UNIVERSITY of BRADFORD

Faculty of Engineering and Digital Technologies

BEng Chemical Engineering with Integrated Foundation Year Programme Specification

https://www.bradford.ac.uk/courses/ug/chemical-engineering-beng/
https://www.brad.ac.uk/courses/ug/chemical-engineering-with-integrated-foundation/

Academic Year:	2024/25
Degree Awarding Body:	The University of Bradford
Target Degree Awards:	Bachelor of Engineering (BEng) Chemical Engineering [Framework for Higher Education Qualifications (FHEQ) Level 6]
Interim/exit Awards:	BEng Engineering (Chemical) [FHEQ Level 6]; Diploma of Higher Education (DipHE) Chemical Engineering [FHEQ Level 5]; Certificate of Higher Education (CertHE) Chemical Engineering [FHEQ L4]; Certificate of Foundation Studies (CertFS) Engineering [Regulated Qualifications Framework (RQF) Level 3]
Programme Admission:	September
Programme Modes of Study:	3 years full time towards BEng (UCAS H8D0); 4 years full time towards BEng with placement/study abroad (UCAS H810); 4 years full time towards BEng with integrated foundation year (UCAS H892); 5 years full time towards BEng with foundation and placement (UCAS H893)
Subject Benchmark Statement:	Engineering (QAA 2015)

Please note: This is the BEng with integrated foundation year specification. Please visit the BEng course page address above to access the specification for the H8D0 and H810 routes. The BEng with Foundation is aligned with the requirements for the Institute of Chemical Engineers (IChemE). Students will be notified when the programme has been granted formal accreditation by this body and/or others.

Please note: This programme specification has been published in advance of the academic year to which it applies. Every effort has been made to ensure that the information is accurate at the time of publication, but changes may occur given the interval between publishing and commencement of teaching. Any change which impacts the terms and conditions of an applicant's offer will be communicated to them. Upon commencement of the programme, students will receive further detail about their course and any minor changes will be discussed and/or communicated at this point.

Minor Modifications Schedule

1. March 2018: Programme LOs re-written
2. March 2019: CPE7013-B Oil and Gas Management module added as option
3. November 2020: Specification reformatted and made accessible
4. June 2021: Annual changes for 2021 academic year
5. July 2022: Annual changes for 2022 academic year. Addition of Engineering Council requirements on compensation
6. March 2023: Annual changes for 2023 academic year.

Introduction

Chemical Engineering is fundamental to the economic and social prosperity of the UK. It is the profession responsible for the creation of all material objects and systems necessary for modern life from concept to customer to decommissioning. The modern society relies on the work of Chemical Engineers who develop and design the processes that make the useful products for the society by efficient use and management of resources including oil and gas, water and energy while controlling health and safety procedures and protecting the environment. The course will provide students with essential tools based on the concept of sustainability and low carbon footprint for changing raw materials into useful products in a safe and cost-effective way.

Studies at Bradford will be a foundation for life aimed at developing a deep understanding of fundamental and advanced technical principles, analytical tools, and competence in their application together with a wide range of management, personal and professional skills. The BEng Chemical Engineering programme sets out:

(i) to give technical depth across the discipline and in relevant specialist applications of technology

(ii) to provide breadth to encourage innovation, and

(iii) facilitate exposure to other engineering disciplines.

Upon graduation students will have the capacity for meaningful interdisciplinary interaction, leadership roles, and professional growth. As qualified Chemical Engineers graduates will understand how to alter the chemical, biochemical or physical state of a substance, to create everything from health care products (face creams, shampoo, perfume, drugs) to food (dairy products, cereals, agro-chemicals) and water (desalination for freshwater) to energy (petroleum to nuclear fuels).

An excellent way to further develop these skills is to undertake an industrial placement as an integral part of the degree studies.

Accreditation of the programme by IChemE, who already accredit our MEng Chemical Engineering programme, is being sought. Accreditation aims to ensure that the BEng degree meets the highest international standards for Chemical Engineers.

