowledge and ideas in these activities, and to promote the professional qualification and standing of its members. In keeping with its commitment to excellence, the Institute welcomes as members those practising or interested in measurement and control technologies.

From Fellow (FInstMC) - the most senior membership grade, recognizing significant contribution to the industry through - to Student, the Institute accommodates the aspirations of individuals at all stages of their professional careers. Acceptably qualified and experienced members are also able pursue further professional qualifications, including Chartered Engineer (CEng), Incorporated Engineer (IEng) and Engineering Technician (EngTech) registration with the Engineering Council and Chartered Scientist (CSci) with the Science Council.

Society of Operations Engineers – professional sector (Institution of Plant Engineers)

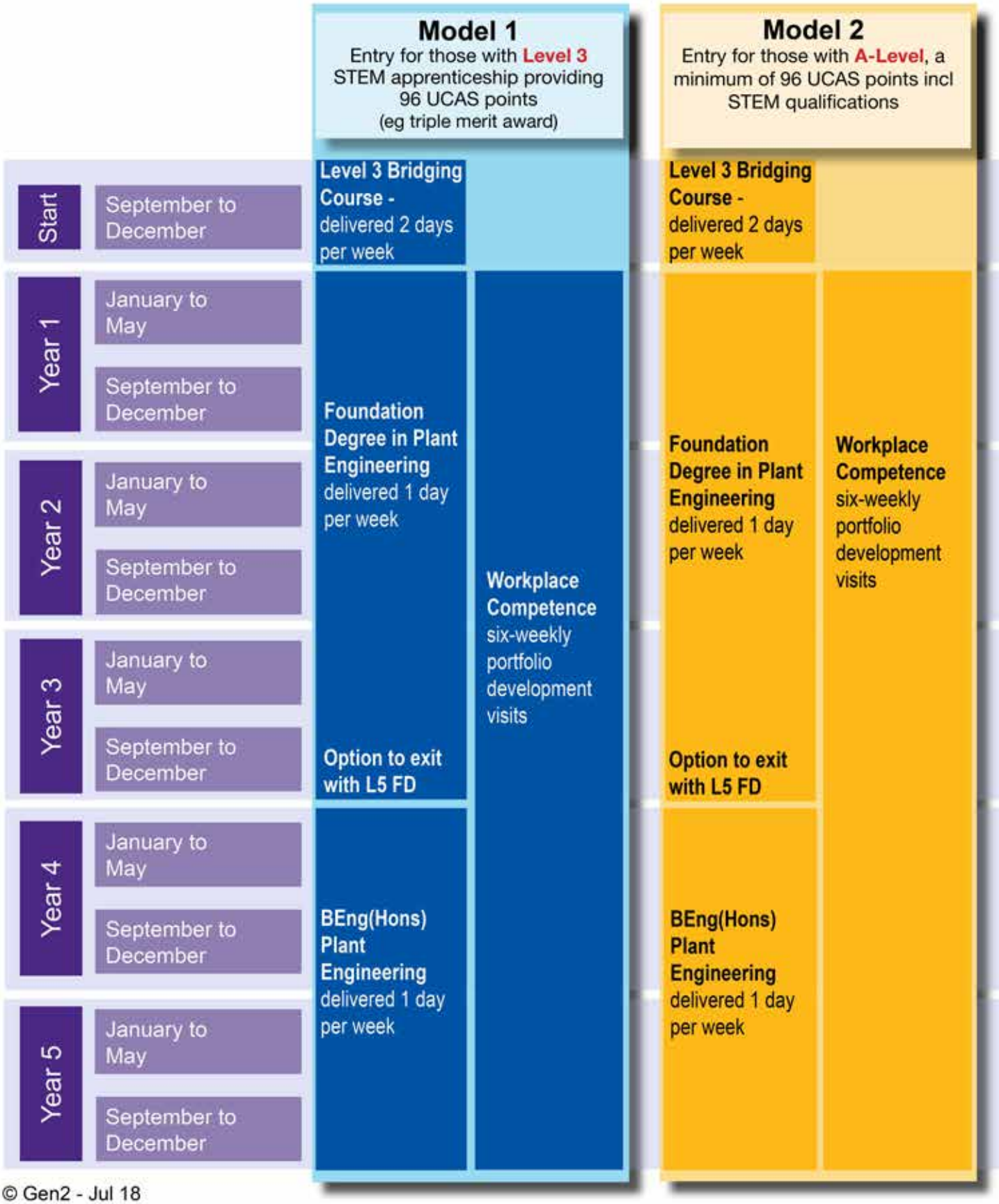
The Gen2 Plant Engineering degrees have been accredited by the Society of Operations Engineers and the professional sector, Institution of Plant Engineers providing successful students with the academic requirements for registration with the Engineering Council. This is re-accredited every 3 years. Gen2 is also a corporate partner of the Society of Operations Engineers.

About the SOE - The SOE was formed in 2000 by the merger of the Institute of Road Transport Engineers (IRTE) and the Institution of Plant Engineers (IPlantE). The Society's third professional Sector, Bureau of Engineer Surveyors (BES), was formed in 2004. Members can join as Associate Member (AMSOE), Member (MSOE) or Fellow (FSOE) depending upon the experience and qualifications of applicants. An associate member is the entry level membership and a fellowship being the most senior level of membership reflecting high degrees of experience and professional contribution.

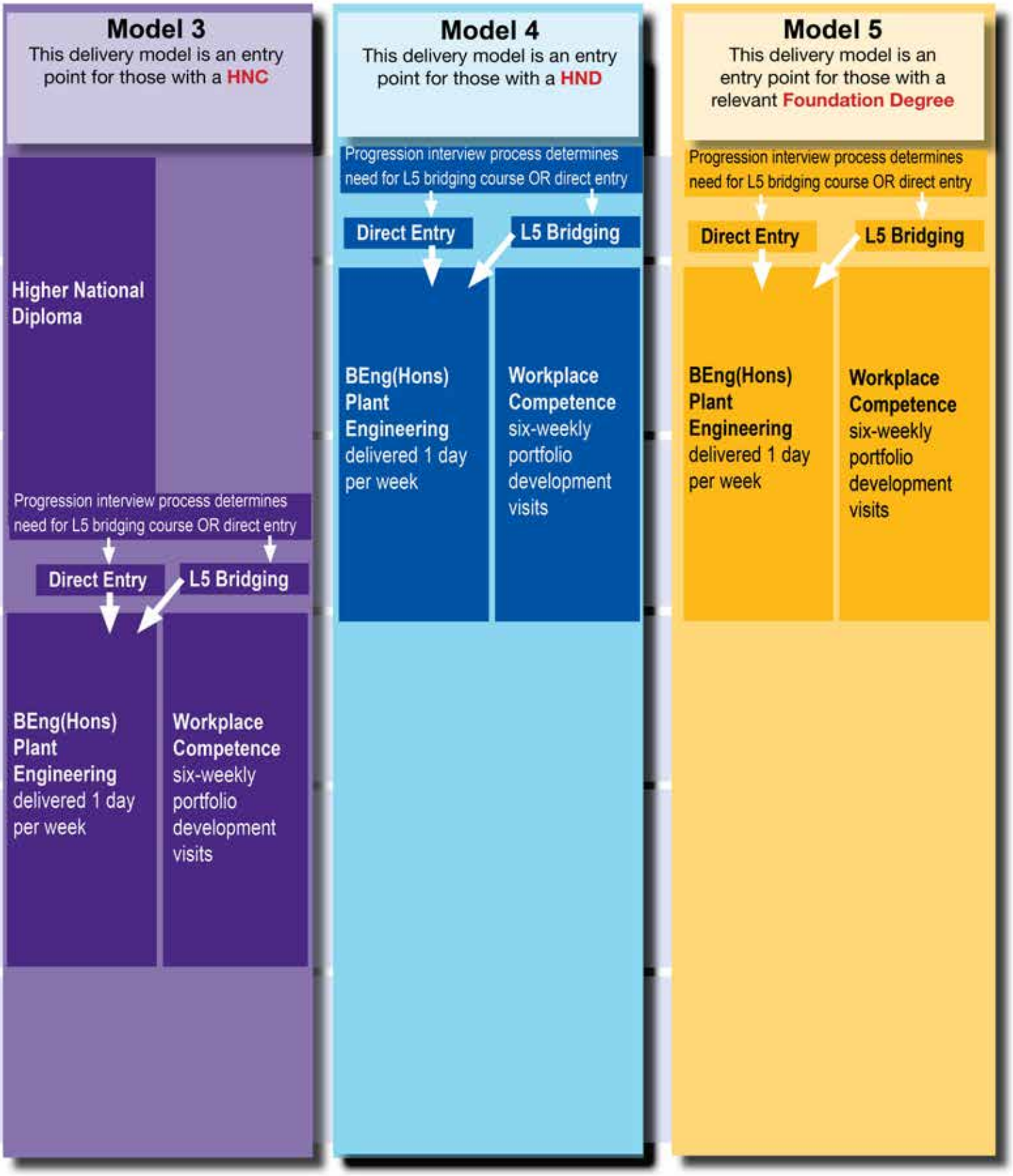
The SOE represents more than 16,000 engineers and companies across the three Professional Sectors The IPlantE (Institution of Plant Engineers) was founded in 1946 and is the Professional Sector for people whose engineering skills are typically used in industrial, manufacturing, military and utility processes for ensuring machinery and equipment can be operated safely, efficiently and in an environmentally-sustainable way.

IPlantE helps its members develop their skills, share best practice and demonstrate their professional competence - for current and prospective employers, engineering service providers, plant and equipment owners or the community at large. As with other accredited professional institutions it has authority to register members with the Engineering Council at Engineering Technician (EngTech), Incorporate Engineering (IEng) or Chartered Engineer (CEng).

Gen2 Degree Apprenticeship Progression Pathway



Gen2
A City & Guilds Business



Bridging Courses for Engineers, Scientists or Technicians

- Level 3 Bridging Course
- Level 5 Bridging Course

Level 3 Bridging Course

Programme Overview

The aim of this Level 3 higher education bridging course is to prepare students for Level 4 studies in engineering and mathematics. It may be some time since students studied at college and therefore this programme will provide students with the opportunity to review areas such as physics and maths and possibly extend their knowledge in these areas.

The course has been specifically designed to provide a seamless transfer to the first year of the foundation degree. Effectively, the course can be compared with A-level study as entry to higher education.

Duration

16 weeks part time study, typically running between September and December.

Attendance

Students attend 5 days per week.

Location

This course is delivered by the Gen2 Higher Education department in Energus, Lillyhall, Workington.

Course Content

The topic areas covered will include:
Unit BC3001- Mathematics:

- Algebra
- Trigonometry
- Graphics
- Collection and Application of Statistical Data

Unit BC3011- Physics (Electrical):

- DC Theory & Circuit theorems
- AC Theory
- Electrostatics & Capacitors
- Magnetism & Induction
- Motors

Unit BC3021- Physics (Mechanics)

- Static Mechanical systems
- Dynamic Mechanical Systems

Progression

On completion of this course students will have a seamless transfer to the Foundation Degree.

Level 5 Bridging Course

Programme Overview

The aim of this Level 5 higher education bridging course is to prepare students for Level 6 studies. It may be some time since students studied at college and therefore this programme will provide them with the opportunity to review areas including maths, control, and an additional option relevant to their chosen pathway through the BEng Honours degree. The course has been specifically designed to extend student knowledge in these areas and to aid a seamless transfer to the first year of the BEng Honours degree.

Duration

16 weeks part time study, typically running between September and December.

Attendance

Students attend 1 day per week.

Location

This course is delivered by the Gen2 Higher Education department in Energus, Lillyhall, Workington.

