PROGRAMME SPECIFICATION

1. Key Information

Programme Title:	BEng (Hons) Civil Engineering
Awarding Institution:	Buckinghamshire New University
Teaching Institution(s):	Buckinghamshire New University
Subject Cluster:	Engineering
Award Title (including separate Pathway Award Titles where offered):	BEng (Hons) Civil Engineering
Pathways (if applicable)	Not applicable
FHEQ level of final award:	6
Other award titles available (exit qualifications):	Certificate of Higher Education Diploma of Higher Education BEng Civil Engineering
Accreditation details:	Accreditation will be sought from Joint Board Moderators (JBM) (Engineering Council)
Length of programme:	3 years Full-time 4 years with Foundation year 4 years with Placement year 6 years Part-time
Mode(s) of Study:	Full-time and part-time
Mode of Delivery:	In person (on-site) delivery
Language of study:	English
QAA Subject Benchmark(s):	QAA Subject Benchmark Statement Engineering (March 2023)
Other external reference points (e.g. Apprenticeship Standard):	AHEP 4 UK-SPEC Institution of Civil Engineers (ICE) Awaiting accreditation of Incorporated Engineer (IEng)
Course Code(s):	BNCIENFT, BNCIENPT, BNCIENFY, BNCIENSW
UCAS Code(s):	
Approval date:	June 2024
Date of last update:	June 2024

2. Programme Summary

This programme will provide you with the ability to identify and engineer solutions to complex challenges through innovation and creativity. You will study a broad range of Civil Engineering disciplines including but not limited to Computer Aided Design and Simulation, Mathematics, Structural Analysis and Design, Fluid Mechanics and Hydraulics, Soil Mechanics and Geotechnical Engineering, Sustainable Materials, Surveying, Transport Engineering, and Health and Safety Principles. The programme enables you to develop and advance your

technical knowledge and skills to negotiate current challenges relevant to the workplace and industry. These include areas such as professional practice, ethics, and sustainability. You will also gain valuable insight into current professional engineering practices when learning about the practical technologies used in the real world of work through hands-on experience you need to become a work-ready civil engineer. Laboratory sessions and a range of practical activities will build upon previous learning, develop, embed, and advance knowledge from lectures and tutorials.

The subject contents of the portfolio and structure meet elements that align to the University philosophy and strategy such as outward facing, externality and industrial involvement, looking to meet the needs of industry, and being industrially focused on delivery with work- related learning and projects.

The programme is learner focused, providing you with the necessary academic qualifications to underpin and progress in your chosen Engineering career. The programme is supported by Employers and will be continually informed through your engagement with industrial partners.

The civil engineering sector significantly contributes to the UK's economic strength and resilience. Through innovation, sustainability, and its role in driving employment and growth, civil engineering actively shapes the nation's future direction. Civil engineering plays a pivotal role in the UK economy, contributing significantly to its growth, infrastructure development, and overall prosperity. Civil engineers are responsible for building and maintaining critical infrastructure, such as roads, bridges, water supply systems, and energy plants. They contribute to healthcare, sustainable energy, and progress toward net zero emissions. Demand for trained Civil Engineers both regionally and nationally has never been so great with a national shortfall recorded of civil engineers. According to published HESA data learners studying Civil Engineering related courses at Higher Education Institutions in the UK increased demonstrating a clear growth in learner population. In response to growing industry, employer and learner demand the BEng (Hons) Civil Engineering programme has been created to develop the knowledge and skills of our future civil engineering workforce. Civil engineering not only shapes our physical environment but also contributes to a safer, more sustainable, and progressive society.There is also a strong focus to develop digitally enabled learners that enhances their employability skills. This programme will seek to be accredited to Incorporated Engineer through the Joint Board of Moderators (JBM), the Institution of Civil Engineering (ICE).

This programme will also run with part-time mode of delivery for 4 years. This is designed for those in employment within construction industry, who will attend the course on a day release or following a block delivery.

3. Programme Aims and Learning Outcomes

Programme Aims

This programme aims to:

1. Offer a contemporary and comprehensive curriculum to provide a stimulating and challenging programme of civil engineering design that meets the knowledge, skills and behaviours of the civil engineering sector and needs of employers in the industry.
2. Provide a thorough understanding and knowledge of scientific and engineering principles, methods, techniques, analysis, tools, and practices to develop the ability to formulate solutions to civil engineering problems and apply these to the design of civil and infrastructure projects.