The BEng fully meets the exemplifying requirements for registration as an Incorporated Engineer (IEng). To achieve Chartered Engineer (CEng) status students will also need to complete accredited further learning at FHEQ Level 7 (such as a one-year accredited MSc) plus a period of postgraduate professional development in industry.

Designed for the next generation of engineers.

Our programmes have been designed as part of the Conceive-Design-Implement-and Operate CDIO educational framework for producing the next generation of engineers. This will provide a learning experience that stresses the engineering fundamentals set within the context of CDIO real-world systems and products. This framework has been developed by universities across the globe and benefits from the ongoing collaborative experience of engineers and educationalists. This will mean that student's learning will reflect the real

world, they will work in teams to solve real-world problems and in the process, they will develop professional skills alongside technical skills.

We also recognise that the future for engineers is one where they will be working in interdisciplinary teams to solve new, complex and evolving problems that will require innovative solutions. Student's ability to work across engineering disciplines and collaboratively with experts in other specialist fields will be crucial to creating the solutions of tomorrow. We have designed our programmes to encourage and experience interdisciplinary working, to develop breadth as well as depth of skills and knowledge, and in this way, we believe students will be ideally equipped to be successful and employable. All our engineering students begin with an interdisciplinary year which ensures that all students have a good understanding of the breadth of what is encompassed by the word 'engineer'. This year provides students with fundamental skills and knowledge as well as specific projects that they will work on with other students in their discipline and a final project which will be an interdisciplinary project working with a range of engineers from different disciplines.

Learning with and as part of a research community

The School places emphasis on both teaching and research. Lecturers at Bradford are active researchers in their fields of expertise producing peer-reviewed knowledge through publications in journal articles and books. This research permeates to their teaching practice giving students access to world leading professionals, equipment and ideas within the University's academic themes of Innovative Engineering, Advanced Healthcare and Sustainable Societies.

We have research strengths in:

- polymers
- coating
- applied rheology
- materials engineering (including the creation of complex components from powders, composites, and polymers).

We draw our research strengths from the combined expertise in the Interdisciplinary Research Council (IRC) in Polymer Science and Technology and the Engineering Materials Research Unit and inform our undergraduate programmes.

Each year students will engage in inquiry-based projects allowing learning through research. The programmes of study will include research with an emphasis on application, experiential learning and real-world engagement. This will make a major contribution to students' skill set, in the skills and attributes for enhanced employability. During the later years of the MEng studies, students can expect to interact with the Faculty's research activity.

The Bradford Graduate

We aim to produce MEng graduates who are imaginative, innovative, versatile and competitive, who will be able to progress rapidly to professional positions of responsibility with minimal additional training, and who can provide technical, managerial and entrepreneurial leadership in specialist and interdisciplinary projects.

Upon graduation students will be able to work as:

a) Projects Engineer

b) Design Engineer

c) Operations Engineer or

d) Research and Development Engineer (R&D) in Chemical/Petroleum/Food and Pharmaceutical/Water Industries.

Students will have the capacity for professional growth to continue the path to Chartered Engineer (CEng) status. However, unlike graduates from many other universities, they will have high-level professional and interpersonal skills built from learning which has been through a team-based environment. An education where they have spent their time conceiving, designing, implementing and operating solutions to problems that they have tackled as part of a learning team. Students will be adept at working with complex value-added engineering systems; they will be familiar with experimentation and systems thinking, and have a solid understanding of the business and enterprise context. We value sustainability at Bradford and to that end, we have embedded sustainable development across all of our programmes. In a future where sustainability is to become increasingly important, students will have a sound understanding of the challenges and the potential for solutions in a world where the action of human industry is creating new pressures on resources.

