

## Programme Specification

A Programme Specification provides a concise summary of the main features of a programme and its intended learning outcomes. It is intended to be used by prospective students, current students, academic staff and potential employers.

<b>Programme Title:</b>	
Post Graduate Engineer	
<b>Programme (AOS) Code(s):</b>	MA1ENC2
<b>UCAS Code:</b>	
<b>Name of Final Award:</b>	Postgraduate Diploma, PGDip
<b>Level of Qualification:</b>	Level 7
<b>Regime of Delivery:</b>	Work-Based Learning
<b>Mode(s) of Delivery:</b>	Part Time
<b>Typical Length of Study (Years):</b>	2 years
<b>Professional Body Recognition / Accreditation (including specific requirements where applicable):</b>	

### Brief Description of the Programme

The post graduate engineer apprenticeship programme has been designed to meet the knowledge, skills and behaviours requirement of the Postgraduate Engineer Apprenticeship Standard (ST0456) and deepen and broaden a learner's knowledge and understanding in the field of Engineering Design. This course will allow apprentices who have completed a BSc (Hons) Engineering Design course or students with a relevant engineering degree to further their study through the apprenticeship route with aspirations to become a Chartered Engineer (CEng).

This course places greater emphasis on critical analysis, problem identification and solving design and technology in the engineering context and quality management and development of the skills required to lead and manage complex engineering projects/systems. The course encompasses a work-based programme encouraging independent study leading to the creation of an innovative technique through the investigation of materials, technology and processes. The opportunity for learners to work in groups or in partnership will help develop leadership and collaborative working skills. Furthermore, the learners will be developing skills for technical leadership in developing new products and services or improve existing ones and evaluate commercial implications to the business and follow professional ethics and sustainability. Their engagement in the various areas of design or technology will equip them to adapt their way of working and increase their specialist knowledge of the technology appropriate to their area or enter positions of responsibility within engineering and design companies. This course fulfils the requirements of typical occupations such as Design and Development Engineer, Engineering Business Manager, Manufacture / Production Engineer, Quality Assurance/Compliance Manager, Research and Development Engineer and Supply Chain/Procurement specified in the apprenticeship standard (ST0456). The apprenticeship standard aligns with the UK Standard for Professional Engineering Competence (UK-SPEC) at CEng level.

The learners will be encouraged to expand their previous skills, knowledge and experience by evaluating and applying their research and ideas through investigation and analysis of their subject areas. Research of current market trends and manufacturing practices within a chosen area will be supported by contextual and business/entrepreneur focused studies designed to promote learners' understanding of their chosen industry and the current trends in the industry.

The programme also emphasises the importance of cultivating unique, personal entrepreneurial skills with the prospect of further engaging in the professional environment with the right skillset to effectively communicate with other departments and companies to produce outcomes that are aimed at international markets. As with any postgraduate course, learners are expected to manage their own learning, including identifying areas where they need specific support (with guidance from their personal tutor or programme leader).

After completing the post graduate engineer apprentice course, apprentices who would like to achieve MSc will be able to undertake Research Dissertation as a top-up module.

## Programme Aims

1	Enable postgraduates to deliver engineering projects efficiently, sustainably, ethically and safely as a senior Engineer
2	Equip postgraduates with advanced understanding of theoretical concepts to solve problems in existing and emerging technologies, applying and developing analytical techniques
3	Foster opportunities to develop team-working, creativity and innovative skills through a group design and / or investigative project.
4	Produce well-rounded postgraduates capable of evaluating business needs and constraints covering both strategic and operational issues, through the application of an enhanced understanding of technical sign off responsibilities.
5	Extend analytical and research skills in order to make logical arguments and creative contributions to solve engineering problems.

## Programme Learning Outcomes

The Bucks Graduate Attributes focus on the development of innovative leaders in professional and creative capacities, who are equipped to operate in the 21st Century labour market and make a positive impact as global citizens. The attributes are developed through the programme.

