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BEng (Hons) Electrical and Electronic Engineering with foundation year

ELR013-F-RGL-FX-02 Full-time

Awarding Institution University of Bolton
Teaching Institution Regent College London
Ucas Code
JACS Code
Language Of Study English
Notes:

Professional Accreditation

None Associated with this programme

Programme Awards

Title	Type	Level	Description
Honours Degree (BEng (Hons))	Final Award	Level 6	Electrical & Electronic Engineering
Diploma of Higher Education (DipHE)	Exit or Fallback Award	Level 5	Electrical & Electronic Engineering
Certificate of Higher Education (CerHE)	Exit or Fallback Award	Level 4	Electrical & Electronic Engineering
Foundation Certificate (FndCert)	Exit or Fallback Award	Level 3	Engineering

Benchmark Statements

The following benchmark statements apply to this programme:

- QAA Subject benchmark statement - Engineering (2023)

Internal and External Reference Points

1. UK Quality Code for Higher Education
2. The University of Bolton awards framework

Other Points of Reference

- Engineering Council as the academic standards expected of graduates with an engineering BEng or Masters degree
- UK Standards for Professional Engineering Competences (UK-SPEC): The Accreditation of Higher Education Programmes 4 (AHEP4).
- The Institution of Engineering and Technology Accreditation Guidelines (2021)

General Entry Requirements

You should have a minimum of two GCE A2-level passes (or equivalent), including mathematics and science; and five GCSEs at grade C or above (or equivalent), including English. You may be required to attend an interview and/or provide a portfolio of work. If English is not your first language you will need to complete a Secure English Language Test at IELTS 6.0 or equivalent.

Additional Criteria

- Students who are deemed to have an insufficient understanding of maths determined by the diagnostic assessment will be required to take additional module ATT3037 (Foundation Principles 0).
- If English is not your first language you will need to complete a Secure English Language Test at IELTS 6.0 or equivalent
- International/European Baccalaureate or equivalent internationally recognised qualification.
- Edexcel-BTEC Ordinary National Diploma/Certificate in engineering with Level 3 Maths and Science will be considered.

Additional Admission Matters

There are no additional Admission Matters associated with this Programme.

Aims of the Programme

The principal aims of the programme are to:

- Educate electrical and electronic engineers to the academic requirements of the UK Standards for Professional Engineering Competences (UK-SPEC)
- Prepare prospective engineers for meaningful professional employment in the Electrical and Electronic Engineering sector of industry or prepare them for further study
- Prepare prospective engineers for a fruitful and responsible life in society and their community
- Complete a programme of professional development and training (PDP)

Distinctive Features of the Programme

- This Programme has been devised with reference to the standards set by the Institution of Engineering and Technology (IET)
- Career and life skills such as leadership, team management and professional communication have been integrated into the programme to develop and enhance employability
- Students will compete with other Universities in the IMechE Design Challenge (or equivalent).
- Project-based learning (PBL) is supplemented by industry visits, and guest speakers
- Hands-on' type modules at all levels of the programme for assimilation and integration of topics and material
- Open access and skills development in industry standard CAD, Analysis, Optimisation, CAM and CAE software.

Learning Outcomes

Knowledge & Understanding

On completion of the programme successful students will be able to demonstrate systematic knowledge and understanding of:

- mathematics, statistics, natural science and engineering principles to the solution of complex problems. Some of the knowledge will be at the forefront of the particular subject of study (C1)
- environmental and societal impact of solutions developed. Experience with solving complex problems and minimise adverse impacts (C7)
- ethical concerns and make reasoned ethical choices informed by professional codes of conduct (C8)
- engineering management principles, commercial context, project and change management, and relevant legal matters including intellectual property rights (C15)

Cognitive, Intellectual or Thinking Skills

On completion of the programme successful students will be able to demonstrate the ability to:

- analyse complex problems to reach substantiated conclusions using first principles of mathematics, statistics, natural science and engineering principles (C2)
- apply an integrated or systems approach to the solution of complex problems (C6)
- select and apply appropriate materials, equipment, engineering technologies and processes, recognising their limitations (C13)
- discuss the role of quality management systems and continuous improvement in the context of complex problems (C14)