All our programmes are designed to provide three progression routes for graduates. Upon graduation students will be equipped to be employed as an engineer. If this is their goal, they should seriously consider a placement year as this will be invaluable. Alternatively, students could pursue a research career since they will have highly developed research skills and their personal tutor can help them identify postgraduate research opportunities here at Bradford. The third route open to students on graduation is to develop their own business. As a Bradford engineering graduate, students will have the skills to design and develop products processes or systems that could have serious commercial potential. We have a long track record of supporting and developing new companies and helping students on those first steps as an entrepreneur.

The ability of an engineer to think clearly, logically and ethically is widely appreciated by many other professions and studies at Bradford may well be a stepping-stone to many alternative careers other than Engineering. As an engineering graduate from Bradford students have a real foundation for life and for a lifetime of learning.

The University

The University of Bradford has four key strategic objectives: excellence; internationalisation; equality and diversity; and sustainability. We believe in doing research and teaching to deliver career opportunities for our students as well as for economic development and job creation. The Faculty of Engineering and Digital Technologies strongly believes that each programme subscribes to these four objectives through the three key streams of the University vision:

- The creation of knowledge through fundamental and applied research.
- The dissemination of knowledge by teaching students from all backgrounds.
- The application of knowledge for the prosperity and wellbeing of people.

The University of Bradford is well known for attracting students from a wide variety of backgrounds, experiences and countries. We recognise that society benefits from the talents of all, and that the development of creative, collaborative engineers, skilled in communication and teamwork is vital. Diverse engineering teams are known to be more innovative. We help students recognise the strength and benefits of diversity, and to contribute to and learn from the varied perspectives of their tutors and peers. We want to equip our graduates with the knowledge and skills to respond to the many diverse needs of our businesses and communities. We contribute to Bradford Science Festival each year and participate in activities to celebrate National Science Week.

Students will have many opportunities to contribute to their Higher Education Achievement Report (HEAR) whilst with us. They can gain HEAR accreditation for becoming student representative for their course, by becoming a student ambassador, helping with open days and applicant experience days, or by being a PAL leader. The peer assisted learning scheme or PAL is where students in stages two and three support new students of the University. The PAL scheme has been very successful, providing guidance on all aspects of being a student of Bradford. PAL leaders become mentors and role models for new students. We support people to become PAL leaders, but we also recognise their contribution through the HEAR.

The University has held Bronze Athena Swan accreditation (recognition of the Universities activities to advance women's careers in science, technology, engineering, medicine and mathematics) on an institutional level since 2015, demonstrating our commitment to striving for gender equality. In May 2021, the Faculty was successful in being awarded Bronze Athena Swan Accreditation. The University of Bradford encourages and supports women in engineering, and the Faculty is instrumental in organising events to celebrate occasions including International Women in Engineering Day (INWED), the UN International Day of Women and Girls in Science, and International Women's Day. We are members of WISE (https://www.wisecampaign.org.uk/) whose long-term vision is for gender balance in STEM, and we signpost students to networking events and specific upskilling opportunities offered via the organisation.

Our Faculty website has a specific page highlighting Women in Engineering for further information, visit: https://www.bradford.ac.uk/ei/women-in-engineering/

Programme Aims

The programme is intended to:

- Develop graduates with a solid grounding in engineering fundamentals and experience of interdisciplinary working.
- Enable graduates to develop the engineering, design, management and personal skills required to become professional Chemical Engineers and in doing so, also equip them for careers in other professions.
- Provide the educational requirements (in compliance with UK-SPEC) when combined with a period of further learning to permit progression to Chartered Membership of the IChemE and registration with ECUK as a chartered engineer.
- Provide a challenging programme in terms of technical breadth and depth as well as supporting managerial and transferable skills in keeping UK-SPEC requirements of an accredited BEng programme.

Programme Learning Outcomes

To be eligible for progression to Stage 1 of the programme or for the RQF Level 3 exit award of Certificate of Foundation Studies, students will be able to:

0.1. Apply knowledge and understanding of mathematics, mechanics, physics, materials and chemistry to an appropriate standard to allow students to engage with an accredited Engineering programme.