ID	Learning Outcome
On successful completion of the programme a graduate will be able to:	
<b>Graduate Attribute: Knowledge and its application (K)</b>	
K1	Demonstrate a synthesised understanding of emerging design concepts, principles and technologies relating to the development of engineering products, services and specifications.
K2	Apply a critically-informed knowledge of project management methodologies to deliver engineering projects, understanding the importance of accountability for technical, financial, social and environmental responsibilities.
K3	Critically evaluate a range of concepts relating to the management of people and development of the skill sets necessary to develop other technical staff

K4	Perform trade-offs between technical and socio-economic factors in the management of complex engineering systems, evaluating how these factors influence the functioning of a business and its constraints.
K5	Evidence the systematic acquisition of knowledge and understanding to apply suitable analytical, computational, simulation and other modelling techniques to solve engineering problems in an uncertain business environment.
<b>Graduate Attribute: Creativity (C)</b>	
C1	Critically analyse and evaluate information and knowledge related to the engineering products and services.
C2	Generate innovative designs and develop manufacturing processes for products, systems, components or services to fulfil new needs.
C3	Apply innovative concepts from a range of areas, including sources outside of engineering and design, effectively in a range of engineering projects.
C4	Display critical and creative thinking to include analysis, synthesis and critical appraisal to identify areas of improvement to an engineering business
C5	Synthesise collated research to develop understanding of the design and engineering discipline
<b>Graduate Attribute: Social and ethical awareness and responsibility (S)</b>	
S1	Justify the importance of understanding of compliance with legislation and codes of practice, industry standards, social and ethical responsibilities.
S2	Demonstrate understanding of technical sign off responsibilities and authorisation processes
S3	Evaluate commercial, social and environmental risks associated with complex engineering projects.
S4	Critically evaluate business and commercial needs/constraints when developing new or enhancing products, systems and services.
S5	Embed a critical, ethical dimension to their practice managing the implications of ethical dilemmas, working proactively with others to formulate solutions and maintain professional reputation.
<b>Graduate Attribute: Leadership and self-development (L)</b>	
L1	Work effectively with multiple teams as a manager, leader or member and undertake technical responsibility for complex engineering systems
L2	Effectively communicate complex ideas suitable for dissemination to a wider audience
L3	Critically reflect on knowledge and understanding of own competencies, capabilities and limitations, and draw from other practitioners' areas of expertise
L4	Take significant responsibility for project(s)/programme(s), finance and personnel management
L5	Demonstrate experience of management and leadership used in a range of different projects, varying in size and complexity

## Programme Structure

Programmes are structured in stages. The number of stages will vary depending on the mode (e.g. full-time, part-time), duration and location of study which will be detailed in the Programme Handbook.

Modules are set at a specific academic level and listed as either core (compulsory) or optional. The level indicates the relative academic difficulty which will increase through the programme. Passing modules will reward you with academic credit. The amount of credits will depend on the complexity of the module and the level of effort required, which is measured in 'notional learning hours'.

Our [Academic Advice webpages](#) provide more information on the structure of taught awards offered by the University.

*Please note: Not all option modules will necessarily be offered in any one year. Other option modules may also be introduced at a later stage enabling the programme to respond to sector developments.*

## Level Seven

Code	Module Title	Credit	Core / Option	Compensable (Normally Yes)
ME708	Project Management and Research Skills WBL	30	Core	Yes
ME709	Product Development for Business WBL	30	Core	Yes
ME710	Industrial Group Project WBL	30	Core	Yes
ME712	Contemporary Methods in Engineering Design WBL	30	Core	Yes

The Post Graduate Engineer Apprenticeship is delivered through three different stages:

- **A Foundation Stage-** Two modules 'ME708: Project Management and Research Skills WBL' and 'ME709: Product Development for Business WBL' will form the part of this stage, which are designed to develop key project and business management skills. The apprentices will have a learning contract identified the areas of learning on these modules. The apprentices must complete this stage to progress to the next stage.
- **A Development Stage:** Apprentices will complete an industry based project and selected either design or technology module to advance their knowledge meeting the requirements of their role such as Design engineer or Production Engineer.
- **An End Point Assessment (EPA)-** This will be based on the assessment guidelines provided in the apprentice standard. It is conducted by an external End Point Assessment Organisation (EPAO) nominated by the employer which is delivered independently. The EPA will include a viva and formal assessment of competences for a Chartered Engineer. Occupational Competence assessed by the employer and Professional Competence, assessed by a relevant Professional Engineering Institution.

Apprentices, who complete PGDip and the EPA, will be able to undertake a top-up dissertation module to achieve MSc in Engineering Design.

