



Course Information Form

This Course Information Form provides the definitive record of the designated course

General Course Information

Course Title	Electronic Engineering Electronic Engineering (with Professional Practice Year)
Qualification	BEng (Hons)
FHEQ Level	6
Intermediate Qualification(s)	None
Awarding Institution	University of Bedfordshire
Location of Delivery	AA- Park Square Luton
Mode(s) of Study and Duration	Full-time over 3 years Full-time with Professional Practice Year over 4 years Part-time pathway typically over 6 years
Professional, Statutory or Regulatory Body (PSRB) accreditation or endorsement	The Institution of Engineering and Technology - The IET
UCAS Course Code	H610
External Benchmarking	<i>QAA Subject Benchmark Statement: Engineering, Feb 2015</i> <i>QAA FHEQ Level descriptors (QAA Frameworks for Higher Education Qualifications in England Wales and Northern Ireland, August 2008)</i>
Entry Month(s)	October, February

Why study this course

The course will provide you with academic and technical skills to analyse interpret and make sense of the electronic engineering. It will enable you to develop necessary skills to meet the challenges of tomorrow's electronics engineering.

Educational Aims

This is a popular course that will open up doors to a wide range of modern career options, which is why we thought fit to invest £1m on a new Electronic Engineering lab with cutting-edge equipment. Our students will benefit from a promising combination of top-tier learning materials and hands-on practical experiences.

You will develop skills in analogue and digital electronics, signal processing, sensors, control systems, digital communications, software engineering and embedded programming. The emphasis on relevant techniques, algorithms, tools and skills will then be put to practice with opportunities to participate in genuine Research and Development projects. Through a combination of theoretical learning and practical application, you will become capable of solving real-world engineering problems.

This course is challenging but enjoyable, and you will receive constant support from a knowledgeable, experienced and friendly teaching team.

The curriculum structure consists of units that allow you to gain fundamental knowledge and to further explore advanced electronic engineering and computer techniques; to develop skills of applying these knowledge and techniques in order to innovatively resolve real-world engineering problems; to develop communication and team-working skills.

This course aims to

- develop personal skills so that you have confidence and ability to apply your knowledge both individually and as part of a team
- promote a responsible attitude towards the use of computer techniques in solving engineering problems
- facilitate your understanding of the fundamentals of electronic engineering and computer technologies
- facilitate your ability to apply the techniques to understand, analyse and resolve real-world engineering problems
- promote your awareness of the cultural, social, political, economic and ethical implications in electronic engineering.

Course Structure

The Units which make up the course (including the Professional Practice Year as applicable) are:

		Unit Code	Level	Credits	Unit Name	Core or option
Level 4/Year 1	Semester I	CIS020-1	4	30	Introduction to Software Development	Core
		CIS018-1	4	30	Fundamentals of Computer Studies	Core
	Semester II	CIS038-1	4	30	Foundations of Electronic Systems and Computer Networks	Core
		CIS034-1	4	30	Engineering Mathematics	Core
Level 5/Year 2	Semester I	CIS047-2	5	30	Circuit Analysis & Signal Processing	Core
		CIS072-2	5	30	Digital Communications and Software Engineering	Core
	Semester II	CIS071-2	5	30	Analogue and Digital Electronics	Core
		CIS048-2	5	30	DSP and Embedded Systems Development	Core

		CIS097-2	5	0	Professional Practice Year (Computer Science and Technology)	Option
Level 6/Year 3	Semester I	CIS013-3	6	30	Research Methodologies and Emerging Technologies	Core
		CIS020-3	6	30	Control, Energy & WSN	Core
	Semester II	CIS015-3	6	30	Social and Professional Project Management	Core
		CIS017-3	6	30	Undergraduate Project	Core

Course-Specific Regulations

This course is accredited by the IET and will require you to pass all units in level 5 and level 6.

Additional Course Costs

None

Entry requirements

Standard:

Standard entry requirements for UK students – <http://www.beds.ac.uk/howtoapply/ukugentryreqs>

Students from the European Union - <http://www.beds.ac.uk/howtoapply/eu/guides>

International students - <http://www.beds.ac.uk/howtoapply/international/>

Additional:

80 UCAS points are expected from one or more following subjects at A/As level: Maths, Advanced Maths, Physics, Computing and Electronic Engineering

Graduate Impact Statements

The course has been designed to develop graduates who are able to:

- Demonstrate the application of knowledge and understanding of methods, concepts, techniques, algorithms and technologies consistent with professional practice within the core area of electronics engineering such as electronics, robotics, sensors, embedded systems and computer systems.
- Independently and collaboratively operate in a multi-specialist development team working to solve real-world engineering problems, in terms of analysis, design, implementation, testing and management
- Learn and use new ideas and techniques as they appear within an evolving electronic industry working with initiative guided by industry standards

Course Learning Outcomes

Upon successful completion of this course, you should be able to

LO1: Demonstrate a systematic understanding of electronic engineering while adopting a logical and pragmatic approach to complex concepts in real world problems.