0.2. Demonstrate knowledge and skills in the use of computers for word processing, report writing, data processing, power-point presentation, Computer Aided Design; numerical methods for simple modelling and analysing engineering problems relevant to their chosen specialism; selection and application of principles and data collection & manipulation methods to support problem solving; undertake and report on an investigation.

0.3. Demonstrate knowledge and skills in data management and presentation, IT and communication skills, systematic problem solving, lifelong learning, scientific method, teamwork, and personal management.

Additionally, to be eligible for the FHEQ Level 4 award Certificate of Higher Education, students will be able to:

1. Select and apply physical principles to describe fundamental engineering processes.

2. Select and correctly apply quantitative methods to analyse the performance of engineering components systems.

Select and use appropriate and relevant materials, equipment, tools, processes, software or products.

Apply simple computational techniques, including AI, to model/simulate and visualise the solution to specified engineering problems.

3. Apply skills in problem solving, working with others, information retrieval, and effective use of general IT facilities, and communicate work to technical and non-technical audiences.

4. Exercise personal and professional responsibility, which may be as a team member, and include evidence of safe and effective workshop and lab practice.

Additionally, to be eligible for the FHEQ Level 5 award of Diploma of Higher Education, students will be able to:

5. Understand the essential concepts, principles and theories of Chemical Engineering.

Select mathematical, statistical and machine learning methods necessary to underpin the engineering discipline and proficiently apply tools and notations in the modelling, analysis, solution, and evaluation of engineering problems.

6. Apply analytical and computational methods to solve and visualize problems in the engineering discipline and to implement appropriate action.

7. Apply problem-solving skills, technical knowledge and understanding to create/adapt and evaluate design solutions that are fit for purpose (inc. operation, maintenance, reliability etc.).

8. Apply relevant practical and laboratory skills to obtain accurate data to evaluate system performance and/or validate system models.

9. Plan and apply safe methods of construction and manufacture to semi-open projects, deriving solutions that consider technical, regulatory, and client requirements.

10. Work effectively as a specialist within in a multidisciplinary team towards a shared objective.

Additionally, to be eligible for the FHEQ Level 6 Degree award of Bachelor of Engineering, students will be able to:

11. Generate innovative designs for products, systems, components, or processes to fulfil new needs.

12. Select, apply, and evaluate quantitative tools and data collection methods to underpin the engineering discipline, and apply a range of tools and notations proficiently and critically in the analysis and solution of engineering problems.

13. Select, apply and effectively integrate knowledge of other engineering disciplines to support study and evaluation of the engineering discipline.

14. Apply principles of organisation and management (project management, change management, health and safety, self-management) to achieve engineering objectives.

15. Demonstrate comprehensive knowledge and understanding of the concepts, principles and theories underpinning Chemical Engineering.

16. Apply engineering principles to critically analyse problems to create innovative process and product designs, with systematic appreciation of key aspects of field of study, including acquisition of coherent and detailed knowledge informed by characteristics of the engineering discipline.

Plan and implement an individual programme of work, monitoring and adjusting where appropriate in an on-going basis, utilising research skills to critically evaluate and report on technical literature and newly developed data and reflect on personal and professional development to improve their performance.

17. Describe and work effectively and collaboratively in different roles within a team, and evidence responsibility of engineers to consider environmental and socio-economic aspects in the development of sustainable solutions.

Use appropriate specialised software packages, including AI applications in the modelling, simulation, analysis, design, and critical performance evaluation of composite engineering systems in the discipline.

18. Correctly identify and use codes of practice and industry standards.

Additionally, to be eligible for the FHEQ Level 7 Integrated Degree award of Master of Engineering, students will be able to:

19. Understand fundamental concepts, principles and theories underpinning Chemical Engineering with knowledge in Upstream production and refinery operations, desalination technology, transport phenomena as well as other optional modules.

20. Apply and critically evaluate comprehensive integrated or systems approaches to engineering problems through know-how of relevant discipline concepts, theories and technologies and their application, with ability to work with technical uncertainty.