Gateway	Module Completion	Criteria 1	Criteria 2	Progress to
Stage 1: Foundation	ME708, ME709 (Total 60 credits)	Successful Employer Review	Satisfactory progress towards the employer required behaviours	Developmental Stage
Stage 2: Development stage	Completion of ME709 and ME711 ie Completion of PGDip	Successful Employer Review and required behaviours aligned to CEng	English and Maths Level 2 Equivalent	Progress to EPA
EPA		External independent assessment of Competencies for Chartered Engineer	-	CEng registration  Option to do Dissertation Module to achieve MSc Engineering Design

A detailed map of End Point Assessment has been presented in the Figure 1 and Figure 2.

A1 Diagram 1a: End Point Assessment for a Post Graduate Engineer

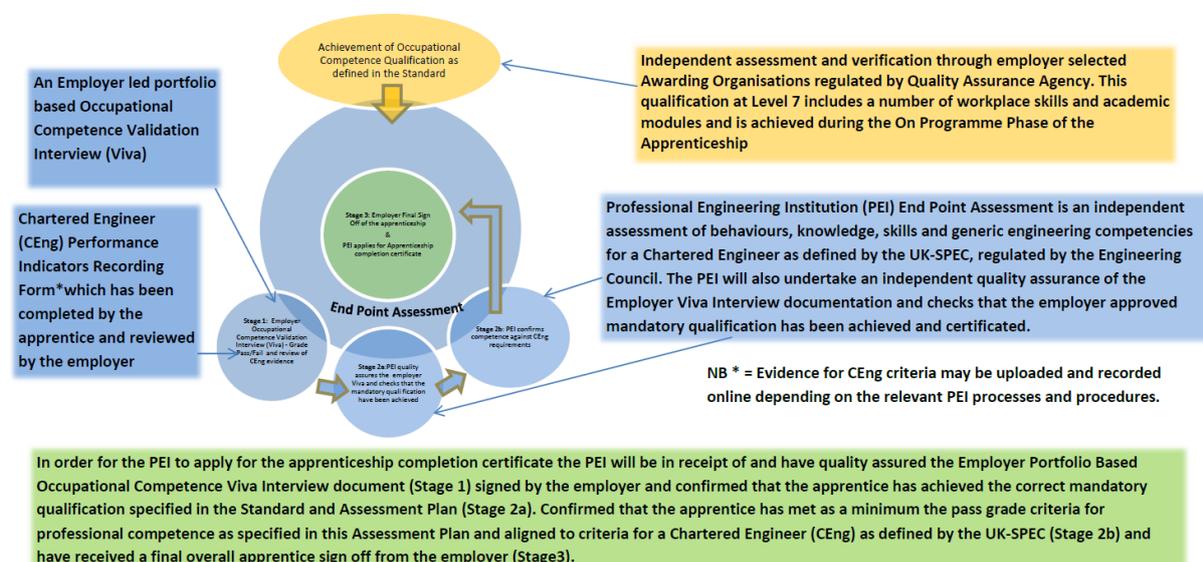


Figure 1: EPA for Post Graduate Engineer (ref: ST0456)