Course Content

This course will be assessed through coursework assignments and terminal examinations carried out in house. The course covers:

- Unit BC5001- Mathematics
- Unit BC5011- Electrical Systems
- Unit BC5021- PLC's and Control Systems
- Unit BC5031- Nuclear Materials
- Unit BC5041- Mechanics

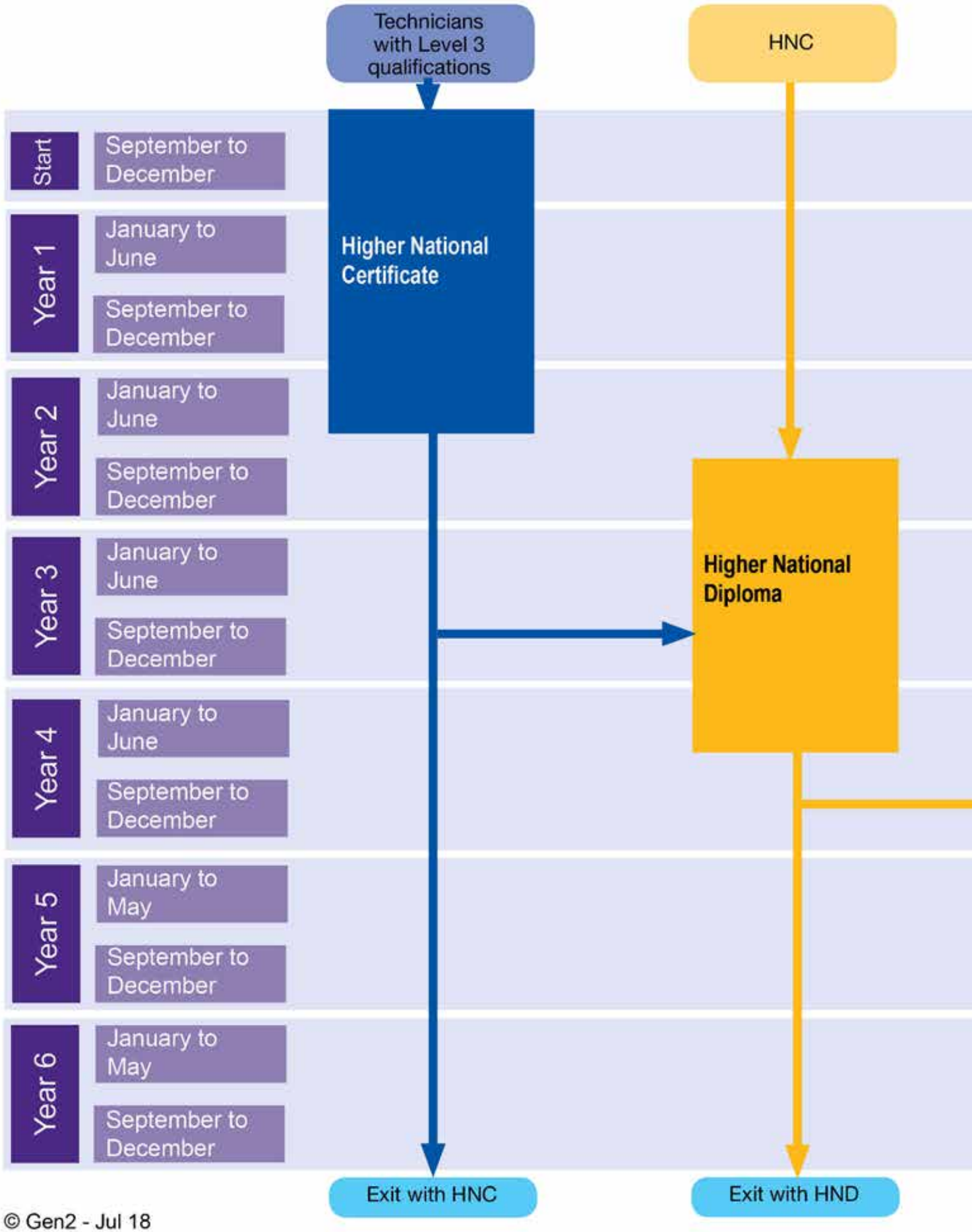
Progression

On completion of this course students will have a seamless transfer to the first year of the BEng Honours degree.

Level 4 Qualifications

- Higher Education Progression Pathway
- Introduction to Higher National Qualifications
- Higher National Certificates (HNCs)
- HNC in Electrical & Electronic Engineering
- HNC in Mechanical Engineering
- HNC in General Engineering
- HNC in Operations Engineering
- HNC in Manufacturing Engineering

Gen2 Higher Education Progression Pathway




Minimum of 120 credits at L4 and 120 credit at L5 or relevant HND
Relevant A-levels or relevant L3 apprenticeship with 96 UCAS points
Bridging Course
Foundation Degree (Non-Funded)
Exit with Foundation Degree
L5 Bridging Course
BEng(Hons) Plant Engineering
BEng(Hons) Plant Engineering
Exit with BEng(Hons)
Exit with BEng(Hons)

Introduction to Higher National Qualifications

BTEC Higher Nationals in Engineering (RQF) are available at Levels 4 and 5. These specialist vocational qualifications teach learners the key concepts and practical skills for direct progression to, or within, employment.

The qualifications are designed to meet the needs of higher level learners in areas of mechanical, electrical and general engineering and are studied on a day release basis over a period of 18 months for HNC and a further 18 months for HND.

The delivery of the qualifications has been designed to enable progression routes to the Foundation Degree and/or the BEng (Hons) Degree in Plant Engineering (Mechanical, Electrical or Control)

The HNC and HND qualifications are composed so that level 4 HNC (120 credits) qualifications are embedded into the level 5 HND (240 credits).

The qualifications are now structured so that there are core options and specialist options to give the required 8 credits for HNC and 7 credits for HND (15 total) as one credit is a 30 credit module.

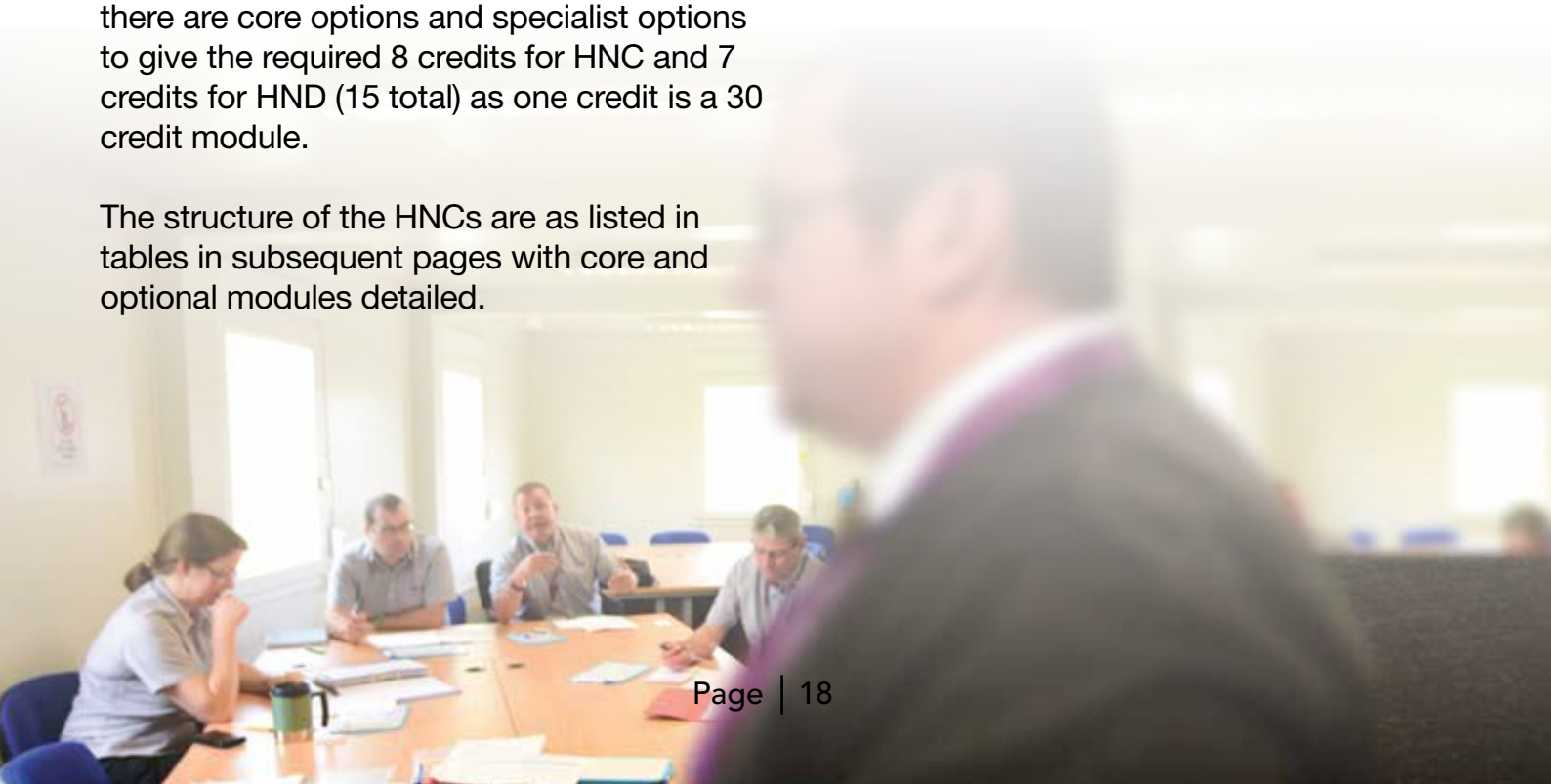
The structure of the HNCs are as listed in tables in subsequent pages with core and optional modules detailed.

Entry Criteria
Students should hold a relevant level 3 qualification (ie national certificate in engineering) or have relevant industrial experience. Learners would typically start on the HNC programme and progress to a HND, unless they have the relevant prior learning and relevant units studied.

Duration
HNC - 18 months
HND - 18 months
can be consecutively studied and will run over a 3 year period.

Location
The qualifications are delivered at our facilities in Lillyhall, Carlisle and Ulverston.

Qualification Gained
On successful completion students will achieve either a BTEC Higher National Certificate or a BTEC Higher National Diploma in Engineering.



Higher National Certificates (HNCs)

Electrical & Electronic Engineering

Level 4 Certificate in Electrical and Electronic Engineering (120 credits)		Unit Credit	Level
Core unit - mandatory	Engineering Design	15	4
Core unit - mandatory	Engineering Maths	15	4
Core unit - mandatory	Engineering Science	15	4
Core unit - mandatory	Managing a Professional Engineering Project (Pearson-set)	15	4
Specialist mandatory	Electrical and Electronic Principles	15	4
Optional unit	Instrumentation and Control Systems	15	4
Optional unit	Electrical Machines	15	4
Optional unit	Electrical Systems and Fault Finding	15	4

General Engineering

Pearson BTEC Level 4 Higher National Certificate in General Engineering (120 credits)		Unit Credit	Level
Core unit - mandatory	Engineering Design	15	4
Core unit - mandatory	Engineering Maths	15	4
Core unit - mandatory	Engineering Science	15	4
Core unit - mandatory	Managing a Professional Engineering Project (Pearson-set)	15	4
Optional unit	Electro, Pneumatic and Hydraulic Systems	15	4
Optional unit	CAD for Maintenance Engineers	15	4
Optional unit	Electrical Machines	15	4
Optional unit	Instrumentation and Control Systems	15	4

Operations Engineering

Level 4 Certificate in Operations Engineering (120 credits)		Unit Credit	Level
Core unit - mandatory	Engineering Design	15	4
Core unit - mandatory	Engineering Maths	15	4
Core unit - mandatory	Engineering Science	15	4
Core unit - mandatory	Managing a Professional Engineering Project (Pearson-set)	15	4
Optional unit	Electro, Pneumatics and Hydraulic Systems	15	4
Optional unit	Instrumentation and Control Systems	15	4
Optional unit	Electrical Systems and Fault Finding	15	4
Optional unit	CAD for Maintenance Engineers	15	4

Mechanical Engineering

Level 4 Certificate in Mechanical Engineering (120 credits)		Unit Credit	Level
Core unit - mandatory	Engineering Design	15	4
Core unit - mandatory	Engineering Maths	15	4
Core unit - mandatory	Engineering Science	15	4
Core unit - mandatory	Managing a Professional Engineering Project (Pearson-set)	15	4
Specialist unit - mandatory	Mechanical Principles	15	4
Specialist unit - mandatory	Fundamentals of Thermodynamics and Heat Engines	15	4
Optional unit	Electro, Pneumatic and Hydraulic Systems	15	4
Optional unit	CAD for Maintenance Engineers	15	4

Manufacturing Engineering

Level 4 Certificate in Mechanical Engineering (120 credits)		Unit Credit	Level
Core unit - mandatory	Engineering Design	15	4
Core unit - mandatory	Engineering Maths	15	4
Core unit - mandatory	Engineering Science	15	4
Core unit - mandatory	Managing a Professional Engineering Project (Pearson-set)	15	4
Specialist unit - mandatory	Production Engineering for Manufacture	15	4
Specialist unit - mandatory	Quality and Process Improvement	15	4
Optional unit	Materials, Properties and Testing	15	4
Optional unit	CAD for Maintenance Engineers	15	4

HNC in Electrical & Electronic Engineering

Programme Overview

This programme aims to develop the technical, communication and management skills required by electrical engineers in today's engineering industry. It integrates electrical and electronic engineering with design, manufacture and business studies. Students relate theory to practice at their place of work.