21. Apply advanced problem-solving skills, technical knowledge and understanding, to establish rigorous and creative solutions that are fit for purpose for all aspects of the problem including production, operation, maintenance and disposal.

22. Extract and evaluate pertinent data and apply engineering analysis techniques to solve unfamiliar problems and communicate outcomes by a range of advanced techniques.

23. Describe and critically evaluate different roles within an engineering team and exercise initiative and personal responsibility as a team member or team leader.

Curriculum

The BEng Biomedical Engineering with Integrated Foundation Year curriculum is organised into modular units, studied across the "Academic Year" of September to May or discretely in a single Semester. Students study 120 credits in each stage/year.

The Integrated Foundation Year introduces students to the principles of engineering holistically, introducing foundational concepts, frameworks and techniques common to other Engineering professions before contextualising them for Chemical Engineering.

Mathematics, Mechanics, and Physics are studied to GCE Advanced level, and Fundamentals of Materials to GCE Advanced Subsidiary level. There is a 20-credit module designed to introduce students to the use of Information and Communication Technologies. The year features practical elements where students spend time in laboratories to conduct experiments on engineering applications. Students will be able to develop awareness of the breadth of opportunities and challenges posed by engineering and the exciting possibilities for their career development.

Table i: Stage 0 Modules (RQF Level 3/CertFS)

Study Period	Code	Title	Credit	Level
Academic Year	MAE3001-B	Foundation Mechanics	20	RQF 3
Academic Year	MAE3002-B	Foundation Physics	20	RQF 3
Academic Year	MAE3003-B	Fundamentals of Materials	20	RQF 3
Academic Year	ENB3001-B	Information and Communication Technology	20	RQF 3
Semester 1	ENM3001-B	Foundation Mathematics 1	20	RQF 3
Semester 2	ENM3002-B	Foundation Mathematics 2	20	RQF 3

At the end of Stage 0, students will be eligible to exit with the award of Certificate of Foundation Studies if they have successfully completed 120 RQF credits and achieved the award learning outcomes 0.1-0.3.

Stage 1 Core Modules (FHEQ Level 4/CertHE)

Study Period	Code	Title	Credit	Level
Academic Year	ENB4002-B	Computer Aided Engineering	20	FHEQ 4
Academic Year	CPE4001-B	Design, Build and Test (Chemical)	20	FHEQ 4
Academic Year	ELE4013-B	Electronics and Mechanics	20	FHEQ 4
Academic Year	ENM4004-B	Mathematical Methods and Applications	20	FHEQ 4
Semester 1	ENG4007-B	Engineering Materials	20	FHEQ 4
Semester 2	ENG4008-B	Thermofluids	20	FHEQ 4

At the end of stage 1, students will be eligible to exit with the FHEQ Level 4 award of Certificate of Higher Education if they have successfully completed at least 120 FHEQ credits and achieved the award learning outcomes 0-6.

Stage 2 Core Modules (FHEQ Level 5/DipHE)

Study Period	Code	Title	Credit	Level
Academic Year	CHE5001-B	Chemistry for Engineers	20	FHEQ 5
Academic Year	CPE5009-B	Engineering and Chemical Thermodynamics	20	FHEQ 5
Academic Year	ENM5007-B	Engineering Mathematics and Machine Learning	20	FHEQ 5
Academic Year	CPE5004-B	Mass Transfer Operations	20	FHEQ 5
Academic Year	CPE5005-B	Reaction Engineering	20	FHEQ 5
Academic Year	CPE5008-B	Transport Processes	20	FHEQ 5

At the end of stage 2, students will be eligible to exit with the FHEQ Level 5 award of **Diploma of Higher Education** if they have successfully completed at least 240 FHEQ credits and achieved the award learning outcomes 0-13.

In stage 3, students will study 100 core credits and choose 1 out of 2 optional modules to study in Semester 2.