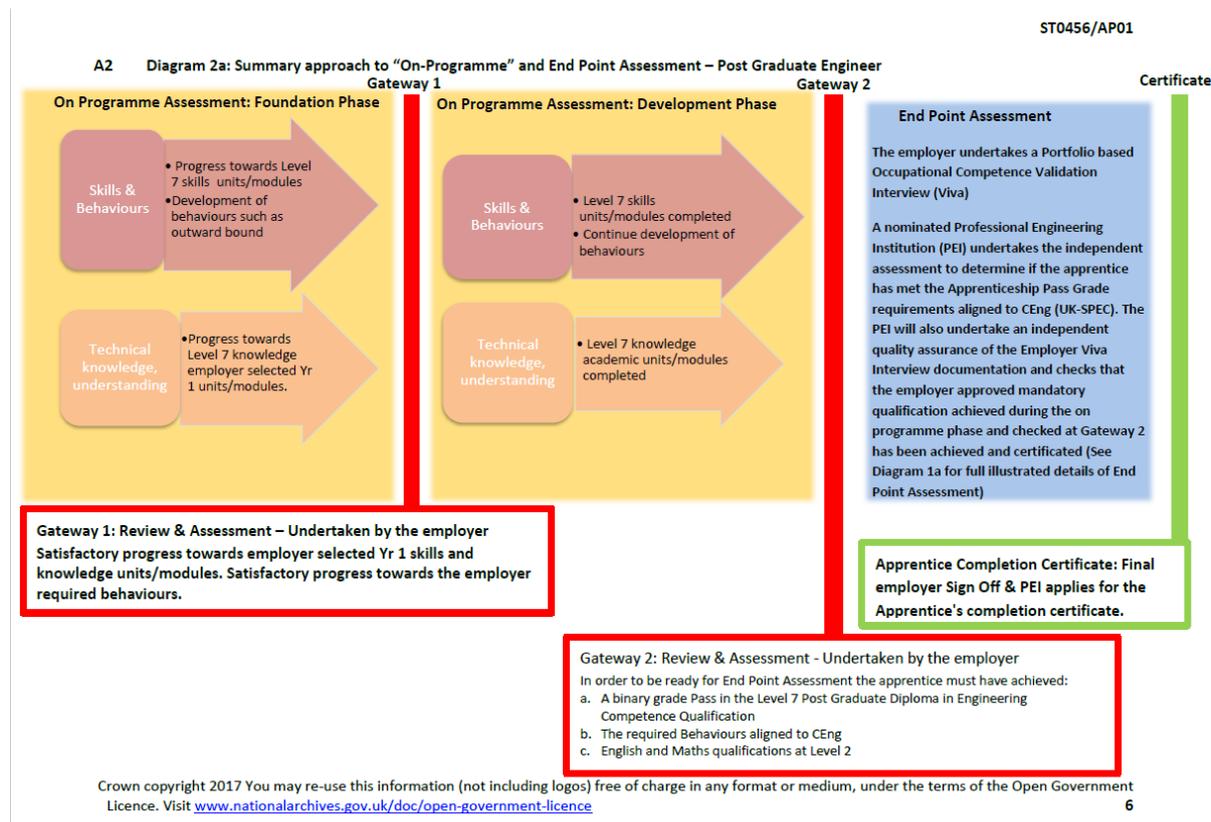


Figure 2: Gateway Details (Ref. ST0456)

## Learning and Teaching Activities

Please see the [Academic Advice pages](#) for a description of learning and teaching activities that are recognised by the University. Detailed information on this specific programme is outlined below:

Significant parts of the learning will be done through the workplace as assessments and case studies will be drawn from these live environments and learners will be expected to use work-based examples from their workplace. There will still be a need for learners to attend lectures at a facility to ensure that there is a minimum 20% of their total job time as off the job learning which fits with the requirement of the apprenticeship standard. The attendance at the University will take either block teaching or one day attendance in every week for the duration of the module.

The learning and teaching strategy is focused on the needs of engineering industry and will use significant use of virtual learning environment. Considerations will be made to foster the awareness and utilisation of emerging technologies facilitating close interaction between industrial partners, student workplaces, the academia and professional organisations. The programme of study consists of four 30 credit modules which develop the thematic aspects of engineering design, manufacture and technical management. The variety and nature of the different learning outcomes underpin and retain a clear linkage with objectives in each subject area and the workplace. Most modules will utilise virtual learning environment both as a means of communication and support, as well as for assessment where possible. Case studies from the workplace will be utilised and specialist lectures by invited external experts will be integrated within appropriate modules. This adds realism to the module material and is another area which is of value in the learning process. Industry standard software and digital approaches will be used in the delivering of the modules where appropriate.

A comprehensive Induction Programme will be held in the first month to ensure students have the necessary base and study skills to benefit fully from the course. During the induction students are made aware of opportunities/resources to support their learning including, but not limited to library resources, the Learning and Development Unit, and disability services.