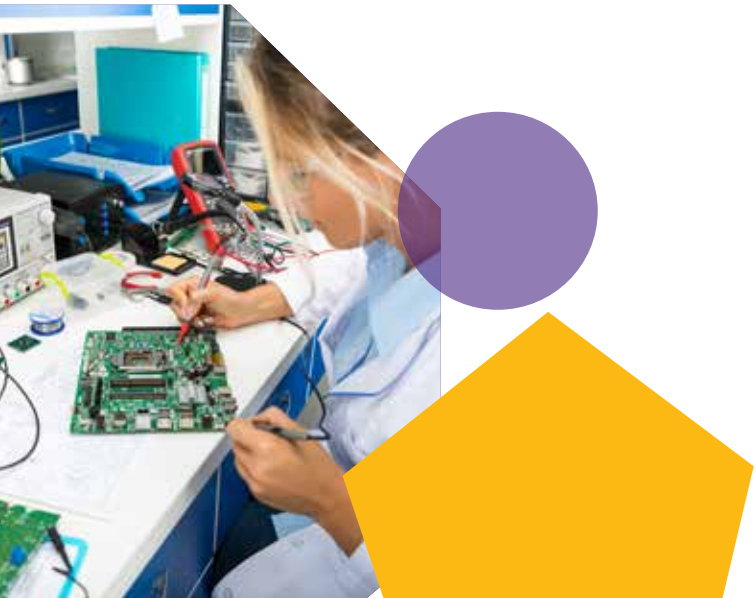
What will I study?

Modules are taught by a combination of: lectures; problem solving classes; small-group seminars & tutorials; and practical classes designed to increase confidence and enable students to take responsibility for their own learning.

HNC Electrical & Electronic Engineering

Year 1 (September to July)
Engineering Design
Engineering Maths
Engineering Science
Electrical and Electronic Principles
Instrumentation and Control Systems

Year 2 (September to February)
Managing a Professional Engineering Project (Pearson-set)
Electrical Machines
Electrical Systems and Fault Finding



Duration and Attendance

18 months, part-time day release. Student attendance is required between 9am and 6:30pm.

Location

Available from the Gen2 centres in Energus, Carlisle and Ulverston.

Assessment

Assessment is carried out through coursework, oral presentations, group work, practical reports, critical reviews and end-of-module exams.

Progression

On successful completion of the HNC qualification the students will have the opportunity to progress into year 2 of the Foundation degree or onto the HND, delivered by Gen2 from the Energus, Carlisle and Ulverston centres

HNC in Mechanical Engineering

Programme Overview

This programme aims to develop the technical, communication and management skills required by technical engineers in today's engineering industry. It integrates mechanical engineering with design, manufacture and business studies. Students relate theory to practice at their place of work.

What will I study?

Modules are taught by a combination of: lectures; problem solving classes; small-group seminars & tutorials; and practical classes designed to increase confidence and enable students to take responsibility for their own learning.

HNC Mechanical Engineering

Year 1 (September to July)
Engineering Design
Engineering Maths
Engineering Science
Mechanical Principles
CAD for Maintenance Engineers

Year 2 (September to February)
Managing a Professional Engineering Project (Pearson-set)
Fundamentals of Thermodynamics and Heat Engines
Electro, Pneumatic and Hydraulic Systems

Duration and Attendance

18 months, part-time day release. Student attendance is required between 9am and 6:30pm.

Location

Available from the Gen2 centres in Energus, Carlisle and Ulverston.

Assessment

Assessment is carried out through coursework, oral presentations, group work, practical reports, critical reviews and end-of-module exams.

Progression

On successful completion of the HNC qualification the students will have the opportunity to progress into year 2 of the Foundation degree or onto the HND, delivered by Gen2 from the Energus, Carlisle and Ulverston centres.

HNC in General Engineering

Programme Overview

This programme aims to develop the technical, communication and management skills required by technical engineers in today's engineering industry. It gives a general engineering approach to engineering with design, manufacture and business studies and is suitable for students who may be of a multiskilling discipline in the workplace. Students relate theory to practice at their place of work.

What will I study?

Modules are taught by a combination of: lectures; problem solving classes; small-group seminars & tutorials; and practical classes designed to increase confidence and enable students to take responsibility for their own learning.

HNC General Engineering

Year 1 (September to July)
Engineering Design
Engineering Maths
Engineering Science
Instrumentation and Control Systems
CAD for Maintenance Engineers

Year 2 (September to February)
Managing a Professional Engineering Project (Pearson-set)
Electro, Pneumatics and Hydraulic Systems
Electrical Systems and Fault Finding

Duration and Attendance

18 months, part-time day release. Student attendance is required between 9am and 6:30pm.

Location

Available from the Gen2 centres in Energus, Carlisle and Ulverston.

Assessment

Assessment is carried out through coursework, oral presentations, group work, practical reports, critical reviews and end-of-module exams.

Progression

On successful completion of the HNC qualification the students will have the opportunity to progress into year 2 of the Foundation degree or onto the HND, delivered by Gen2 from the Energus, Carlisle and Ulverston centres.

HNC in Operations Engineering

Programme Overview

This programme aims to develop the technical, communication and management skills required by technical engineers in today's engineering industry. It integrates engineering with design, manufacture and business studies and is suitable for students who are working at the operations stage within the workplace. Students relate theory to practice at their place of work.

What will I study?

Modules are taught by a combination of: lectures; problem solving classes; small-group seminars & tutorials; and practical classes designed to increase confidence and enable students to take responsibility for their own learning.

HNC Operations Engineering

Year 1 (September to July)
Engineering Design
Engineering Maths
Engineering Science
Instrumentation and Control Systems
CAD for Maintenance Engineers

Year 2 (September to February)
Managing a Professional Engineering Project (Pearson-set)
Electro, Pneumatics and Hydraulic Systems
Electrical Systems and Fault Finding

Duration and Attendance

18 months, part-time day release. Student attendance is required between 9am and 6:30pm.

Location

Available from the Gen2 centres in Energus, Carlisle and Ulverston.

Assessment

Assessment is carried out through coursework, oral presentations, group work, practical reports, critical reviews and end-of-module exams.

Progression

On successful completion of the HNC qualification the students will have the opportunity to progress into year 2 of the Foundation degree or onto the HND, delivered by Gen2 from the Energus, Carlisle and Ulverston centres.

HNC in Manufacturing Engineering

Programme Overview

This programme aims to develop the technical, communication and management skills required by technical engineers in today's engineering industry. It integrates manufacturing engineering with design, mechanical and business studies. Students relate theory to practice at their place of work.

What will I study?

Modules are taught by a combination of: lectures; problem solving classes; small-group seminars & tutorials; and practical classes designed to increase confidence and enable students to take responsibility for their own learning.

HNC Manufacturing Engineering

Year 1 (September to July)
Engineering Design
Engineering Maths
Engineering Science
Production Engineering for Manufacture
CAD for Maintenance Engineers

Year 2 (September to February)
Managing a Professional Engineering Project (Pearson-set)
Quality and Process Improvement
Materials, Properties and Testing

Duration and Attendance

18 months, part-time day release. Student attendance is required between 9am and 6:30pm.

Location

Available from the Gen2 centres in Energus, Carlisle and Ulverston.

Assessment

Assessment is carried out through coursework, oral presentations, group work, practical reports, critical reviews and end-of-module exams.

Progression

On successful completion of the HNC qualification the students will have the opportunity to progress into year 2 of the Foundation degree or onto the HND, delivered by Gen2 from the Energus, Carlisle and Ulverston centres.

Level 5 Qualifications

- Higher National Diplomas (HNDs)
- Delivery Programme
- Foundation Degree in Plant Engineering (Electrical Engineering)
- Foundation Degree in Plant Engineering (Mechanical Engineering)
- Foundation Degree in Plant Engineering (Control & Instrumentation)
- Foundation Degree in Plant Engineering (Quality Engineering)
- Foundation Degree in Plant Engineering (Nuclear Plant and Process Technology)
- Foundation Degree Apprenticeship - Nuclear Technician

Higher National Diplomas (HNDs)

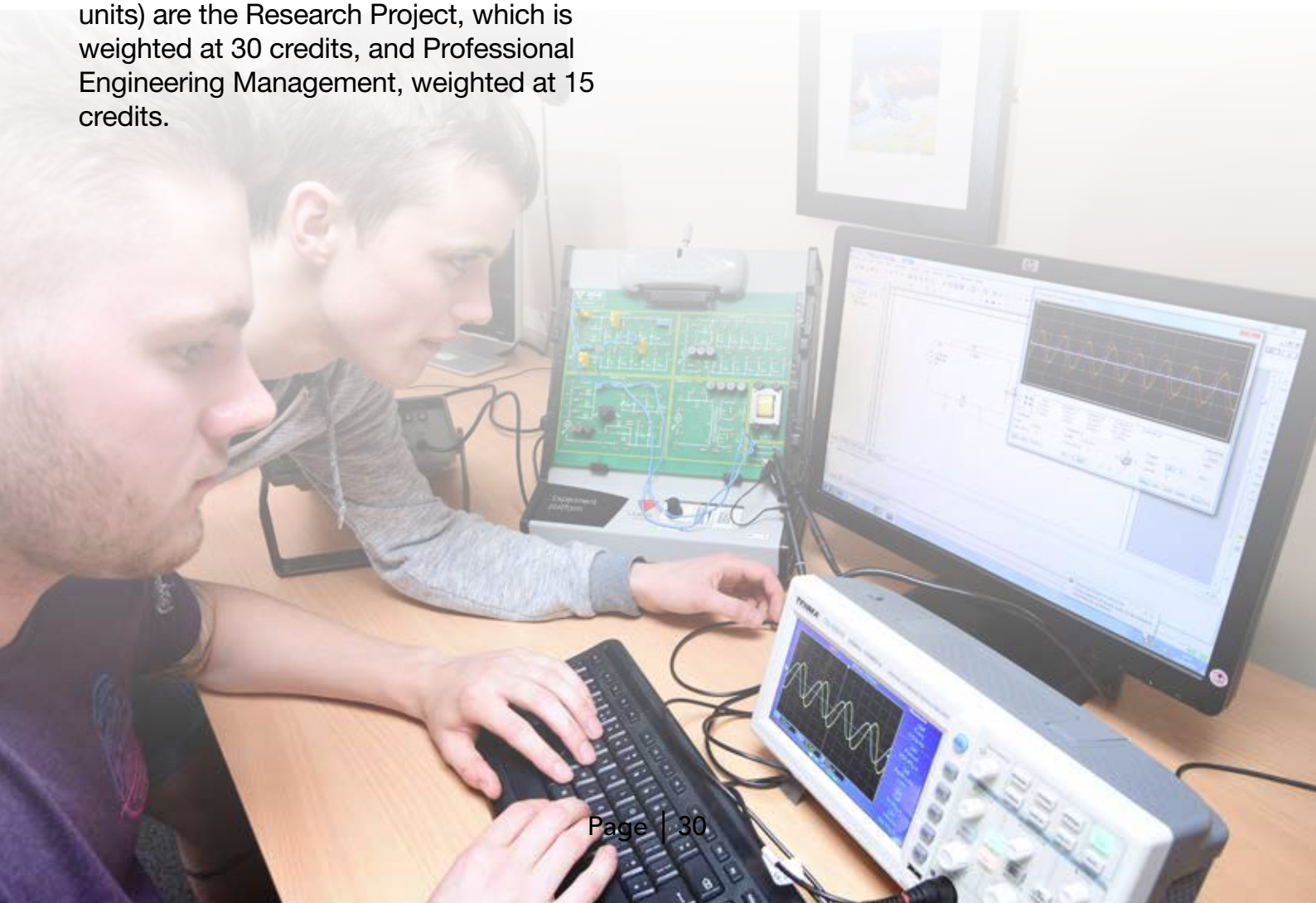
The Level 5 Higher National Diploma consists of the Level 4 Higher National Certificate plus an additional 120 credits at Level 5. The following pathways are intended to build on the subjects studied at level 4 HNC and hence the optional units are selected to follow on from the level 4 modules.

Qualification credit value: a minimum of 240 credits of which 120 credits are at Level 5, and 120 credits are at Level 4 and usually attained via the HNC

There is a required mix of core, specialist and optional units for each pathway.

The core units required for each Level 5 pathway (in addition to the specialist units) are the Research Project, which is weighted at 30 credits, and Professional Engineering Management, weighted at 15 credits.