Practical, Professional or Subject-specific Skills

On completion of the programme successful students will be able to demonstrate the ability to:

- select and apply appropriate computational and analytical techniques to model complex problems, recognising the limitations of the techniques employed (C3)
- select and evaluate technical literature and other sources of information to address complex problems (C4)
- design solutions for complex problems that meet a combination of societal, user, business and customer needs as appropriate. This will involve consideration of applicable health & safety, diversity, inclusion, cultural, societal, environmental and commercial matters, codes of practice and industry standards (C5)
- use a risk management process to identify, evaluate and mitigate risks (the effects of uncertainty) associated with a particular project or activity (C9)
- adopt a holistic and proportionate approach to the mitigation of security risks (C10)
- use practical laboratory and workshop skills to investigate complex problems (C12)
- communicate effectively on complex engineering matters with technical and non-technical audiences (C17)

Transferable, Key or Personal Skills

On completion of the programme successful students will be able to demonstrate the ability to:

- adopt an inclusive approach to engineering practice and recognise the responsibilities, benefits and importance of supporting equality, diversity and inclusion (C11)

- function effectively as an individual, and as a member or leader of a team (C16)
- plan and record self-learning and development as the foundation for lifelong learning/CPD (C18)
- critically reflect on personal performance in delivering projects
- exercise initiative and personal responsibility
- Clearly communicate complex ideas verbally and in writing, and to construct coherent arguments using language appropriate to their programme of study

Programme Structure

This 4 year full time programme requires 120 points to be attained at Level 3 before transferring to the BEng which requires 360 credits to be established for the award BEng (Hons) in Electrical and Electronic Engineering; 120 credits at HE4, 120 credits at HE5 and 120 credits at HE6. All modules at HE4 and HE5 are core modules and have a 20 credit value. At level HE6, there are a total of four compulsory modules encompassing a 40 credit project module, and three 20 credit taught modules (Management & Enterprise in Engineering, Electrical Machines & Power Electronic Drives, Engineering Electromagnetism). There is a single optional module at level HE6. At Level 3 there are 4 modules which are 30 credits each in addition there is one optional non-credit bearing module (ATT3037) which is available to support Foundation Mathematics 1 where this is required.

Validated Modules

Title	Module Code	COE ¹
Foundation Principles 0	ATT3037	O
Foundation Principles 1	ATT3033	C
Foundation Principles 2	ATT3034	C
Engineering Study Skills	ATT3035	C
Engineering Technology	ATT3036	C
Engineering Environment	AME4061	C
Introductory Engineering Mathematics	EEE4011	C
Introductory Electrical Principles	EEE4012	C
Introductory Digital Electronics	EEE4013	C
Introductory Analogue Electronics	EEE4014	C
Introductory Embedded Systems	EEE4015	C
Engineering Modelling and Analysis	AME5014	C
Instrumentation and Control	EEE5011	C
Intermediate Digital Electronics and Communications	EEE5012	C
Intermediate Electrical Principles and Enabling Power Electronics	EEE5013	C
Intermediate Embedded Systems	EEE5014	C
Analogue Signal Processing and Communications	EEE5015	C
Management and Enterprise in Engineering	AME6013	C
Major Project	EEE6010	C
Electrical Machines and Power Electronic Drives	EEE6011	C
Engineering Electromagnetism	EEE6012	C
Digital Signal Processing	EEE6013	O
Power Systems and Smart Grids	EEE6015	O
Advanced Embedded Systems	EEE6017	O
Green Renewable Energy	EEE6026	O

¹Core, Optional, Elective

Learning & Teaching Strategies

The diverse nature of this engineering programme necessitates the use of a variety of teaching and learning methods in order to ensure the acquisition and development of appropriate concepts, knowledge and skills. Many of these methods will be experienced during formal timetabled classes. Most sessions in the Foundation year comprise a formal lecture, workshop what will mainly focus on practical problem solving quizzes, to reinforce the learning and a stock of brief in-house student delivered classroom tasks. Modules will include real world problems solving. Other methods, which are also demanded by professional body accreditation requirements, will be experienced through opportunities to develop creativity and innovative skills. This is predominantly achieved through open-ended project and design, make and test activity, where application, assimilation and integration of course material is realised. As projects, design activity and assimilation is extremely important and time dependent, all project modules are 40 credit value and run over two semesters. Also, as you progress through the programme, your studies will become less

structured and more open-ended in nature as you develop as an independent learner. This programme adopts a blended style of learning and teaching including online delivery and engagement where appropriate. This programme adopts a blended style of learning and teaching including online delivery and engagement where appropriate.