The learning and teaching methods will include:

- **Lecturers and Tutorials:** A variety of teaching and learning strategies and methodologies are evident within the Programme structure. Lectures will be used to deliver the overarching topics. Tutorials will then be used to work through examples and case studies reinforcing the lectures.
- **Seminars:** In addition to the traditional lecture and tutorial approach, discursive seminars are used extensively to develop and reinforce group dynamics and interpersonal skills. This is particularly useful where higher level cognitive and presentation skills are required. The importance of previous student learning experience is also identified as critical and the knowledge which the individual students bring to a group forum gives a value-added dimension to the learning experience. Case studies will be utilised particularly within the Engineering modules and specialist lecturers be invited and external experts will be integrated within appropriate modules. This will add industrial input to the module material and is another area which is of value to the learning process.
- **Workshops and student presentations:** These are used to help develop personal research and reflection skills as well as learning to express oneself by portraying a commanding presence.
- **Laboratory Sessions and practical demonstrations:** Laboratory sessions allow students to practically apply the theoretical aspects of the course which encourages student experimentation, this could be physical exercises or software-based activities. Practical sessions will allow the acquisition of specific skills and techniques, and highlight the health and safety requirements of materials, equipment and processes.

### Additional Course Costs

There are costs associated with all studies, additional to the tuition fee, which require consideration, when planning and budgeting for expenditure. Costs are indicative and for the total length of the course shown unless otherwise stated and will increase with inflation; depending on the programme they may include equipment, printing, project materials, study trips, placement activities, DBS and/or other security checks.

The other costs which may be incurred in this programme are related to industrial visits both locally and nationally, if appropriate. This is not expected to be more than approximately £200-£400 over the programme for the trips and other activities.

All required texts can be found electronically or will be available in the library.

Its likely that engineering laboratory will be set up in High Wycombe campus. In that situation, students will have to attend laboratories up to 4 weeks in each semester in the second year and the cost of travel from Aylesbury to High Wycombe could be up to £100.

## Contact Hours

1 unit of credit is the equivalent of 10 notional learning hours. Full time undergraduate students study 120 credits (1200 hours) and full-time postgraduate students study 180 credits (1800 hours) per year or 'stage' of the course.

Course Stage	Scheduled Activities (Hours)	Guided Independent Study (Hours)	Placement / Study Abroad / Work Based Learning (Hours)
Year One	120	120	360
Year Two	120	120	360

## Assessment Methods

The [Assessment and Examination webpages](#) provide further information on how assignments are marked and moderated, including a description of assessment activities. These also include further information about how feedback on assessed work is provided to students, including our commitment to ensure this is provided to students within 15 working days (the 'three-week turnaround').

There are a variety of assessment vehicles, which are a selection of those found in the QAA Engineering Benchmark. Assignments are carried out in the student's own time, in-class assignments, worksheets, presentations; laboratory/CAD exercises may also be used. The forms of assessment have been chosen to motivate students to achieve and to create positive learning opportunities, and to meet the requirements of the apprenticeship standard and the EPA.

A variety of assessment methods will be used within this programme as appropriate to meet the learning outcomes. The following assessment activities are used on this programme:

- **Written Assignment** – This will be mainly in the form of written documents, where learners are requested to present research material in specific subjects and edit it to fit the desired outcomes.
- **Reports** – Learners are encouraged to document their entire learning progress throughout the degree, and some of that documentation will be delivered in the form of reflective and critically evaluative reports and will be assessed and marked.
- **Portfolio** – Learners will be expected to produce visual portfolios in preparation for the independent EPA. Learners are taught on the different processes involved in producing an industry-standard portfolio and will be assessed on the outcomes.
- **Presentation Assessment** – Presentation skills are a key element when working in teams and presenting ideas. Throughout the degree, learners are expected to produce coursework and present it to a range of audiences (including industry representatives), who's feedback will contribute to the assessment.
- **Group-work** – This mode of assessment develops transferable skills in the areas of oral communication, negotiation and interpersonal skills. Working in a group can also promote the sharing of ideas and practical problem-solving skills. Learners will have the opportunity to undertake team-based assessments; where they are assessed, the grade for the assignment

will be a combination of a shared grade as a group based on specific assessment criteria and individual element.

The group work will be facilitated using the Virtual Learning Environment (VLE) where apprentices will be sharing their work with each other, discuss and monitor progress. In a special circumstance, if there is no other apprentices are available to work as a team, the apprentice will have to identify work colleagues or other engineers who will comment and provide inputs to the project s/he is undertaking to demonstrate collaboration. The tutor will suggest other options of collaborating as appropriate.

Assessment strategies support learners' understanding of their learning processes and are designed to foster a deep approach to learning. Strategies also promote autonomous learning and self-evaluation as vital elements within the overall learning process.