3. Provide key employability skills to achieve optimum and innovative solutions to civil and infrastructure engineering design in an efficient and effective manner, to further develop their design creativity and digital skills.
4. Produce learners who are able to use a sound, evidence-based approach in applying innovative and hi-tech technologies, processes and systems and leadership skills to transform conceptual ideas into reality, individually and working as a team, by meeting client, financial, environmental, quality, statutory and safety objectives.
5. Develop learners with critical understanding and leadership of professional framework and engineering ethics, social and cultural values in civil engineering and other business contexts in developing designs recognising the impacts their decisions could have on the environment and society (locally and nationally).
6. To provide you with a vocationally and applied focused course of study that meets externally prescribed requirements of the Institution of Civil Engineers for registration as *Incorporated Engineer.*

Programme Learning Outcomes

Knowledge and Understanding (K)

On successful completion of the programme you will be able to:

ID	Learning Outcome
K1	Develop detailed and systematic skills, knowledge and understanding of a range of scientific and engineering principles, tools and processes used in solving complex civil engineering design and technological problems.
K2	Demonstrate a comprehensive understanding of materials, construction technology, health and safety and sustainability considerations for the design, construction and management of civil engineering infrastructure.
K3	Outline a range of tools and techniques, including digital approaches, to model, simulate and analyse complex civil and structural engineering problem.
K4	Select suitable planning, implementation, and presentation techniques in carrying out major individual project within the field of civil engineering.
K5	Define the importance of linking academic knowledge and skills with industry, research, and development within the engineering sector.

Analysis and Criticality (C)

On successful completion of the programme you will be able to:

ID	Learning Outcome
C1	Evaluate appropriate techniques and methods, including laboratory experiments, for solving complex numerical and scientific engineering problems.
C2	Interpret scientific knowledge and skills in formulating and analysing civil engineering design concepts and techniques whilst considering client, financial, environmental, quality, management systems and safety objectives.
C3	Critique a range of engineering software for the integration of design functions from concept to realisation, within the fields of structures, geotechnics, fluids and transport engineering.

C4	Analyse civil engineering materials and evaluate their life cycle impacts for the design development and implementation of sustainable and practical solutions to civil engineering problems.
C5	Integrate research and scholarship skills in the structure of a strategy for discovery, learning and its dissemination.

Application and Practice (P)

On successful completion of the programme you will be able to:

ID	Learning Outcome
P1	Manage and apply safe systems of work including taking responsibility for your own obligations for health, safety and welfare issues, assessing and controlling risk.
P2	Conduct and interpret experimental laboratory work within a range of technical engineering subjects to current industrial standards, with the ability to critique results and to draw fitting conclusions that can be embedded within engineering design.
P3	Implement engineering design projects both individually and in a group utilising a methodical and disciplined approach in order to satisfy client, financial, environmental, quality, statutory and safety requirements.
P4	Design civil engineering infrastructure considering their lifecycle, safety, ethical and sustainability considerations
P5	Implement appropriate planning and management systems for carrying out civil and infrastructure engineering, with the ability to manage resources, budgetary requirements and to reflect upon limitations of the approach.

Transferable skills and other attributes (T)

On successful completion of the programme you will be able to:

ID	Learning Outcome
T1	Work effectively in collaboration with others, by identifying and working towards targets for personal, career, and professional development.
T2	Communicate effectively by oral, written, and visual means including highly specialised manual and computer-based methods for civil engineering design and presentation.
T3	Plan, manage and monitor effectively the key stages within a civil engineering project, by effectively guiding and collaborating with multidisciplinary teams, understanding contracts, budgets and client expectations.
T4	Investigate and define a problem and identify constraints including environmental and sustainability limitations; ethical, health, safety, security and risk issues; code of practice and standards.
T5	Adapt to a diverse and evolving engineering landscape; new technologies, regulations, climate change and challenges.

Graduate Attributes

The BNU Graduate Attributes of: Knowledge and its application; Creativity; Social and ethical awareness and responsibility; and Leadership and self-development 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.