Learning Activities (KIS entry)

Course Year	Level 3	HE4	HE5	HE6	HE7
Scheduled learning and teaching activities	42%	34%	22%	22%	n/a
Guided independent study	58%	66%	78%	78%	n/a
Placement/study abroad	n/a	n/a	n/a	n/a	n/a

Assessment Strategy

The assessment strategy for the programme is designed to ensure that the overall aims and learning outcomes of the programme are assessed and achieved. To accomplish this, a range of assessment methods are used and applied, depending upon the learning outcome in question and the type of module content being assessed. Assessment and feedback may be formative or summative. Summative assessments may consist of project, assignment or design reports, examinations, portfolios, presentations, and blogs. At Level 3 you must achieve an average of 40% pass for each module. At levels HE4, HE5 and HE6 you must achieve a 40% pass in all elements of assessment for each module.

Assessment Methods (KIS entry)

Course Year	Level 3	HE4	HE5	HE6	HE7
Written exams	50%	27%	60%	37%	n/a
Coursework	50%	73%	40%	63%	n/a
Practical Exams	n/a	n/a	n/a	n/a	n/a

Assessment regulations

Assessment Regulations for Undergraduate Programmes apply to this programme.

The following variations apply:

For the BEng programme levels HE4, 5 and 6 you must achieve a mark of 40% or above in all assessments for each module in order to pass. When a programme is accredited by a PSRB, the requirements for accreditation by the PSRB apply. For the full and current version of the Assessment Regulations, refer to the document "Assessment Regulations for Undergraduate Modular Programmes (Main Document)" on the University website.

Grade Bands & Classifications

Undergraduate Honours Degree

Regulations can be found at: <http://www.bolton.ac.uk/studentinformation-policyzone/Home.aspx>

Role of External Examiners

External examiners are appointed for all programmes of study. They oversee the assessment process and their duties include: approving assessment tasks, reviewing assessment marks, attending assessment boards and reporting to the University on the assessment process.

Support for Student Learning

- The programme is managed by a Programme Leader
- Each student has a Personal Tutor who is responsible for support and guidance
- Feedback is available on formative and summative assessments
- The opportunity to develop skills for employment
- The online Student Information – Policy Zone provides all regulatory and policy information in one place
- A subject specialist link tutor supports the programme
- Induction/Welcome Week introduces the student to the University, partner and their programme
- UoB online library services are a very good source of advice and support with excellent study skills materials available
- Partner centre has study resources
- Programme Handbooks and Modules guides provide information about the programme and university/partner regulations
- Academic Partnership Manager supports the partner centre
- The partner centre provides administrative support, information and advice
- Student representative training is available online from the Student Union

Methods of Evaluating & Enhancing the Quality of Learning Opportunities

- Student Staff Liaison Committees
- Module evaluations by students
- Programme and University Student Surveys
- Annual quality monitoring and action planning through Programme Plans including data analysis, Subject Quality Enhancement Plans, School Quality Enhancement Plans, University Quality Enhancement Plan
- Peer review/observation of teaching
- Professional development programme for staff
- External Examiner reports

Sources of Information

- Student Portal <http://www.bolton.ac.uk/Students/Home.aspx>
- Students Union <https://www.boltonsu.com/>
- External Examiner Report <https://www.bolton.ac.uk/Quality/EEE/ExternalExaminersReports/>
- Careers <http://www.bolton.ac.uk/careers>
- Student Information - Policy Zone <http://www.bolton.ac.uk/studentinformation-policyzone/Home.aspx>
- Regent College London <https://www.rcl.ac.uk>

Audit Notes

The following changes were made from the previous version of this Programme:

PRR