The HND qualifications are designed to start after the completion of the HNC and are a 3 semester programme running from February until July the following year. The research project is a substantial piece of work and is a year long subject that would normally commence in the September and complete the following July



Higher National Diplomas (HNDs)

Electrical & Electronic

Level 5 units further 120 credits		Unit Credit	Level
Core unit - mandatory	Research Project	30	5
Core unit - mandatory	Professional Engineering Management (Pearson-set)	15	5
Specialist unit - mandatory	Further Mathematics	15	5
Specialist unit - mandatory	Industrial Power, Electronics and Storage	15	5
Specialist unit - mandatory	Industrial Systems	15	5
Optional unit	Further Machines and Drives	15	5
Optional unit	Fundamentals of Control Systems	15	5

General

Level 5 units further 120 credits		Unit Credit	Level
Core unit - mandatory	Research Project	30	5
Core unit - mandatory	Professional Engineering Management (Pearson-set)	15	5
Specialist unit - mandatory	Further mathematics	15	5
Specialist unit - mandatory	Lean Manufacturing	15	5
Optional unit	Industrial Systems	15	5
Optional unit	Further Thermodynamics	15	5
Optional unit	Fundamentals of Control Systems	15	5

Operations

Level 5 units further 120 credits		Unit Credit	Level
Core unit - mandatory	Research Project	30	5
Core unit - mandatory	Professional Engineering Management (Pearson-set)	15	5
Specialist unit - mandatory	Further Mathematics	15	5
Specialist unit - mandatory	Heating, Ventilation, Air Conditioning (HVAC)	15	5
Specialist unit - mandatory	Industrial Services	15	5
Specialist unit - mandatory	Thermofluids	15	5
Optional unit	Fundamentals of Control Systems	15	5

Higher National Diplomas (HNDs)

Mechanical

Level 5 units further 120 credits		Unit Credit	Level
Core unit - mandatory	Research Project	30	5
Core unit - mandatory	Professional Engineering Management (Pearson-set)	15	5
Specialist unit - mandatory	Advanced Mechanical Principles	15	5
Specialist unit - mandatory	Virtual Engineering	15	5
Specialist unit - mandatory	Further Mathematics	15	5
Optional unit	Further Thermodynamics	15	5
Optional unit	Industrial Systems	15	5

Manufacturing Engineering

Level 5 units further 120 credits		Unit Credit	Level
Core unit - mandatory	Research Project	30	5
Core unit - mandatory	Professional Engineering Management (Pearson-set)	15	5
Specialist unit - mandatory	Manufacturing Systems Engineering	15	5
Specialist unit - mandatory	Lean Manufacturing	15	5
Specialist unit - mandatory	Advanced Manufacturing Technology	15	5
Optional unit	Industrial Services	15	5
Optional unit	Industrial Systems	15	5

Delivery Programme

The following are the indicative sequence of study for each route at HND

Electrical & Electronic

Year 1 (February - July)
Professional Engineering Management (Pearson-set)
Industrial Power, Electronics and Storage
Further Machines and Drives

Year 2 (September - July)
Research Project
Industrial Systems
Fundamentals of Control Systems
Further Mathematics

General

Year 1 (February - July)
Professional Engineering Management (Pearson-set)
Lean Manufacturing
Further Thermodynamics

Year 2 (September - July)
Research Project
Industrial Systems
Fundamentals of Control Systems
Further Mathematics

Operations

Year 1 (February - July)
Professional Engineering Management (Pearson-set)
Heating, Ventilation, Air Conditioning (HVAC)
Industrial Services

Year 2 (September - July)
Research Project
Further Mathematics
Thermofluids
Fundamentals of Control Systems

Mechanical

Year 1 (February - July)
Professional Engineering Management (Pearson-set)
Advanced Mechanical Principles
Industrial Systems

Year 2 (September - July)
Research Project
Virtual Engineering
Further Mathematics
Further Thermodynamics

Manufacturing

Year 1 (February - July)
Professional Engineering Management (Pearson-set)
Manufacturing Systems Engineering
Lean Manufacturing

Year 2 (September - July)
Research Project
Advanced Manufacturing Technology
Industrial Services
Industrial Systems

Course Duration and Attendance
18 months part-time day release. Student attendance is required between 9am and 6:30pm.

Location
Available from the Gen2 centres in Energus, Carlisle and Ulverston.

Assessment
Assessment is carried out through coursework, oral presentations, group work, practical reports, critical reviews and end-of-module exams.

Progression
On successful completion of the HND qualification the students will have the opportunity to progress to a degree level course with Gen2 or with other providers. Currently the Gen2 BEng. in Plant Engineering is delivered at the Energus, Lillyhall Workington and progression onto this programme would be by achieving suitable grades at HND level and by an interview. There is the opportunity for students progressing to BEng. to undertake the level 5 bridging course for enhanced study or if the units studied at HND do not fully match the pathway of the BEng. programme.

Foundation Degree in Plant Engineering (Electrical Engineering)

Programme Overview

This course aims to provide the students with a consolidated body of knowledge appropriate to electrical and electronic engineering as practised within plant engineering. It will also provide students with an experience of higher education that reflects the requirements for innovation and inter-related activities in the industrial environment of plant engineering.

Course Duration

The course is normally delivered over 3 years (day release).

Course Target Group

This course is suitable for personnel who currently have a relevant level 3 qualification who wish to up skill to a level 5 degree level qualification in engineering

Validation Body

University of CUMBRIA

Location

The course is delivered by Gen2 in Energus at Lillyhall, Workington

Course Content

The course covers the following:

Year 1

Semester 1	Semester 2
PLEN4013 Maths for Plant Engineering & Technology I - Compulsory **(10 credits)**	PLEN4002 Maths for Plant Engineering & Technology II - Compulsory **(10 credits)**
PLEN4003 Fundamentals of Mechanical Science - Compulsory **(20 credits)**	PLEN4011 Fundamentals of Nuclear Science & the Nuclear Industry OR PLEN4010 Engineering & Process Measurement **(20 credits)**
PLEN4004 Electrical & Electronic Principles - Compulsory **(20 credits)**	

Year 2 - (Electrical Engineering Pathway)

Semester 1	Semester 2
PLEN40009 Electronic Instrumentation & Sequence Control - Compulsory **(20 credits)**	PLEN5005 Applications of Electrical Technology to Engineering Plant Systems **(20 credits)** - Compulsory
PLEN4007 Plant Based Project Management **(10 credits)** - Core	PLEN5008 Plant & Process Control **(20 credits)** Compulsory
PLEN4006 Plant Based Learning 4 Core **(10 credits)**	

Year 3 - (Electrical Engineering Pathway)

Semester 1	Semester 2
PLEN5001 Plant Based Project Core **(20 credits)**	
PLEN5019 Engineering Design **(20 credits)** Compulsory	
PLEN5003 Condition Monitoring & SQA **(10 credits)** Compulsory	PLEN5002 Further Maths for Plant Technology & Modelling **(10 credits)** Compulsory
SSSE5162 Integration of Energy Power Systems & Electrical Distribution **(20 credits)** Compulsory	

Foundation Degree in Plant Engineering (Mechanical Engineering)

Programme Overview

This course aims to provide the students with a consolidated body of knowledge appropriate to mechanical engineering as practised within plant engineering. It will also provide students with an experience of higher education that reflects the requirements for innovation and inter-related activities in the industrial environment of plant engineering.

Course Duration

The course is normally delivered over 3 years (day release).

Course Target Group

This course is suitable for personnel who currently have a relevant level 3 qualification who wish to up skill to a level 5 degree level qualification in engineering.

Validation Body

University of CUMBRIA

Location

The course is delivered by Gen2 in Energus at Lillyhall, Workington

Course Content

The course covers the following:

Year 1

Semester 1	Semester 2
PLEN4013 Maths for Plant Engineering & Technology I - Compulsory **(10 credits)**	PLEN4002 Maths for Plant Engineering & Technology II **(10 credits)** - Compulsory
PLEN4003 Fundamentals of Mechanical Science - Compulsory **(20 credits)**	PLEN4011 Fundamentals of Nuclear Science & the Nuclear Industry OR PLEN4010 Engineering & Process Measurement **(20 credits)**
PLEN4004 Electrical & Electronic Principles - Compulsory **(20 credits)**	

Year 2 - (Mechanical Engineering Pathway)

Semester 1	Semester 2
PLEN4008 Plant & Process Principles - **(10 credits) - Core**	PLEN5004 Thermo-Fluids & Heat Transfer **(20 credits)** - Compulsory
PLEN4007 Plant Based Project Management **(10 credits)** - Core	PLEN5007 Mechanics, Materials & Stress Analysis **(20 credits) - Compulsory**
PLEN4006 Plant Based Learning 4 **(10 credits) - Core**	

Year 3 - (Mechanical Engineering Pathway)

Semester 1	Semester 2
PLEN5001 Plant Based Project Core **(20 credits)**	
PLEN5019 Engineering Design **(20 credits)** Compulsory	
PLEN5017 - Applications of Pneumatics Hydraulics **(10 credits)** Compulsory	PLEN5002 Further Maths for Plant Technology & Modelling **(10 credits)** Compulsory
PLEN5021 Computer Aided Design & Drawing **(20 credits)** Compulsory	

Foundation Degree in Plant Engineering (Control & Instrumentation)

Programme Overview

This course aims to provide the students with a consolidated body of knowledge appropriate to instrumentation & control engineering as practised within plant engineering. It will also provide students with an experience of higher education that reflects the requirements for innovation and inter-related activities in the industrial environment of plant engineering.

Course Duration

The course is normally delivered over 3 years (day release).

Course Target Group

This course is suitable for personnel who currently have a relevant level 3 qualification who wish to up skill to a level 5 degree level qualification in engineering.

Validation Body

University of CUMBRIA

Location

The course is delivered by Gen2 in Energus at Lillyhall, Workington

Course Content

The course covers the following:

Year 1

Semester 1	Semester 2
PLEN4013 Maths for Plant Engineering & Technology I - Compulsory **(10 credits)**	PLEN4002 Maths for Plant Engineering & Technology II **(10 credits)** - Compulsory
PLEN4003 Fundamentals of Mechanical Science - Compulsory **(20 credits)**	PLEN4011 Fundamentals of Nuclear Science & the Nuclear Industry OR PLEN4010 Engineering & Process Measurement **(20 credits)**
PLEN4004 Electrical & Electronic Principles - Compulsory **(20 credits)**	

Year 2 - (Instrumentation & Control Pathway)

Semester 1	Semester 2
PLEN4009 Electronic Instrumentation & Sequence Control- **(20 credits)** - Option	PLEN5015 Computer Control **(20 credits)** - Compulsory
PLEN4007 Plant Based Project Management **(10 credits)** - Core	PLEN5008Plant & Process Control **(20 credits)** Compulsory
PLEN4006 Plant Based Learning 4 Core **(10 credits)**	

Year 3 - (Instrumentation & Control Pathway)

Semester 1	Semester 2
PLEN5001 Plant Based Project Core **(20 credits)**	
PLEN5019 Engineering Design **(20 credits)** Compulsory	
PLEN5003 Condition Monitoring & SQA **(10 credits)** Compulsory	PLEN5002 Further Maths for Plant Technology & Modelling **(10 credits)** Compulsory
PLEN5014 Smart Instruments & Networks **(20 credits)** Compulsory	

Foundation Degree in Plant Engineering (Quality Engineering)

Programme Overview

This course aims to provide the students with a consolidated body of knowledge appropriate to quality engineering as practised within plant engineering. It will also provide students with an experience of higher education that reflects the requirements for innovation and inter-related activities in the industrial environment of plant engineering.

Course Duration

The course is normally delivered over 3 years (day release).

Course Target Group

This course is suitable for personnel who currently have a relevant level 3 qualification who wish to up skill to a level 5 degree level qualification in engineering.

Validation Body

University of CUMBRIA

Location

The course is delivered by Gen2 in Energus at Lillyhall, Workington

Course Content

The course covers the following:

Year 1

Semester 1	Semester 2
PLEN4013 Maths for Plant Engineering & Technology I - Compulsory **(10 credits)**	PLEN4002 Maths for Plant Engineering & Technology II **(10 credits)** - Compulsory
PLEN4003 Fundamentals of Mechanical Science - Compulsory **(20 credits)**	PLEN4011 Fundamentals of Nuclear Science & the Nuclear Industry OR PLEN4010 Engineering & Process Measurement **(20 credits)**
PLEN4004 Electrical & Electronic Principles - Compulsory **(20 credits)**	

Year 2 - (Quality Engineering Pathway)

Semester 1	Semester 2
PLEN4008 Plant & Process Principles OR PLEN4009 Electronic Instrumentation & Sequence Control **(20 credits)** - Option	PLEN5007 Mechanics, Materials & Stress Analysis OR PLEN5005 Applications of Electrical Technology to Engineering Plant Systems **(20 credits)** - Option
PLEN4007 Plant Based Project Management **(10 credits)** - Core	PLEN5022 Applications of Quality Management **(20 credits)** Compulsory
PLEN4006 Plant Based Learning 4 Core **(10 credits)**	

Year 3 - (Instrumentation & Control Pathway)

Semester 1	Semester 2
PLEN5001 Plant Based Project - Core **(20 credits)**	
PLEN5012 Plant Commissioning OR PLEN5013 Plant Decommissioning & Decontamination Techniques & Procedures OR PLEN5024 - Applications of Materials to a Nuclear Plant **(20 credits)** Option	
PLEN5003 Condition Monitoring & SQA **(10 credits)** Compulsory	PLEN5018 Principles of Civil Engineering **(10 credits)** Compulsory
PLEN5023 Leadership of Quality Management **(20 credits)** Compulsory	

Foundation Degree in Plant Engineering (Nuclear Plant & Process Technology)

Programme Overview

This course aims to provide the students with a consolidated body of knowledge appropriate to nuclear plant & process technology as practised within plant engineering. It will also provide students with an experience of higher education that reflects the requirements for innovation and inter-related activities in the industrial environment of plant engineering.