Graduates will achieve comprehensive knowledge and understanding of engineering design (K1), who will be pragmatic, seek to achieve sustainable solutions (K, C4, P4). They will be effective problem solvers, able to apply creative, critical, and evidence-based planning and thinking to conceive innovative responses to future challenges (P3) in civil engineering and convey ideas effectively (T2) to a range of audiences for a variety of purposes (C1-C5). They will be risk, cost and value-conscious, ethical, social, cultural, environmental, health and safety aware (P3). They will have the ability to engage with dynamic traditions of thought (K2-K3), the ability to apply their knowledge in real-time practice across multi-disciplinary and multi-professional contexts (P3-P4) in designing civil engineering infrastructure. Graduates will appreciate the global dimensions of civil engineering, be able to formulate and operate within appropriate codes of conduct, professional in their outlook, capable of team working and effective communicators (T1-T5). Graduates will engage in professional, intellectual, and ethical behaviour, and have the potential to take leadership roles in the future (K5, P5), well prepared for living, learning, and working in a digital society (K3, C3, T2) within their chosen careers.

4. Entry Requirements

The University's general entry requirements will apply to admission to this programme. For up-to-date entry requirements, please visit the programme web page. The following additions / exceptions apply:

- For entry into Year 1 (Level 4), applicants will need to have gained relevant qualifications at levels 2 and 3, such as:
    - A levels in Mathematics or Physics (or equivalent qualification)
    - BTEC National Diploma/Extended Diploma in Engineering of Physics
    - Relevant T level qualification
    - GCSE Maths and English
- For further details of our international English entry requirements, please visit our international webpages.
- This Level 6 programme is also offered as a Top Up qualification for students who have completed a HND, FdA or other equivalent qualification in a relevant subject and who wish to progress further to achieve an Honours degree.
- Students from an HNC, HND and Foundation Degree Engineering or equivalent may have the opportunity to join this programme as part of the progression route at Level 5 or Level 6.

If you do not meet the entry requirements you may, if you have relevant professional experience, still be invited for interview, where you will be required to demonstrate the necessary knowledge and understanding for entry onto the course.

Previous study, professional and / or vocational experiences may be recognised as the equivalent learning experience and permit exemption from studying certain modules in accordance with our accreditation of prior learning (APL) process.

5. Programme Structure

Level	Modules (Code, Title and Credits)	Exit Awards
Foundation Year[1]	**Core modules:** ENG0007 Foundation Mathematics ENG0008 Introduction to Engineering Design ENG0009 Introduction to Engineering Science ENG0010 Introduction to Engineering Materials and Structures ENG0011 Project: Engineering Design ENG0012 Engineering in Practice and Professional Development	**N/A.** No credit is awarded at this Level.
Level 4	**Core modules:** CAD4079 Science and Materials for Engineers (20) CAD4080 Mathematics for Engineers (20) CAD4083 Computer Aided Design and Simulation (20) CAD4087 Individual Engineering Project and Management (20) CAD4076 Fundamentals of Electrical & Electronic Eng (20) CAD4086 Modelling & Analysis of Electromechanical Systems (20)	**Certificate of Higher Education**, awarded on achievement of 120 credits at Level 4
Level 5	**Core modules:** ENG5030 Construction Management (20) ENG5031 Soil Mechanics (20) ENG5032 Fluid Mechanics (20) ENG5033 Surveying for Engineers (20) ENG5034 Structural Analysis and Design 1 (20) ENG5035 Transport Engineering (20)	**Diploma of Higher Education**, awarded on achievement of 240 credits, including a minimum of 120 credits at Level 5
Placement year (optional)	ENG5036 Professional Practice (20)	
Level 6	**Core modules:** ENG6030 Geotechnical Engineering (20)	**Ordinary Degree**, awarded on achievement of 300 credits, including

[1] Modules on the Foundation Year only apply to learners who are enrolled on the “with Foundation Year” programme.

	ENG6031 Hydraulic Engineering (20) CAD6061 Leadership and Management (20) ENG6032 Structural Analysis and Design 2 (20) CAD6021 Research Project (40)	60 credits at Level 6 and 120 credits at each of Levels 4 and 5 **Honours Degree**, awarded on achievement of 360 credits, including 120 credits at each of Levels, 4, 5 and 6

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 changes in the subject area.