LO2: Develop creative and innovative skills to achieve sustainable solutions to problems using accurately established techniques of analysis and enquiry within electronic engineering.

LO3: Provide solutions to complex problems based on your conceptual understanding and application of numerical, computational, analytical and technical skills using industry level emerging tools.

LO4: Solve real-world problems with an understanding of uncertainty, ambiguity and limits of knowledge within electronic engineering.

LO5: Critically evaluate arguments; assumptions, abstract concepts from scholarly articles within subject area of electronic engineering..

LO6: Initiate and manage appropriate projects using recognised electronic engineering processes, including design, analyses, optimisation, implementation, test and documentation within appropriate codes of conduct.

LO7: Demonstrate comprehensive knowledge and understanding of the complex economic, social, ethical and environmental aspects of electronic engineering products, services and processes.

LO8: Communicate clearly and logically to specialist and non-specialist audiences both orally and in writing adapting professional and commercial considerations.

In order to qualify for the award of BEng (Hons) Electronic Engineering (with Professional Practice year) students will need to meet all of the outcomes above and:

LO9: Demonstrate knowledge and analytical understanding of professional practice by successfully completing an approved period of approved work place practice.

PSRB details

This course is accredited by The IET (The Institution of Engineering and Technology) accreditation at level CEng accredited programme. The University of Bedfordshire fully follows the PSRB monitoring procedures. The PSRB QA handbook/procedures are on:

<http://www.theiet.org/academics/accreditation/index.cfm>

Learning and Teaching

Our teaching is centred upon you, aiming to build your confidence by providing timely and informative feedback under the guidance of their teacher.

The approach to teaching and learning begins with student centred methods and progresses towards independent learning.

The students will gain foundation knowledge in electronic engineering in their first year of study on this course. They will focus on the application of computer techniques to the engineering domain in detail, broadening their knowledge at Levels 5 and 6 of this course. In addition, during their final year projects, students should be able to demonstrate various in-depth skills including project management and the production of an artefact.

Project supervision involves regular tutorial meetings between groups/individuals and their staff supervisor. The project is a required part of the degree that guarantees the Honours element, and is seen both in the University and outside as an indication of the overall abilities and performance of the student. The assessments are designed to assist students in meeting the required learning outcomes and their own learning needs in relation to each unit.

Assessment

The assessments provide you with opportunities to diagnose your skills, abilities, academic/occupational background and to give you an early indication of what specific learning practices may help you improve in specific areas of study, starting from student induction period in conjunction with Fundamentals of Computing unit and throughout the entire in-course period of study. There will be frequent opportunities to get feedback both from tutors, peers and via self-assessment, and some assessments will allow for draft submissions to be considered by a tutor or peers to identify aspects in need of development prior to final hand-in.

The assessments are to be inclusive such that a variety of methods will be used in assessing students to ensure that no particular group of students are advantaged or disadvantaged. The methods include portfolios, laboratory practical work, group and individual production projects, individual and group written reports and formal written exams.

Mini-projects and case studies provide you with real-world problems. You are expected to find solutions to the problems following the process of analysis, technique evaluation, design and syntheses, and solution evaluation.

These min-projects and case studies are designed in both group work and individual work fashions to allow you to practice your communication skills and team working skills, and to develop the capability of working individually. They are also design in the way in which you need to connect together different elements taught within a unit and also across different units with helps from the course team who explain to you how individual units make-up of the course.

Written exams focus on theoretical knowledge and the application of the knowledge to engineering problems.