Learners will be asked to complete a series of projects given in the form of a project brief in line with the Apprenticeship requirements. Self and peer feedback during regular group and individual discussions will be an essential element in the maturation of ideas and practical development. Learners will be expected, during critiques and other discussions, to display a critical and reflective approach to their own and the work of others.

Summative assessment will take place during and at the end of the module. Submitted work will be assessed on the achievement of the module Learning Outcomes and awarded a grade based upon the assessment criteria. The assessments will take place with a full review of the briefs and all the supporting development work, which should clearly document the breadth and depth of research and the development of conceptual ideas for each project undertaken.

Summative feedback is provided within three weeks of submission. However formative feedback will normally be provided prior to this during the assessment process, to ensure that students are given opportunities to respond to feedback prior to submission. Formative feedback and feed forward are considered a vital part of the assessment process. More formal oral and/or written formative feedback is given at key identified points, usually during learner led presentations of work in progress. Self and peer-evaluation constitute an important part of formative assessment and, on occasion, of the formal summative assessment process.

Within the modules, where appropriate, the written assessments will be project based. This will allow the students to prepare for their EPA within the apprentice framework. This qualification at Level 7 includes a number of workplace skills required to manage complex engineering projects at senior level, which will be required to work towards achieving Chartered Engineer (CEng) status. All assessments will be testing their knowledge and skills required for EPA and will support the apprentices to develop evidence required for the EPA. An example of this would be the Contemporary Methods in Engineering Design module which ensures that their theoretical knowledge can be applied to solve design problems through using existing and emerging technologies and understand the application of specific specialist knowledge for specific role profiles.

## Classification

**Calculation of final award:** 100%

For full details of assessment regulations for all taught programmes please refer to our [Results webpages](#). These include the criteria for degree classification.

## Admissions Requirements

Please see the [Application webpages](#) for more information on how to apply, including a statement on how we support students from a variety of backgrounds. Please also see our [general entry requirements](#) for taught programmes. Applicants who do not meet our published entry requirements are encouraged to contact our admissions team for further advice and guidance.

### Typical applicant profile and any programme-specific entry requirements

All candidates must be employed in a role related to the subject matter of the Degree Apprenticeship and be sponsored by their employer. Applications can only be made through the sponsoring employer. The University will consider all such applications and will have the final decision whether to accept the candidate for entry to the programme.

Employers will set the recruitment and selection criteria for their own requirements. In order to optimise success candidates will typically have: Professionally recognised Bachelors Level Degree or equivalent such as BEng, BSc in a STEM subject.

All apprentices must have at least English and Maths at Level 2 prior to the End Point Assessment.

Please see Appendix: Degree Apprenticeships for more information.

**Do applicants required a Disclosure and Barring Service (DBS) Check?**

**No**

### Opportunities for students on successful completion of the programme

As this diploma is associated to the apprenticeship scheme all learners will be in a working environment. This will allow them to continue to progress their careers and to develop high learning skills.

The diploma will open up the management opportunities for them to develop further in the engineering discipline. They will be able to do top-up Engineering Dissertation for the award of MSc Engineering Design.

### Recognition of Prior Learning

Previous study, professional and / or vocational experiences will be assessed by the Programme Lead to ensure learning is not repeated. Exemptions will be provided where prior learning has taken place and can be evidenced under our APL guidelines. Please refer to our [Credit Accumulation webpages](#) for further guidance.

### Student Support

During the course of their studies, students will be supported in the following ways:

- At the start of their studies all students will receive a full **induction** to the programme which will include introduction to the staff responsible for delivering the course, and access to library and IT facilities

- The **Programme Handbook** will outline the exact nature of the course and how it is structured, including the availability of option modules
- Each student will be allocated a **Personal Tutor** who will support their academic development, be able to advise and guide them with their studies and, where necessary, give advice on study options
- Students will be able to access our full range of **support services**, including the Learning Development Unit for skills and study support, the Library, the Careers and Employability Team, Student Finance Team, Accommodation and Counselling Services.
- **Contract Management**- Regular Contract Management meetings between Bucks New University and the employer will be arranged by Bucks New University at the commencement of the contract. The meetings will give the employer the opportunity to review the delivery of the programme, monitor the progress of the apprentice(s) and enable all parties to respond to, manage, resolve and clarify any issues.