6. Learning, Teaching and Assessment

Learning and teaching

Learning and teaching activities are strongly focused on developing your knowledge and critical evaluation of theories and concepts in the field of building and construction engineering and its application in practice. The activities are a mix of lectures, tutorials and seminars together with workshops and laboratory based individual and group working. Project/case studies and problem-solving are key approaches, with explicit emphasis on 'real-world' learning activities and scenarios that will enable you to address realistic problems. Case studies, live briefs, computer-based simulations and scenarios will be used to develop your academic study skills, graduate skills and attributes and employability skills. Research informed teaching is considered in the delivery of the individual modules to allow you to learn from ongoing research or to take part actively in the research activities. The university's virtual learning environment (VLE) will be used as a vehicle to support your learning, alongside class-based activities. Learning materials and discussion tools will be available on the VLE for all modules.

Employers will be involved in delivering guest lectures, site visits and contribute to the assessment of the learner's work. In unforeseen circumstances when actual site/industry visits will not be possible, digital information such as photographs, drawings as well as opportunities for interaction with relevant industry practitioners virtually will be provided. At all levels of the course, employability skills have been built into the programme to prepare you to gain work experience and acquire skills to secure employment on graduating. These activities will include practitioner visits, CV preparation, mock interviews, and production of a personal portfolio.

Digital technologies and industry standard software will be used in the relevant modules. An integrated 3D digital CAD model of a building, which embeds multiple facets of information such as specifications, programme, cost, environment, health and safety etc., will be used in the teaching of relevant modules. This will foster deep learning enabling you to see how the contents delivered in different modules are interrelated to provide holistic concepts of construction technology, sustainable design, and integration of building services for effective design and operation of buildings.

You are expected to take ownership of their learning and are required to spend time outside the contact time with tutors. The independent guided study and self-learning increases from level 4 to 6, which requires high degrees of self-discipline and time management. By graduation, it is anticipated that you will be ready to face real world challenges and to gain employment.

Lectures

Lectures provide the framework for communicating theory, concepts, primary principles and industrial practices and procedures. Lectures are not deemed to focus on the one-way flow of information from lecturer to learner but are used as a vehicle for two-way dialogue and for the embedment of short concept-focussed learning activities.

Tutorials

Tutorials involve one-to-one meeting or small group supervision, feedback or detailed discussion on a topic or project. Tutorials can take place virtually as well a face-to-face.

Seminars

Seminars are small group sessions used to consolidate and extend learning of the materials covered in lectures. The sessions centre around structured learning activities designed to promote learner engagement. A seminar may require a short presentation from a small group of learners (peer-led) or a tutor-led session where theoretical concepts are described and explained, and example exercises as solved on a step-by-step basis. The nature of any presentation is dependent on the subject area but may for example be based on the small group findings in response to a learning activity with the finding being used for general dissemination or used for whole group discussion. The sessions may also provide a learning environment in their own right and will also be used for the provision of formative assessment and feedback.

Case Studies

Module specific case studies are used to reinforce the linkage between the taught materials and the real world. Case studies will normally be used to facilitate discussion and debate in seminars and other learning events.

Practical Sessions / Workshops

Practical sessions are small group activities designed to promote the practical skills required by the module learning outcomes. Typically, these will involve structured learning activities with well-defined outcomes. These sessions could also include working in the CAD and IT suites.

Laboratory Work

Laboratory work is used to underpin theoretical concepts and supports the practical aspects of a module. The learning activities require the application of appropriate techniques, interpretation of data and the communication of results. The activities also aim to promote an enquiring learner approach to potential sources of error and Health and Safety implications. Laboratory sessions complement both lecture and small group teaching sessions and emphasise regulatory roles of various British Standard and Euro Codes.

Personal Development Planning

Learners across all three levels of the course are required to record their work as they progress through sequences of projects. Aspects of design practice such as site visits and collaborations with clients or colleagues on other courses are also documented. Personal Development Planning (PDP) portfolios encourage learners to employ self-evaluation skills and critically reflect upon the learning outcomes for projects and the connections between studio and theory modules.