Stage 3 Modules (FHEQ Level 6/BEng)

Study Period	Code	Title	Credit	Level	Type
Academic Year	CPE6007-D	Chemical Engineering Design Project	40	FHEQ 6	Core
Semester 1	CPE6005-B	Process Design	20	FHEQ 6	Core
Semester 1	CPE6009-B	Process Dynamics and Control	20	FHEQ 6	Core
Semester 2	ENB6009-B	Reliability and Safety Engineering	20	FHEQ 6	Core
Semester 2	ENB6010-B	Project Management and Six Sigma	20	FHEQ 6	Option
Semester 2	ENG6005-B	Sustainable Energy	20	FHEQ 6	Option

At the end of stage 3, students will be eligible to exit with the FHEQ Level 6 Degree award of Bachelor, BEng Engineering (Chemical) if they have successfully completed 360 FHEQ credits but have not met the programme-specific requirements for an accredited award.

Students will be eligible for the FHEQ Level 6 Degree award of Bachelor, BEng Chemical Engineering if they have successfully completed at least 360 FHEQ credits, achieved award learning outcomes 0-23 and met the programme-specific accredited award regulations.

Students intending to transfer to the MEng Chemical Engineering programme must have passed Stage 0 at 70% and each of Stages 1-3 at 50% or higher overall or must exit with a BEng. Other requirements apply as detailed in the MEng Programme Specification.

Please note: The curriculum may change, subject to the University's programme approval, monitoring and review processes.

Placement and/or Study Abroad

This programme provides the option for students to undertake a work placement or period of study abroad in the penultimate year of study (between the 3rd and 4th year of the programme or between the 2nd and 3rd years of the BEng). Students wishing to take this option will be encouraged to register for the placement year programme. All Faculty of Engineering and Digital Technologies students are encouraged to apply for Industrial Placements (Year in industry).

Timetabled Pre-Placement lectures and Timetabled 'drop-in' sessions will be scheduled to support students throughout the pre-placement process. All placement opportunities received are made available to students on the placement route via the VLE.

Students can also access various support services organised by Career and Employability Services including one-to-one appointments, Employability Workshop/Webinar Programme, Careers Fairs and jobs/placement opportunities. Students are encouraged to take the opportunity to find their own placement.

- On successful completion of ENG5002-Z, the placement, students will be eligible for the additional award of University Diploma Industrial Studies.
- On successful completion of ENG5004-Z, the study/placement abroad experience, students will be eligible for the additional award of University Diploma Industrial Studies (International).

For further information about study abroad opportunities, including shorter opportunities available to all students or taking a semester overseas, please refer to the International Opportunities website: https://www.bradford.ac.uk/study/abroad/

Learning and Teaching Strategy

From 2020-2025, the University of Bradford aims to create an inclusive learning culture and transformative university experience that empowers our students to realise their ambitions and make a positive difference in the world. This vision will be realised through the achievement of three objectives: inclusive community, inclusive curriculum, inclusive experiences and inclusive community. We aim to make learning accessible to all of our students regardless of starting point or individual circumstances.

The University Learning, Teaching and Student Experience strategy commits to being inclusive and recognises the value of diversity. This aligns with the ethics and outlook relevant to working as a Professional Engineer where the needs of a diverse range of users and beneficiaries must always be considered when making design decisions. Through the implementation of this ethos, students are encouraged to think about alternative approaches to engineering solutions and in addition to sustainability and economic requirements. Equality impacts of any decisions must also be considered. We are working to decolonise our curriculum and adopt principles of Liberated Learning. This is reflected in module content which is regularly updated with examples of relevance to all students, and in encouraging students to identify and challenge structures and inequalities to support their confidence in contributing to improvements in their own work as engineers. The

principles of Universal Design for Learning (UDL) are incorporated into the curriculum. Students are partners in their learning, and their comments and feedback are regularly listened to and acted upon, for example via Staff Student Liaison Committee (SSLC) meetings with elected student representatives, through Departmental Assembly sessions where all staff and students are encouraged to share ideas and via small group and individual discussions in Personal Academic Tutor (PAT) groups. Intercultural competence is supported through facilitated group work. Students must work with others who may come from different cultural backgrounds and prior experiences. This approach enables students to better appreciate the perspectives of others from different backgrounds, including that of gender, race and disability. We also recognise that students must not feel isolated in a group, so care is taken to ensure students do not feel minoritised.