Course Duration

The course is normally delivered over 3 years (day release).

Course Target Group

This course is suitable for personnel who currently have a relevant level 3 qualification who wish to up skill to a level 5 degree level qualification in engineering.

Validation Body

University of CUMBRIA

Location

The course is delivered by Gen2 in Energus at Lillyhall, Workington

Course Content

The course covers the following:

Year 1

Semester 1	Semester 2
PLEN4013 Maths for Plant Engineering & Technology I - Compulsory **(10 credits)**	PLEN4002 - Maths for Plant Engineering & Technology II **(10 credits)** - Compulsory
PLEN4003 Fundamentals of Mechanical Science - Compulsory **(20 credits)**	PLEN4011 Fundamentals of Nuclear Science & the Nuclear Industry OR PLEN4010 Engineering & Process Measurement **(20 credits)**
PLEN4004 Electrical & Electronic Principles - Compulsory **(20 credits)**	

Year 2 - (Nuclear Plant and Process Technology Pathway)

Semester 1	Semester 2
PLEN4008 Plant & Process Principles **(20 credits)** - Option	PLEN5004 Thermo-Fluids & Heat Transfer **(20 credits)** - Compulsory
PLEN4007 Plant Based Project Management **(10 credits)** - Core	PLEN5008 - Plant & Process Control **(20 credits)** Compulsory
PLEN4006 Plant Based Learning 4 Core **(10 credits)**	

Year 3 - (Nuclear Science & Process Technology Pathway)

Semester 1	Semester 2
PLEN5001 Plant Based Project - Core **(20 credits)**	
PLEN5012 Plant Commissioning OR PLEN5013 Plant Decommissioning & Decontamination Techniques & Procedures OR PLEN5024 - Applications of Materials to a Nuclear Plant - Option **(20 credits)**	
PLEN5016 Analytical Techniques & Instrumentation **(10 credits)** Compulsory	PLEN5002 Further maths for Plant Technology & Modelling **(10 credits)** Compulsory
PLEN5025 Nuclear Principles and Plant **(20 credits)** Compulsory	

Foundation Degree Apprenticeship - Nuclear Technician

Programme Overview

The aim of the Foundation Degree (FdEng) programme is to provide industry with highly skilled and qualified technicians and engineers with strong academic ability in science and engineering, complimented by extensive on-plant experience. FdEng Apprentices are engaged in a variety of research and development projects aimed at improving plant operations. They develop innovative solutions to meet unique technical challenges in highly-regulated safety-critical industries.

Who should apply?

School-leavers, 18 years and older and others looking for a career in engineering or technology within the sponsoring organisations and who wish to achieve university-level qualifications while in paid employment.

Pre-requisites

Candidates must be aged 18+ years and hold a minimum of 96 UCAS points (equivalent to the previous rating of 240). This total can have been gained either at 'A'-level in appropriate STEM subjects, or, alternatively, a National Certificate at Level 3 (such as BTEC) either in Science or Engineering. In addition, prospective candidates must have achieved a minimum of 5 GCSE's at grades 9 to 5 (equivalent to the previous GCSE A* to C grades) and which include Maths, English Language and a Science subject

What will I study?

There are 5 pathways available for students to achieve FdEng in Plant Engineering; these include the following areas:

- **Instrumentation & Control Engineering**
- **Electrical Engineering**
- **Mechanical Engineering**
- **Nuclear Plant & Process Technology**
- **Quality Engineering**

What qualifications will I obtain?

On successful completion of this apprenticeship and End Point Assessment learners will obtain:

- FdEng - Level 5 qualification in chosen discipline

Delivered by Gen2 and awarded by the University of Cumbria.

University of CUMBRIA

Professional Accreditations

The degrees are accredited by:

- The Institute of Measurement and Control
- The Institute of Plant Engineers
- The Society of Operations Engineers

and fulfils the criteria for registration as Engineering Technician (EngTech) and Incorporated Engineer (IEng)

How and where will my training be delivered?

The academic timetable is as follows:

Degree:

- Years 1 to 3: January to May, then September to December

- **Work-based competency:** Students will be on placement with their sponsoring employer at all times when not on academic release, and including the periods between teaching semesters.

- **Academic:** Students will study all of their taught components at a Gen2 HE Centre based in West Cumbria, including the pre-degree recommended 4-month Bridging Course. The students will attend the Gen2 Centre for the 36-month duration of the degree.

Progression

Students achieving the FdEng in Plant Engineering can progress onto the BEng(Hons) at Level 6 in their chosen discipline. These qualifications can aid progression towards Chartered Engineer or Chartered Scientist status.

Average salaries in these professions can range from £30k to £70k when fully qualified.

Level 6 Qualifications

- Degree Apprenticeship - Nuclear Scientist & Nuclear Engineer
- BEng(Hons) Degree in Plant Engineering (Electrical Engineering)
- BEng(Hons) Degree in Plant Engineering (Mechanical Engineering)
- BEng(Hons) Degree in Plant Engineering (Instrumentation & Control)
- BEng(Hons) Degree in Plant Engineering (Quality Engineering)
- BEng(Hons) Degree in Plant Engineering (Nuclear Plant and Process Technology)
- Degree Apprenticeship - Control / Technical Support Engineer
- Degree Apprenticeship - Manufacturing Engineering
- Degree Apprenticeship - Product Design and Development

Degree Apprenticeship - Nuclear Scientist & Nuclear Engineer

Programme Overview

The aim of this degree programme is to provide industry with highly skilled and qualified technicians and engineers with strong academic ability in science and engineering complimented by extensive on-plant experience. Degree Apprentices are engaged in a variety of research and development projects aimed at improving plant operations. They develop innovative solutions to meet unique technical challenges in highly-regulated safety-critical industries.

Who should apply?

School-leavers, 18 years and older and others looking for a career in engineering or technology within the sponsoring organisations and who wish to achieve university-level qualifications while in paid employment.

Pre-requisites

Candidates must be aged 18+ years and hold a minimum of 96 UCAS points (equivalent to the previous rating of 240). This total can have been gained either at 'A'-level in appropriate STEM subjects, or, alternatively, a National Certificate at Level 3 (such as BTEC) either in Science or Engineering. In addition, prospective candidates must have achieved a minimum of 5 GCSE's at grades 9 to 5 (equivalent to the previous GCSE A to C grades) and which include Maths, English Language and a Science subject

What will I study?

There are 5 pathways available for students to follow from FdEng through to BEng(Hons) This degree includes the following areas:

- **Instrumentation & Control Engineering**
- **Electrical Engineering**
- **Mechanical Engineering**
- **Nuclear Plant & Process Technology**
- **Quality Engineering**

What qualifications will I obtain?

On successful completion of this apprenticeship and End Point Assessment learners will obtain either:

- FdEng - Level 5 qualification in chosen discipline
- BEng (Hons) - Level 6 qualification in chosen discipline

Delivered by Gen2 and awarded by the University of Cumbria.

University of CUMBRIA

Professional Accreditations

The degrees are accredited by:

- The Institute of Measurement and Control
- The Institute of Plant Engineers
- The Society of Operations Engineers

and fulfils the criteria for registration as Engineering Technician (EngTech) and Incorporated Engineer (IEng)

Where will my training be delivered?

The academic timetable is as follows:

Bridging Course
- (pre-Degree Apprenticeship): 4 months - September to December

Degree:
- Years 1 to 4: January to May, then September to December
- Year 5: January to December for the Project Dissertation

- **Work-based competency:** Students will be on placement with their sponsoring employer at all times when not on academic release, and including the periods between teaching semesters.

- **Academic:** Students will study all of their taught components at a Gen2 HE Centre based in West Cumbria, including the pre-degree recommended 4-month Bridging Course. The students will attend the Gen2 Centre for the 60-month duration of the degree.

Progression

Students achieving the BEng(Hons) in Plant Engineering can progress towards Chartered Engineer or Chartered Scientist status.

Average salaries in these professions can range from £30k to £70k when fully qualified.

BEng(Hons) Degree in Plant Engineering (Electrical Engineering)

Programme Overview

This course aims to provide the students with a consolidated body of knowledge appropriate to electrical and electronic engineering as practised within plant engineering. It will also provide students with an experience of higher education that reflects the requirements for innovation and inter-related activities in the industrial environment of plant engineering.

Course Duration

The course is normally delivered over 2 years (day release).

Course Target Group

This course is suitable for personnel who have completed the Foundation Degree in Plant Engineering or a HND qualification and wish to progress to a level 6 honours degree in engineering.

Validation Body

University of CUMBRIA

Location

The course is delivered by Gen2 in Energus at Lillyhall, Workington and/or the Gen2 Higher Education Facility at Carlisle.

Year 1 - (Electrical Engineering Pathway)

Semester 1	Semester 2
PLEN6001 Plant Automation **(20 credits)** - Compulsory	PLEN6011 Mechatronics & System Interfacing **(20 credits)** - Compulsory
PLEN6002 Plant Design & Simulation Compulsory **(20 credits)**	
PLEN6013 Electrical Machines & Drives Compulsory **(20 credits)**	

Year 2 - (Common Project Module)

Semester 1	Semester 2
PLEN6003 Industrial Project **(40 credits)** - Core	

BEng(Hons) Degree in Plant Engineering (Mechanical Engineering)

Programme Overview

This course aims to provide the students with a consolidated body of knowledge appropriate to mechanical engineering as practised within plant engineering. It will also provide students with an experience of higher education that reflects the requirements for innovation and inter-related activities in the industrial environment of plant engineering.

Course Duration

The course is normally delivered over 2 years (day release).

Course Target Group

This course is suitable for personnel who have completed the Foundation Degree in Plant Engineering or a HND qualification and wish to progress to a level 6 honours degree in engineering.

Validation Body

University of CUMBRIA

Location

The course is delivered by Gen2 in Energus at Lillyhall, Workington and/or the Gen2 Higher Education Facility at Carlisle.

Year 1 - (Mechanical Engineering Pathway)

Semester 1	Semester 2
PLEN6009 Fluid Mechanics and CFD **(20 credits)** - Compulsory	PLEN6004 Structural Integrity & Materials Performance **(20 credits)** - Compulsory
PLEN6002 Plant Design & Simulation Compulsory **(20 credits)**	
PLEN6008 Advanced Thermo-hydraulics Compulsory **(20 credits)**	

Year 2 - (Common Project Module)

Semester 1	Semester 2
PLEN6003 Industrial Project **(40 credits)** - Core	

BEng(Hons) Degree in Plant Engineering (Instrumentation & Control)

Programme Overview

This course aims to provide the students with a consolidated body of knowledge appropriate to instrumentation & control as practised within plant engineering. It will also provide students with an experience of higher education that reflects the requirements for innovation and inter-related activities in the industrial environment of plant engineering.

Course Duration

The course is normally delivered over 2 years (day release).

Course Target Group

This course is suitable for personnel who have completed the Foundation Degree in Plant Engineering or a HND qualification and wish to progress to a level 6 honours degree in engineering.

Validation Body

University of CUMBRIA

Location

The course is delivered by Gen2 in Energus at Lillyhall, Workington and/or the Gen2 Higher Education Facility at Carlisle.

Year 1 - (Instrumentation & Control Pathway)

Semester 1	Semester 2
PLEN6001 Plant Automation **(20 credits)** - Compulsory	PLEN6011 Mechatronics & System Interfacing **(20 credits)** - Compulsory
PLEN6002 Plant Design & Simulation Compulsory **(20 credits)**	
PLEN6006 Plant Control Engineering Compulsory **(20 credits)**	

Year 2 - (Common Project Module)

Semester 1	Semester 2
PLEN6003 Industrial Project **(40 credits)** - Core	

BEng(Hons) Degree in Plant Engineering (Quality Engineering)

Programme Overview

This course aims to provide the students with a consolidated body of knowledge appropriate to quality engineering as practised within plant engineering. It will also provide students with an experience of higher education that reflects the requirements for innovation and inter-related activities in the industrial environment of plant engineering.

Course Duration

The course is normally delivered over 2 years (day release).

Course Target Group

This course is suitable for personnel who have completed the Foundation Degree in Plant Engineering or a HND qualification and wish to progress to a level 6 honours degree in engineering.

Validation Body

University of CUMBRIA

Location

The course is delivered by Gen2 in Energus at Lillyhall, Workington and/or the Gen2 Higher Education Facility at Carlisle.

Year 1 - (Quality Engineering Pathway)

Semester 1	Semester 2
PLEN6001 Plant Automation OR PLEN6009 Fluid Mechanics and CFD OR PLEN6012 Principles of Design in Civil Engineering **(20 credits)** - Option	PLEN6011 Mechatronics & System Interfacing **(20 credits)** OR PLEN6004 Structural Integrity & Materials Performance **(20 credits)** Option
PLEN6002 Plant Design & Simulation Compulsory **(20 credits)**	
PLEN6010 Management of Quality Engineering Principles in Projects Compulsory **(20 credits)**	

Year 2 - (Common Project Module)

Semester 1	Semester 2
PLEN6003 Industrial Project **(40 credits)** - Core	

BEng(Hons) Degree in Plant Engineering (Nuclear Plant & Process Technology)

Programme Overview

This course aims to provide the students with a consolidated body of knowledge appropriate to nuclear plant & process technology as practised within plant engineering. It will also provide students with an experience of higher education that reflects the requirements for innovation and inter-related activities in the industrial environment of plant engineering.