Study Visits and Tours

The course team arranges visits to construction companies, project sites and exhibitions introducing learners to the clients, contacts and project sites. There will be opportunities for international study visits organised across the school.

Placement Year

The programme offers an optional placement year, providing an opportunity for students to complete a year-long industry placement. An academic from the school will act as a placement tutor, who will advise and support students on placements. The placement will be administered and monitored through a 20-credit, year-long ‘professional placement’ module.

Assessment

A variety of assessment vehicles are used as appropriate to each module. The forms of assessment have been chosen to motivate you to achieve and to create positive learning opportunities. The assessments are mainly coursework, which include:

- Written exercises
- Report (individual and group)
- Portfolio
- In-class assignments
- Computer-based tests
- Set exercises - worksheets, to be completed as required usually in the learner's own time
- Presentations (such as poster and oral, individual and group)
- Laboratory exercises and report
- Proposal
- Dissertation
- Examination

Formative feedback on your progress on the project work, directed study activities, class exercises and progress on summative assessments will be provided using verbal feedback during individual tutorials, group critiques or seminar sessions and peer feedback. Formative feedback opportunities will be provided to monitor and reflect on progress, identifying areas of achievement as well as focusing on objectives for future development.

Assessment criteria reflect the progressively independent learning expected as you progress through the course. This supports the practical nature of the course, supported by theoretical research and critical writing.

Contact Hours

Learners can expect to receive approximately 12 hours of scheduled learning activities per week. You will also be expected to undertake 18-20 hours of independent study (including research and practice) per week towards the completion of your coursework. For the part time mode of delivery, pro-rata hours of scheduled learning activities will apply.

7. Programme Regulations

This programme will be subject to the following assessment regulations:

- *Regulations for Taught Degree Programmes (2023)*

The following exceptions will apply to all modules on this programme:

- The module pass mark will be 40% overall, but in accordance with Engineering Council regulations each assessment element must achieve a minimum threshold of 30% for the module to be passed.
- No more than 20 credits may be compensated across the programme. Where compensation is applied, the student may instead request reassessment.
- For the placement year option, the degree algorithm will instead be calculated on the best 100 credits out of 140 Level 5 credits. Other aspects will remain the same. The student will achieve an overall total of 380 credits.

8. Support for learners

The following systems are in place to support you to be successful with your studies:

- The appointment of a personal tutor to support you through your programme
- A programme handbook and induction at the beginning of your studies
- Library resources, include access to books, journals and databases - many of which are available in electronic format – and support from trained library staff
- Access to Blackboard, our Virtual Learning Environment (VLE), which is accessible via PC, laptop, tablet or mobile device
- Access to the MyBNU portal where you can access all University systems, information and news, record your attendance at sessions, and access your personalised timetable
- Academic Registry staff providing general guidance on University regulations, exams, and other aspects of students and course administration
- Central student services, including teams supporting academic skills development, career success, student finance, accommodation, chaplaincy, disability and counselling
- Support from the Bucks Students' Union, including the Students' Union Advice Centre which offers free and confidential advice on University processes.
- Access to a 'Final Year Project Information Session' towards the end of stage 2, where you will be introduced to the final year project selection process and will learn how you go about choosing or proposing your research project.

9. Programme monitoring and review

BNU has several ways for monitoring and reviewing the quality of learning and teaching on your programme. You will be able to comment on the content of their programme via the following feedback mechanisms:

- Formal feedback questionnaires and anonymous module 'check-ins'
- Participation in external surveys
- Programme Committees, via appointed student representatives
- Informal feedback to your programme leader

Quality and standards on each programme are assured via the following mechanisms:

- An initial event to approve the programme for delivery
- An annual report submitted by the External Examiner following a process of external moderation of work submitted for assessment
- The Annual Monitoring process, which is overseen by the University's Education Committee
- Review by the relevant PSRB(s)
- Periodic Subject Review events held every five years
- Other sector compliance and review mechanisms

10. Internal and external reference points

Design and development of this programme has been informed by the following internal and external reference points:

- The Framework for Higher Education Qualifications (FHEQ)
- The QAA 2023 Engineering Subject Benchmark Statement – see detailed mapping below
- The PSRB Standards of Proficiency (SOP) for the Joint Board of Moderators (JBM), Institution of Civil Engineers (ICE)