The teaching and learning strategy takes into consideration the learning outcomes that need to be achieved, progression through the levels of study, and the nature of the subject. One of the goals of Higher education is that students develop lifelong learning skills and are increasingly able to take greater responsibility for their own learning as they progress through the programme.

The student journey has been considered at programme-level and our strategy begins with the end in mind. We want students to become great engineers; that means great problem solvers, great team-workers with an inquisitive and curious mind. This should mean that by the end of their study with us they can move seamlessly into the world of work, academic research or become an entrepreneur. In addition to the modules, academic skills workshops will be organised during the year to provide further support in self-regulation, persistence, and the development of essential skills such as digital literacy.

Stage 0

Integrated Foundation Year students will experience a wide range of teaching and learning environments. Concepts, principles and theories are typically explored in formal lectures, practised in tutorials, and demonstrated in laboratory classes. Practical skills are developed in laboratories. Cognitive and personal skills are developed in more open-ended problem solving and design exercises, often tackled by working in small groups supported by members of academic, technical, and library staff. Project work is used to bring various aspects of the programme together.

Typically, each module will involve students in 72 hours of scheduled contact except Mathematics for which students will have 96 hours of scheduled contact for each module. An expected weekly attendance commitment will be around 21 hours.

Stages 1-3

The teaching and learning methods have been selected to engage students in developing their knowledge and understanding of engineering fundamentals, chemical engineering through formal learning opportunities such as lectures and tutorials, experiential learning through practical classes and lab sessions and informal and social learning through team-working in projects and competitions.

Study with us will include formal lectures (including those from Visiting Lecturers), but these will always be interactive and two-way. We want to develop students understanding of the vast array of opportunities open to today's professional engineer and therefore we look to incorporate aspects of real-world engineering problems and solutions where possible. To this end we make use of case studies, practical demonstrations, and provide lots of opportunities for students to design their own solutions.

As part of our focus on building a learning experience which will prepare students for the world of work our curriculum has been developed using the CDIO framework. This means that our learning strategy will be to encourage students to work in teams to Conceive potential solutions, Design new products processes or services, implement (or model) and test those designs, and operate the product or solution. In line with the CDIO philosophy students will have numerous opportunities to be an active learner, to work as an engineer on real-world projects.

Students will be involved in project work from the start of their time with us and these projects will become more complex and challenging as their skills and knowledge develop. At Levels 5 and 6 students will engage with practical work on chemical engineering unit operations in a purpose-built laboratory. They will also design equipment and procedures and use control and measuring techniques in a supportive and collaborative environment with their supervisors.

The University recognises the importance of providing pastoral support, taking into consideration all aspects of our students' journeys and development. All students are allocated a personal academic tutor, with whom they meet regularly to discuss and receive guidance on their learning and development. The University also operates a wide range of support services covering areas such as disability, counselling, faith advisors and careers.

Assessment Strategy

In the same way that our teaching and learning strategy is designed to prepare students for the world of work, academic research or entrepreneurship, our assessment methods incorporate a wide range of different methods designed to meet the needs of industry, the accrediting bodies as well as prepare students for a potential academic research career.

Assessment is a key part of the learning process, it is only through challenging students to express what they have learned or put it to practical use, can they complete the learning journey and assess for themselves if they have understood what they have been taught and are able to apply and use those skills and knowledge. There are two forms of assessment formative assessment which provides an opportunity for our staff will give students feedback during their learning. This feedback is designed to help and guide students learning. All the modules will have some formative assessment, and this may be in various forms including discussions or questioning from the supervisor, tests, practical activities, et cetera. These formative activities are crucial if students are to make best use of their learning experience and they are designed to prepare students for their summative assessment. Summative assessment is how work is graded on a module and the details of this assessment will be available from the beginning of the module so that students understand how their grade will be determined.