### **Programme specific support (if applicable)**

During the course of their studies, learners will be supported in the following ways:

- At the start of their studies all apprentices will receive a full induction to the programme which will include introduction to the staff responsible for delivering the course, and access to library and IT facilities
- Apprentices will have access to the PREP module (pre-apprenticeship preparation, self-review)
- The Programme Handbook will outline the exact nature of the course and how it is structured, including the availability of option modules
- Each apprentice will be allocated a Personal Tutor who will support their academic development, be able to advise and guide them with their studies and, where necessary, give advice on study options
- Apprentices will also be supported by a work-based mentor.
- Apprentices will be able to access to support services, including the Learning Development Unit for skills and study support, the Library, the Careers and Employability Team and Counselling Services

## Appendices

### Quality Assurance

<b>Awarding Body:</b>	Buckinghamshire New University
<b>Language of Study:</b>	English
<b>QAA Subject Benchmark Statement(s):</b>	Engineering, October 2019 Apprenticeship Standard (ST0456)
<b>Assessment Regulations:</b>	<i>Academic Assessment Regulations</i> , accessible via the Academic Advice webpages ( <a href="https://bucks.ac.uk/students/academicadvice">https://bucks.ac.uk/students/academicadvice</a> )
<b>Does the Fitness to Practise procedure apply to this programme?</b>	No
<b>Ethics Sub-committee</b>	
<b>Date Published / Updated:</b>	
<b>Date programme re-approval required:</b>	Usually six years from date published / approved

### Other awards available on programme (Exit Qualifications)

Please refer to the *Academic Qualifications Framework* for Exit Qualifications recognised by the University and credit and module requirements.

<b>Name of Exit Qualification:</b>	Postgraduate Certificate (PGCert)
<b>Full name of Qualification and Award Title:</b>	PGCert in Engineering Design
<b>Credits requirements:</b>	60 Credits
<b>Module requirements:</b>	Any 60 Credits at Level 7
<b>Learning Outcome</b>	
On successful completion of PGCert, the graduates will be able to:	
Demonstrate understanding of emerging design concepts, principles and technologies relating to the development of engineering products, services and specifications	
Apply suitable project management methodologies to deliver engineering projects complying with technical, financial, social and environmental requirements.	
Critically analyse and evaluate information and knowledge related to the engineering products and services	
Communicate complex ideas suitable for dissemination to a wider audience	

## Degree Apprenticeships

<b>Apprenticeship Standard:</b>	<b>POST GRADUATE ENGINEER (ST0456)</b>
<b>End Point Assessment (EPA):</b>	<b>Independent EPA: Retains a separate independent EPA and follows the recommended process</b>

Degree Apprenticeships combine university study and work-based learning to enable apprentices to gain a full master's or bachelor's degree qualification. This provision of an academic degree is integrated with experience, practice and learning in the workplace. An apprentice has paid employment status and does not pay any training costs or student fees. Degree Apprenticeships are co-designed by employers ensuring that apprentices are equipped with the skills employers need and for their own future career.

### **The Standard and End Point Assessment Plan (EPA) - Independent**

As well as containing on programme training and assessment, all apprenticeship standards must contain an end-point assessment (EPA).

Apprentices must undertake an independent end-point assessment, which is a synoptic assessment of the knowledge, skills and behaviours that have been learnt throughout the apprenticeship. The purpose of the assessment is to make sure the apprentice meets the standard set by employers and is fully competent in the occupation. It is taken by apprentices at the very end of the on-programme phase of training when their employer (and in some cases their training provider) is satisfied that they have met the "gateway" criteria to undertake the assessment. End-point-assessments are graded and an apprenticeship certificate is only awarded after end-point assessment is successfully completed.

End-point assessment must be administered by an assessor from an approved, independent Apprenticeship Assessment Organisation, and not by Bucks New University as the training provider for the on-programme part of the apprenticeship programme.

### **Admission requirements**

Under UK Government rules, Degree Apprentices must be employed for a minimum of 30 hours per week and must have the right to live and work in the UK (applies only in England). A Degree Apprentice cannot be self-employed. The employer must enter into an Apprenticeship Agreement with the student.

All candidates must be employed in a role related to the subject matter of the Degree Apprenticeship and be sponsored by their employer. Applications can only be made through the sponsoring employer. The University will consider all such applications and will have the final decision whether to accept the candidate for entry to the programme.