- The BNU Qualifications and Credit Framework
- The BNU Grading Descriptors
- The University Strategy, Impact 2022

Mapping of Subject Benchmark Statement and any relevant Apprenticeship Standard to Programme Learning Outcomes

Subject Benchmark Statement / Apprenticeship Standard:	**Knowledge and understanding (K)**					**Analysis and Criticality (C)**					**Application and Practice (P)**					**Transferable skills and other attributes (T)**				
Benchmark / Standard requirement	**K1**	**K2**	**K3**	**K4**	**K5**	**C1**	**C2**	**C3**	**C4**	**C5**	**P1**	**P2**	**P3**	**P4**	**P5**	**T1**	**T2**	**T3**	**T4**	**T5**
Engineering																				
Science, mathematics, and engineering principles	X	X			X	X	X		X					X						X
Engineering analysis, including use of computational tools and techniques.	X		X			X		X	X			X					X			X
Design, creativity, safety and innovation, including applying an integrated or systems approach.	X			X	X		X			X			X	X					X	X
Engineering and society, incorporating sustainability, ethics, risk, security and equity, diversity and inclusion		X			X		X		X		X		X	X	X			X	X	X
Engineering practice, including teamwork, project management,		X		X		X	X	X	X		X	X	X	X	X	X		X	X	X

Subject Benchmark Statement / Apprenticeship Standard:	**Knowledge and understanding (K)**					**Analysis and Criticality (C)**					**Application and Practice (P)**					**Transferable skills and other attributes (T)**				
Benchmark / Standard requirement	**K1**	**K2**	**K3**	**K4**	**K5**	**C1**	**C2**	**C3**	**C4**	**C5**	**P1**	**P2**	**P3**	**P4**	**P5**	**T1**	**T2**	**T3**	**T4**	**T5**
communication and use of practical equipment.																				

Mapping of Programme Learning Outcomes to Modules

Programme Learning Outcome	**Knowledge and understanding (K)**					**Analysis and Criticality (C)**					**Application and Practice (P)**					**Transferable skills and other attributes (T)**				
Module Code (Core)	**K1**	**K2**	**K3**	**K4**	**K5**	**C1**	**C2**	**C3**	**C4**	**C5**	**P1**	**P2**	**P3**	**P4**	**P5**	**T1**	**T2**	**T3**	**T4**	**T5**
Level 4																				
Science and Materials for Engineers	X	X				X			X		X	X		X					X	X
Mathematics for Engineers	X		X			X	X					X				X	X			
Computer Aided Design and Simulation			X				X					X					X		X	X
Individual Engineering Project		X		X	X		X	X	X	X	X		X	X	X	X	X	X	X	X
Fundamentals of Electrical & Electronic Eng	X		X				X	X	X				X	X	X			X		X
Modelling & Analysis of Electromechanical Systems		X			X	X	X			X		X					X		X	X
Level 5																				
Construction Management	X		X			X	X					X				X	X			
Soil Mechanics	X			X		X		X			X	X		X					X	X
Fluid Mechanics	X			X		X		X			X	X		X	X				X	X
Surveying for Engineers			X			X		X			X	X			X	X	X		X	X

Programme Learning Outcome	Knowledge and understanding (K)					Analysis and Criticality (C)					Application and Practice (P)					Transferable skills and other attributes (T)				
Module Code (Core)	**K1**	**K2**	**K3**	**K4**	**K5**	**C1**	**C2**	**C3**	**C4**	**C5**	**P1**	**P2**	**P3**	**P4**	**P5**	**T1**	**T2**	**T3**	**T4**	**T5**
Structural Analysis and Design 1	X	X	X			X	X	X	X	X		X		X					X	X
Transport Engineering	X	X			X	X	X	X	X		X	X		X					X	X
Level 6																				
Geotechnical Engineering	X		X			X		X			X	X		X					X	X
Hydraulic Engineering	X		X			X		X			X	X		X					X	X
Leadership and Management		X		X			X			X	X					X		X	X	X
Structural Analysis and Design 2		X	X	X				X	X	X	X		X	X	X				X	X
Research Project	X				X	X				X	X	X				X	X		X	X