A main method of assessment (as is common on all professional engineering degree programmes) is by formal written examinations. Nevertheless, many of the assessments will be tailored to the most efficient ways the learning outcomes. Therefore, project work will often be assessed based on the quality of the product produced as part of the project; we use practical tests to assess practical skills and written reports to show the depth of understanding of concepts and ideas. Practical skills are often assessed via individual and group technical reports with the laboratory work linked with the taught modules. The methods of assessment of transferable skills are built in the structure of the examinations, case studies, laboratory demonstrations and the 'Design Project' work. To get the students ready for world of work, assessments are designed to measure industry ready skills such as presentation skills, report writing skills, team-work skills (using group coursework to strengthened students' ability to work effectively in teams) and peer evaluation.

Assessment Regulations

The standard University Assessment Regulations are available at the link below: https://www.bradford.ac.uk/regulations/

However, to gain an accredited award, the following waiver to the regulations applies:

Compensation is only permitted in a maximum of 20 credits across the whole programme (from Stage 1 onwards) with a mark no lower than 30%.

If the above requirement is not met, but the University's undergraduate regulations are complied with, then a non-accredited BEng will be awarded:

BEng Engineering (Chemical)

Admission Requirements

The University welcomes applications from all potential students and most important in the decision to offer a place is our assessment of a candidate's potential to benefit from their studies and of their ability to succeed on this particular programme. Consideration of applications will be based on a combination of formal academic qualifications and other relevant experience.

The minimum entry requirements for the programme are as follows:

A typical offer to someone seeking entry through the UCAS scheme would be 72 UCAS points, a minimum of GCSE Maths grade B/grade 6 and GCSE English grade D/grade 3 (equivalents accepted) although having post GCSE Maths and/or Physics (A level) would be an advantage.

On completion of a UCAS form potential students will be invited to the School for an Experience Day when they will have the opportunity to meet staff, view the facilities and discuss "the Bradford experience" with current students.

On completion of a UCAS form students will be invited to the Faculty for an Open Day where they will have the opportunity to meet staff, view the facilities and discuss "the Bradford

experience" with current students. Students will be made aware of the range of engineering programmes available within the Faculty.

Access and Recognition of Prior Learning

Applications are welcome from students with non-traditional qualifications, and/or significant personal/professional experience. For such applicants, evidence of their interests and any work experience would be required and this would likely take the form of a portfolio of work and/or an interview with the programme.

The University of Bradford has always welcomed applications from disabled students. To discuss adjustments or to find out more about support and access, you may wish to contact Disability Services before you apply online: www.bradford.ac.uk/disability/before

Applications are particularly welcomed from adult learners (those aged 21+ at the start of the programme), armed forces families, carers and care leavers, estranged or orphaned learners, refugees and asylum seekers, and Romani or Traveller families. To find out more about the University of Bradford Progression Scheme, visit the webpage: https://www.bradford.ac.uk/applicants/progression-scheme/

If applicants have prior certificated learning or professional experience which may be equivalent to parts of this programme, the University has procedures to evaluate and recognise this learning in order to provide applicants with exemptions from specified modules or parts of the programme. For more details on RPL, visit the webpage: https://www.bradford.ac.uk/teaching-quality/prior-learning/

Please note: This information is relevant to the contemporary recruitment cycle and therefore may be different now to when this document was originally published. The current UCAS tariff for the programmes, as well as detail of accepted equivalent qualifications, is published online at the course pages:
https://www.bradford.ac.uk/courses/ug/chemical-engineering-beng/
https://www.bradford.ac.uk/courses/ug/chemical-engineering-with-integrated-foundation/