Course Duration

The course is normally delivered over 2 years (day release).

Course Target Group

This course is suitable for personnel who have completed the Foundation Degree in Plant Engineering or a HND qualification and wish to progress to a level 6 honours degree in engineering.

Validation Body

University of CUMBRIA

Location

The course is delivered by Gen2 in Energus at Lillyhall, Workington and/or the Gen2 Higher Education Facility at Carlisle.

Year 1 - (Nuclear Plant & Process Technology Pathway)

Semester 1	Semester 2
PLEN6014 Nuclear Waste Management **(20 credits)** - Compulsory	PLEN6004 - Structural Integrity & Materials Performance **(20 credits)** - Compulsory
PLEN6002 Plant Design & Simulation Compulsory **(20 credits)**	
PLEN6015 Processing of Irradiated Materials Compulsory **(20 credits)**	

Year 2 - (Common Project Module)

Semester 1	Semester 2
PLEN6003 Industrial Project **(40 credits)** - Core	

Degree Apprenticeship - Control / Technical Support Engineer

Qualification Overview

Control/Technical Support Engineers primarily assist the smooth running of manufacturing with activities such as site maintenance. Typically they work closely with other production roles in a fast-paced and cost-conscious manufacturing environment, where complex problem solving is key.

Pre-requisites

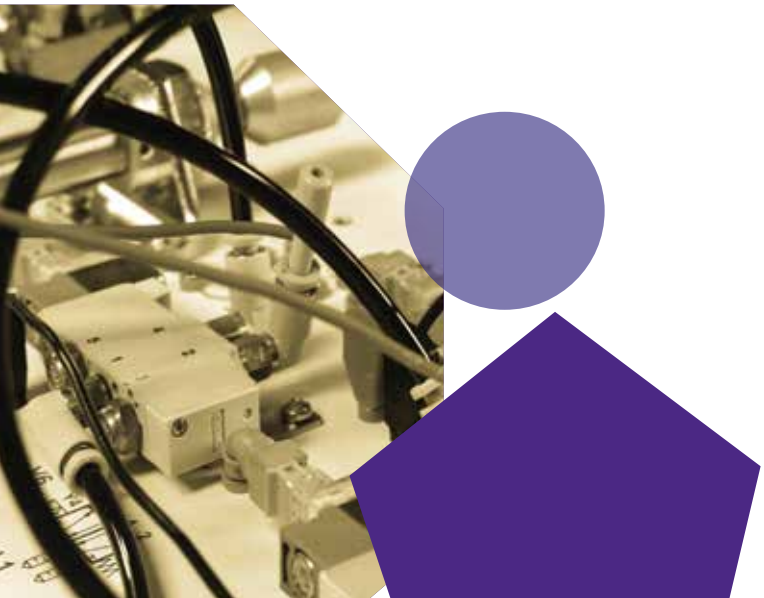
Students are likely to be aged 18+ years and hold a minimum of 96 UCAS points (equivalent to the previous rating of 240). This total can have been gained either at 'A'-level in appropriate STEM subjects, or, alternatively, a National Certificate at Level 3 (such as BTEC) either in Science or Engineering. In addition, prospective candidates must have achieved a minimum of 5 GCSE's at grades 9 to 5 (equivalent to the previous GCSE A to C grades) and which include Maths, English Language and an appropriate Science subject.

Course Duration

This degree apprenticeship can be delivered using one of the five delivery models, with varying course durations. Refer to delivery plan for full details.

Course Target Group

This apprenticeship is open to those leaving sixth form education or others looking for a career in engineering within the sponsoring organisations and who wish to achieve a university-level qualification while in paid employment.



Validation Body

This apprenticeship is delivered by Gen2, with the full degree awarded by the University of Cumbria.

University of CUMBRIA

Location

The academic course is delivered by Gen2 in Energus, Lillyhall, Workington.

The NVQ component will be delivered by Gen2 in Energus, Lillyhall, Workington, Carlisle Skills Centre, Kingmoor Park, Carlisle or Furness Skills Centre, Lightburn Trading Estate, Ulverston.

Qualifications Gained

Foundation Degree and BEng Honours Degree in Plant Engineering with one of the following pathways:

- Control & Instrumentation
- Degree Apprenticeship - Level 6 in Control / Technical Support Engineering

Progression

Students achieving the BEng(Hons) can apply for Chartered Engineer status.

The course covers the following:

Year 1

Semester 1	Semester 2
PLEN4013 Maths for Plant Engineering & Technology I - Compulsory **(10 credits)**	PLEN4002 - Maths for Plant Engineering & Technology II - Compulsory **(10 credits)**
PLEN4003 Fundamentals of Mechanical Science - Compulsory - **(20 credits)**	PLEN4010 Engineering and Process Measurement **(20 credits)**
PLEN4004 Electrical & Electronic Principles - Compulsory - **(20 credits)**	

Year 2 - (Instrumentation & Control Pathway - Control / Technical Support Engineer)

Semester 1	Semester 2
PLEN4009 Electronic Instrumentation & Sequence Control - Option - **(20 credits)**	PLEN5015 Computer Control Compulsory - **(20 credits)**
PLEN4007 Plant Based Project Management Core - **(10 credits)**	PLEN5008 - Plant & Process Control Option **(20 credits)**
PLEN4006 Plant Based Learning 4 Core - **(10 credits)**	

Year 3 - (Instrumentation & Control Pathway - Control / Technical Support Engineer)

Semester 1	Semester 2
PLEN5001 Plant Based Project - Core - **(20 credits)**	
PLEN5019 Engineering Design - Compulsory - **(20 credits)**	
PLEN5002 Further Maths for Plant Technology & Modelling - Compulsory **(10 credits)**	PLEN5017 Applications of Hydraulic and Pneumatic Systems - Option **(10 credits)**
PLEN5014 Smart Instruments & Networks - Compulsory - **(20 credits)**	

Year 4 - (Instrumentation & Control Pathway - Control / Technical Support Engineer)

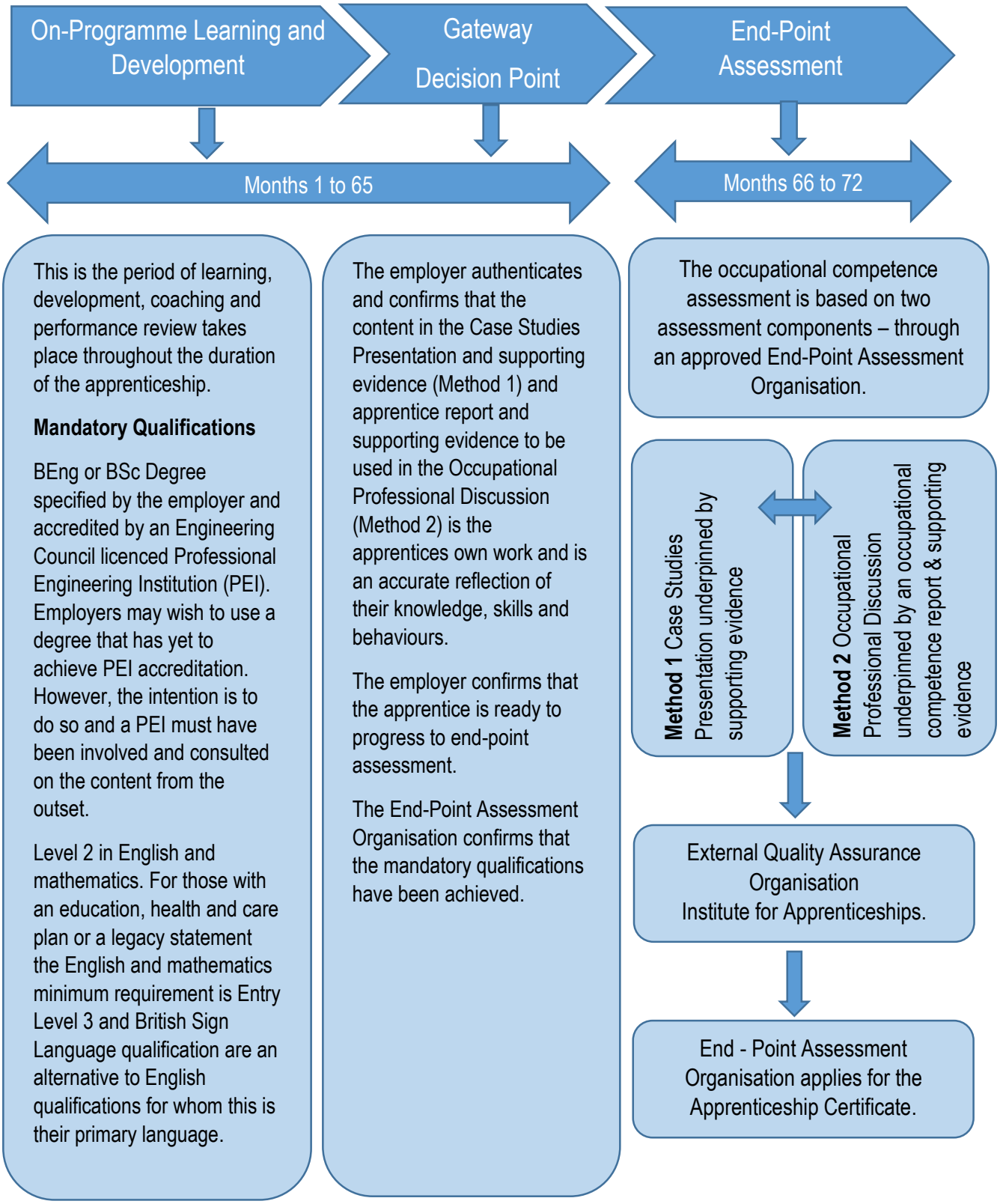
Semester 1	Semester 2
PLEN6001 Plant Automation - Compulsory **(20 credits)**	PLEN6011 Mechatronics & System Integration Compulsory - **(20 credits)**
PLEN6002 - Plant Design & Simulation - Compulsory **(20 credits)**	
PLEN6006 - Plant Control Engineering - Compulsory **(20 credits)**	

Year 5 - (Common Project Module)

Semester 1	Semester 2
PLEN6016 Industrial Project - Core - **(40 credits)**	

Degree Apprenticeship - Control / Technical Support Engineer (continued)

Degree Apprenticeship - Level 6 - Control / Technical Support Engineer - Typical Apprenticeship Journey



Degree Apprenticeship - Manufacturing Engineering

Qualification Overview

Manufacturing Engineers primarily support the activities involved in bringing design programmes into manufacture. This role is pivotal to the launch planning and smooth delivery of exciting new products or product refresh programmes. The focus is on the advanced manufacturing techniques and project management skills required to launch products on time, on cost and to the right quality. Typically Manufacturing Engineers work closely with a range of other engineers, functions and managers both within their own company and supplier base.

Pre-requisites

Students are likely to be aged 18+ years and hold a minimum of 96 UCAS points (equivalent to the previous rating of 240). This total can have been gained either at 'A'-level in appropriate STEM subjects, or, alternatively, a National Certificate at Level 3 (such as BTEC) either in Science or Engineering. In addition, prospective candidates must have achieved a minimum of 5 GCSE's at grades 9 to 5 (equivalent to the previous GCSE A to C grades) and which include Maths, English Language and an appropriate Science subject.

Course Duration

This degree apprenticeship can be delivered using one of the five delivery models, with varying course durations. Please see delivery plan on final page for full details.

Course Target Group

This apprenticeship is open to those leaving sixth form education or others looking for a career in engineering within the sponsoring organisations and who wish to achieve a university-level qualification while in paid employment.

Validation Body

This apprenticeship is delivered by Gen2, with the full degree awarded by the University of Cumbria.

University of CUMBRIA

Location

The academic course is delivered by Gen2 in Energus, Lillyhall, Workington.

The NVQ component will be delivered by Gen2 in Energus, Lillyhall, Workington, Carlisle Skills Centre, Kingmoor Park, Carlisle or Furness Skills Centre, Lightburn Trading Estate, Ulverston.

Qualifications Gained

Foundation Degree and BEng Honours Degree in Plant Engineering with one of the following pathways:

- Mechanical Engineering
- Degree Apprenticeship - Level 6 in Manufacturing Engineering

Progression

Students achieving the BEng(Hons) can apply for Chartered Engineer status.

The course covers the following:

Year 1

Semester 1	Semester 2
PLEN4013 Maths for Plant Engineering & Technology I - Compulsory - **(10 credits)**	PLEN4002 - Maths for Plant Engineering & Technology II - Compulsory - **(10 credits)**
PLEN4003 Fundamentals of Mechanical Science - Compulsory - **(20 credits)**	PLEN4010 Engineering and Process Measurement **(20 credits)**
PLEN4004 Electrical & Electronic Principles - Compulsory **(20 credits)**	

Year 2 - (Mechanical Engineering Pathway - Manufacturing Engineering)

Semester 1	Semester 2
PLEN4008 Plant & Process Principles Compulsory - **(20 credits)**	PLEN5004 Thermo-Fluids & Heat Transfer Compulsory - **(20 credits)**
PLEN4007 Plant Based Project Management Core - **(10 credits)**	PLEN5007 - Mechanics, Materials & Stress Analysis Compulsory **(20 credits)**
PLEN4006 Plant Based Learning 4 Core - **(10 credits)**	

Year 3 - (Mechanical Engineering Pathway - Manufacturing Engineering)

Semester 1	Semester 2
PLEN5001 Plant Based Project - Core - **(20 credits)**	
PLEN5019 Engineering Design - Compulsory - **(20 credits)**	
PLEN5002 Further Maths for Plant Technology & Modelling - Compulsory **(10 credits)**	PLEN5017 Applications of Hydraulic and Pneumatic Systems - Compulsory **(10 credits)**
PLEN5021 Computer Aided Design & Drawing - Compulsory **(20 credits)**	

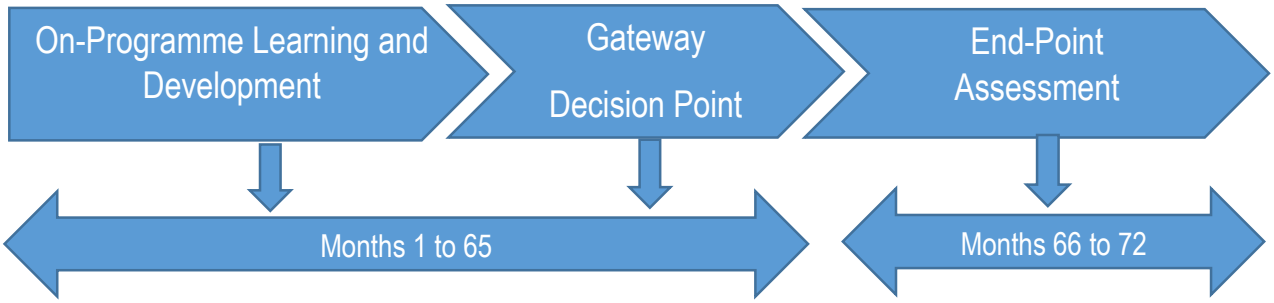
Year 4 - (Mechanical Engineering Pathway - Manufacturing Engineering)

Semester 1	Semester 2
PLEN6009 Fluid Mechanics and CFD - Compulsory **(10 credits)**	PLEN004 - Structural Integrity & Materials Performance - Compulsory **(10 credits)**
PLEN6002 Plant Design & Simulation - Compulsory **(20 credits)**	
PLEN6008 Advanced Thermo-hydraulics - Compulsory **(20 credits)**	

Year 5 - (Common Project Module)

Semester 1	Semester 2
PLEN6016 Industrial Project - Core - **(40 credits)**	

Degree Apprenticeship - Level 6 - Manufacturing Engineering - Typical Apprenticeship Journey



This is the period of learning, development, coaching and performance review takes place throughout the duration of the apprenticeship.

Mandatory Qualifications

BEng or BSc Degree specified by the employer and accredited by an Engineering Council licenced Professional Engineering Institution (PEI). Employers may wish to use a degree that has yet to achieve PEI accreditation. However, the intention is to do so and a PEI must have been involved and consulted on the content from the outset.

Level 2 in English and mathematics. For those with an education, health and care plan or a legacy statement the English and mathematics minimum requirement is Entry Level 3 and British Sign Language qualification are an alternative to English qualifications for whom this is their primary language.

The employer authenticates and confirms that the content in the Case Studies Presentation and supporting evidence (Method 1) and apprentice report and supporting evidence to be used in the Occupational Professional Discussion (Method 2) is the apprentices own work and is an accurate reflection of their knowledge, skills and behaviours.

The employer confirms that the apprentice is ready to progress to end-point assessment.

The End-Point Assessment Organisation confirms that the mandatory qualifications have been achieved.

The occupational competence assessment is based on two assessment components – through an approved End-Point Assessment Organisation.

Method 1 Case Studies Presentation underpinned by supporting evidence

Method 2 Occupational Professional Discussion underpinned by an occupational competence report & supporting evidence

External Quality Assurance Organisation
Institute for Apprenticeships.

End - Point Assessment Organisation applies for the Apprenticeship Certificate.

Degree Apprenticeship - Product Design & Development

Qualification Overview

Product Design & Development Engineers work on all stages of product creation, product modification and product components. They support activities ranging on early concept feasibility, Computer Aided Design and other modelling, activities and stages through to final preparation for launch and customers. This includes working in concept studios, rapid prototyping, assembly, and testing, validating and analysing performance. Typically they work closely with suppliers and managers in bringing new concepts to life or contributing to redesigns of existing products.

Pre-requisites

Students are likely to be aged 18+ years and hold a minimum of 96 UCAS points (equivalent to the previous rating of 240). This total can have been gained either at 'A'-level in appropriate STEM subjects, or, alternatively, a National Certificate at Level 3 (such as BTEC) either in Science or Engineering. In addition, prospective candidates must have achieved a minimum of 5 GCSE's at grades 9 to 5 (equivalent to the previous GCSE A to C grades) and which include Maths, English Language and an appropriate Science subject.

Course Duration

This degree apprenticeship can be delivered using one of the five delivery models, with varying course durations. Please see delivery plan on final page for full details.

Course Target Group

This apprenticeship is open to those leaving sixth form education or others looking for a career in engineering within the sponsoring organisations and who wish to achieve a university-level qualification while in paid employment.

Validation Body

This apprenticeship is delivered by Gen2, with the full degree awarded by the University of Cumbria.

University of CUMBRIA

Location

The academic course is delivered by Gen2 in Energus, Lillyhall, Workington.

The NVQ component will be delivered by Gen2 in Energus, Lillyhall, Workington, Carlisle Skills Centre, Kingmoor Park, Carlisle or Furness Skills Centre, Lightburn Trading Estate, Ulverston.

Qualifications Gained

Foundation Degree and BEng Honours Degree in Plant Engineering with one of the following pathways:

- Degree in Electrical Engineering
- Degree in Mechanical Engineering
- Degree Apprenticeship in Product Design and Development

Progression

Students achieving the BEng(Hons) can apply for Chartered Engineer status.

Degree Apprenticeship - Product Design & Development (continued)

The course covers the following:

Electrical Engineering Pathway

Year 1

Semester 1	Semester 2
PLEN4013 Maths for Plant Engineering & Technology I - Compulsory - **(10 credits)**	PLEN4002 - Maths for Plant Engineering & Technology II - Compulsory - **(10 credits)**
PLEN4003 Fundamentals of Mechanical Science - Compulsory - **(20 credits)**	PLEN4010 Engineering and Process Measurement **(20 credits)**
PLEN4004 Electrical & Electronic Principles - Compulsory - **(20 credits)**	

Year 2 - (Electrical Engineering Pathway - Product Design and Development Engineer)

Semester 1	Semester 2
PLEN4009 Electronic Instrumentation & Sequence Control - Compulsory **(20 credits)**	PLEN5005 Applications of Electrical Technology to Engineering Plant Systems - Compulsory **(20 credits)**
PLEN4007 Plant Based Project Management Core - **(10 credits)**	PLEN5007 - Mechanics, Materials and Stress Analysis - Option - **(20 credits)**
PLEN4006 Plant Based Learning 4 Core - **(10 credits)**	

Year 3 - (Electrical Engineering Pathway - Product Design and Development Engineer)

Semester 1	Semester 2
PLEN5001 Plant Based Project Core - **(20 credits)**	
PLEN5019 Engineering Design Compulsory - **(20 credits)**	
PLEN5002 Further Maths for Plant Technology & Modelling - Option - **(10 credits)**	PLEN5003 Condition Monitoring & SQA Option - **(10 credits)**
SSSE5162 Integration of Energy Power Systems & Electrical Distribution Compulsory - **(20 credits)**	

Year 4 - (Electrical Engineering Pathway)

Semester 1	Semester 2
PLEN6001 Plant Automation - Compulsory **(20 credits)**	PLEN6011 - Mechatronics & System Integration Compulsory **(20 credits)**
PLEN6002 Plant Design & Simulation - Compulsory **(20 credits)**	
PLEN6013 Electrical Machines & Drives - Compulsory **(20 credits)**	

Year 5 - (Common Project Module)

Semester 1	Semester 2
PLEN6016 Industrial Project - Core - **(40 credits)**	

The course covers the following:

Mechanical Engineering Pathway

Year 1

Semester 1	Semester 2
PLEN4013 Maths for Plant Engineering & Technology I - Compulsory - **(10 credits)**	PLEN4002 - Maths for Plant Engineering & Technology II - Compulsory - **(10 credits)**
PLEN4003 Fundamentals of Mechanical Science - Compulsory - **(20 credits)**	PLEN4010 Engineering and Process Measurement **(20 credits)**
PLEN4004 Electrical & Electronic Principles - Compulsory - **(20 credits)**	

Year 2 - (Mechanical Engineering Pathway - Product Design and Development Engineer)

Semester 1	Semester 2
PLEN4008 Plant & Process Principles Compulsory - **(20 credits)**	PLEN5004 Thermo-Fluids & Heat Transfer Compulsory - **(20 credits)**
PLEN4007 Plant Based Project Management Core - **(10 credits)**	PLEN5007 - Mechanics, Materials and Stress Analysis - Option - **(20 credits)**
PLEN4006 Plant Based Learning 4 Core - **(10 credits)**	

Year 3 - (Mechanical Engineering Pathway - Product Design and Development Engineer)

Semester 1	Semester 2
PLEN5001 Plant Based Project Core - **(20 credits)**	
PLEN5019 Engineering Design Compulsory - **(20 credits)**	
PLEN5002 Further Maths for Plant Technology & Modelling - Option - **(10 credits)**	PLEN5017 Applications of Hydraulic and Pneumatic Systems - Option - **(10 credits)**
PLEN5021 Computer Aided Design & Drawing Compulsory - **(20 credits)**	

Year 4 - (Mechanical Engineering Pathway - Product Design and Development Engineer)

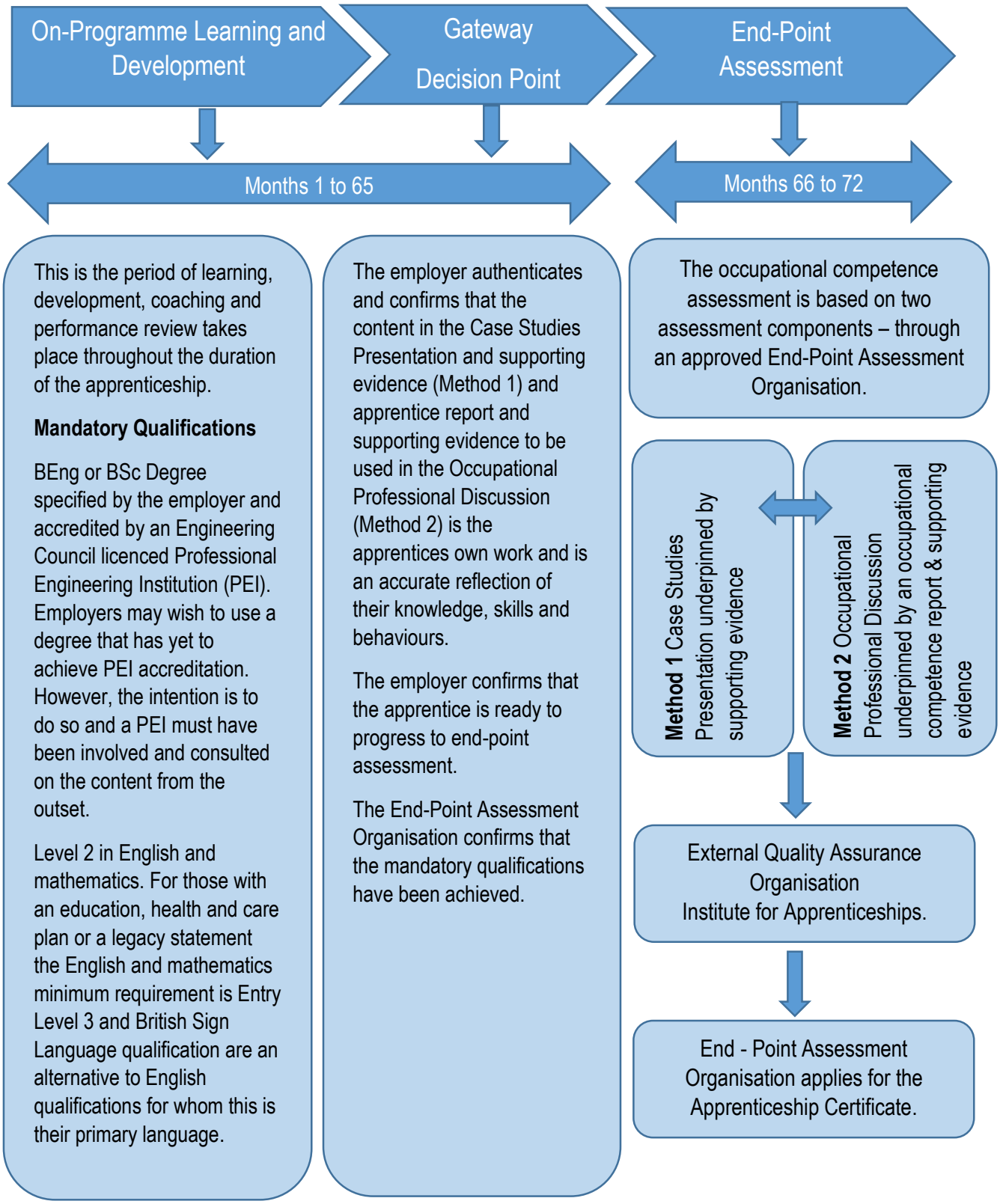
Semester 1	Semester 2
PLEN6009 Fluid Mechanics and CFD - Compulsory **(20 credits)**	PLEN6004 - Structural Integrity & Materials Performance - Compulsory **(20 credits)**
PLEN6002 Plant Design & Simulation - Compulsory **(20 credits)**	
PLEN6008 Advanced Thermo-hydraulics - Compulsory **(20 credits)**	

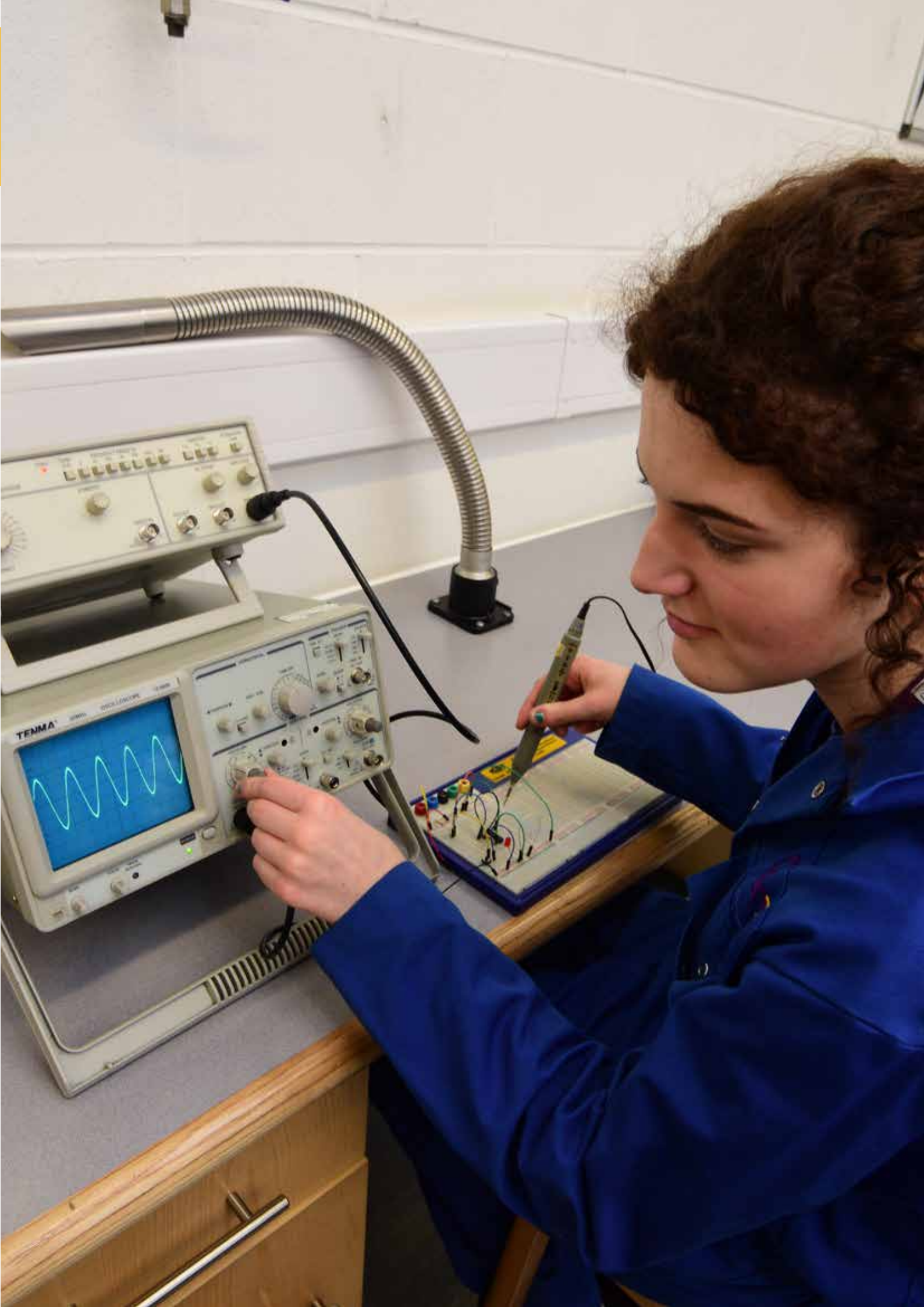
Year 5 - (Common Project Module)

Semester 1	Semester 2
PLEN6016 Industrial Project - Core - **(40 credits)**	

Degree Apprenticeship - Product Design & Development (continued)

Degree Apprenticeship - Level 6 - Product Design and Development - Typical Apprenticeship Journey




TENMA

Additional Courses and Schemes at Gen2

Electrical Engineering courses available:

Course	Duration
Inspection, Testing & Certification of Electrical Installations - 2395	4 days plus a half day assessment
Electrical Safety	1 day
Electrical Upskilling	5-10 days depending on experience
18th Edition Wiring Regulations	4 day full course or 1 day upgrade course
Instrumentation Systems Testing & Calibration	5 days

Mechanical Engineering courses include:

Course	Duration
Pneumatics	3 days
Hydraulics	3 days
Process Control	5 days
Process Plant Pumping & Piping Systems	5 days
Technology of Fluid in Pipelines	5 days
CSWIP 3.0	3 days
CSWIP 3.1	5 days

NVQs include:

Course	Level
Business Improvement Techniques	2-4
Performing Manufacturing Operations	2
Performing Engineering Operations	2
Mechanical Manufacturing Engineering	2 & 3
Warehousing	2 & 3
Chemical Operations	2
Engineering Maintenance	2 & 3
Installation & Commissioning	2 & 3
Engineering Technical Support	2 & 3
Fabrication & Welding	2 & 3
Engineering Leadership	4
Materials Processing & Finishing	2 & 3
Electrical & Electronic Engineering	2 & 3
Business Administration	2,3 & 4
Customer Services	2,3 & 4
Team Leading	2
Management	3 & 5
Nuclear Decommissioning Technology	2 & 3

General Engineering courses include:

Course	Duration
Ladder Safety	Half day
Slinging	1 day
Safety Harness Training	Half day

Health & Safety courses include:

Course	Duration
Fire Safety	Half day
Risk Assessment	1 day
CDM Regulations	1 day
Emergency First Aid	1 day
CIEH level 2 in principles of COSHH	Half day
CIEH level 2 in the principles of Manual Handling	Half day
Safety Work in Confined Spaces	1 day
Gas Bottle Safety	Half day

Apprenticeships include:

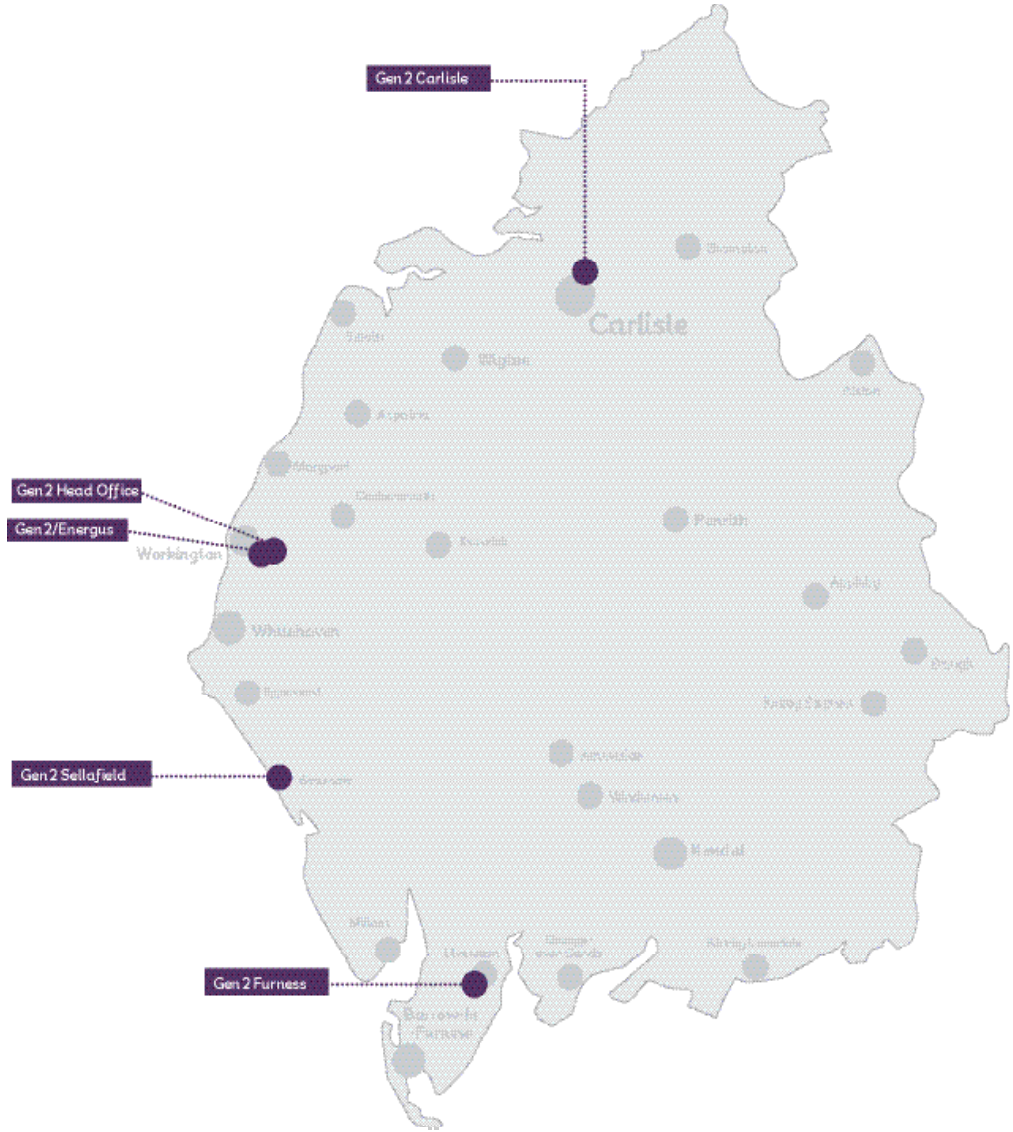
Course
Mechanical
Electrical & Instrumentation
Welding, Fabrication & Plating
Process
Control Systems
Scientific
Mechanical Design
Electrical Design
Customer Service
Business & Administration
Warehousing
Business Improvement Techniques
Nuclear Operator
Health Physics Monitor
Project Management
Nuclear Welding Inspection Technician
Non-Destructive Testing
Electrotechnical
IT Infrastructure Technician
Management and Team Leading

Please Note: New courses are constantly being added, if you do not see the course you require, please contact Gen2 as the organisation may already have the course available, or may be able to provide it upon request.

Gen2 Customers

Gen2 are proud to deliver high quality training and education services to over 300 customers, including a broad spectrum of well known and highly respected businesses:

Gen2 locations



Gen2 Head Office
Blackwood Road
Lillyhall Industrial Estate
Workington, Cumbria CA14 4JJ.
01900 701 300

Gen2 - Energus
Energus, Blackwood Road
Lillyhall, Workington
Cumbria CA14 4JW.
01900 605 665

Gen2 - Carlisle
Kingmoor Park, Unit F2
Kingmoor South
Carlisle, Cumbria CA6 4RD.
01228 599 890

Gen2 - Sellafield
Building B111, Sellafield
Cumbria CA20 1PG.
01946 786 616

Gen2 - Furness
Lightburn Trading Estate
Ulverston, Cumbria LA12 7NE.
01229 483 760

Gen2
A City & Guilds Business

01900 701 300 **www.gen2.ac.uk**
info@gen2.ac.uk

Find us on Social Media

Aug 18