Assessment Map

Unit Code	C / O	Trimester 1 (Oct)											Trimester 2 (Feb)											
		4	5	6	7	8	9	10	11	12	13	14	15	5	6	7	8	9	10	11	12	13	14	15
CIS020-1	C			CW-ePort								WR-Gr												
CIS018-1	C								CW-Port			EX-CB												
CIS038-1	C													WR-I										EX
CIS034-1	C																WR-Gr							EX
CIS047-2	C								CW-Port			EX												
CIS072-2	C				WR-I							EX												
CIS071-2	C																		WR-I					EX
CIS048-2	C																			CW-Port				EX
CIS097-2	0	Year Long work placement																						
CIS013-3	C	CW-RW										WR-I												
CIS020-3	C							WR-Gr				EX												
CIS015-3	C																		PR-Oral	WR-I				
CIS017-3	C															WR-I							PR-viva	

Developing your employability

Employability is understood widely as encompassing knowledge, skills and a professional attitude which your tutors expect you to display in all your units. All University of Bedfordshire courses aim to help you to be prepared for the world of work. The Careers Service is there to support you throughout the three years of your study. Our curriculum gives you skills that are valuable for a career within Electronics Engineering in particular but is also relevant for a much wider range of applications such as Computer System Engineering or Telecommunication Management Engineering.

The final year unit 'Social and Professional Project Management' in particular requires you to work in a team so as to apply a current project management methodology that embraces all of these knowledge areas in an integrated way while going through the stages of planning, execution and project control; you will work as part of a team, take responsibility and make autonomous decisions that impact on the project team performance.

To keep you abreast with recent developments, industry visits will be arranged. Guest speakers from industry and/or other Universities will also be invited to give you a wider perspective of subject area. At least two visits/ speakers will be arranged in each academic year.

Students who register for the degree with professional practice year will additionally attend a series of workshops and activities related to securing a suitable placement and compulsory briefings at the end of year 2 to ensure that all legal requirements for health and safety, safeguarding etc. training have been met,. This will be explained more fully in your professional practice handbook once you have registered with the Careers and Employability Service's Student Development and Awards Team in your first year. If you will be working with children and/or vulnerable people you will be required to have a DBS check and undertake Safeguarding and Prevent training.

After Graduation

The critical, theoretical, analytical and practical skills of this degree will prepare you for a range of careers. The most common destination will be in industries dealing with electronics system design, for instance as electronics engineer or design engineer. You may as well work for companies that provide solutions for electronics system design, for instance in communication system, measurement equipment, audio and video system and radar system. Examples of such companies from a more electronics system design perspective can be found at conferences like Enterprise Search Europe (<http://www.enterprisesearch europe.com>), but also global players such as MBDA, BAE, QUALCOMM and National Instrument will be interested in successful electronics engineering candidates.

The theoretical foundations taught in the course will enable you to continue your studies and register on taught Masters Courses in Electronics Engineering and Telecommunications Engineering. You can also continue onto PhDs by research which can lead to a career in higher education.

Additional Information

Peer-assisted learning (PAL)

Peer-assisted learning is provided within the first year unit Fundamentals of Computing and Software Engineering. It will be aligned with the PAL arrangements already used for the other undergraduate courses within Computer Science and Technology.

Initial Assessment (week 6)

CIS020-1 Introduction to Software Development

CIS038-1 Foundations of Electronic Systems and Computer Networks

Improving students' learning

Several units allow students to use work and feedback from the first assessment to perform best in the second.

All units benefit from weekly practical sessions or supervisor meetings that provide a constant learner-teacher interaction process which also serves to reflect on learning styles.

The Undergraduate Project in the final year features an 'interim report' as Assessment 1 which is formative in nature and provides an opportunity of structured feedback on the approach taken by the students for their honours project.

Academic Integrity

Most of the interaction there is one-to-one between student and supervisor there will be some dedicated lectures to the class on key issues such as referencing or utilizing library resources.

HEAR implementation

The Higher Education Achievement Report (HEAR) is intended as a formative document used with students during the course of their studies. Course teams have constant access to the transcript of students, results and progression through the SITS e-vision system, and in addition to this formal statistical outline of individual progress, students are encouraged to have regular meetings with their Personal Tutor to assist the reflective process in monitoring progress. Many students find it helpful to maintain a personal blog of their progress monitoring academic and skill development which can be developed within the University platforms such as BREO. Course teams thus ensure working with students to help complete the HEAR document.

Internationalisation

Teaching and learning of the courses align with the University's policies of inclusion and internationalisation. Much of the content of project management is internationalised through the use of a number of internationally recognised project management techniques. Similarly, most – if not all – of the Computing materials are non-country specific, so skills taught to the students here are international by their very nature.

Sustainability

Information Technology and hence Electronics Engineering play a central role within sustainable development and manufacturing. Across the curriculum and in particular in the units CIS038-1 Foundations of Electronic Systems and Computer Networks and CIS047-2 Circuits Analysis and Signal Processing are discussed that are central in developing Electronics System technology. The final year honours project creates the opportunity to develop these ideas further.

Student Support during the course

At institutional level, the university has in place a range of easily accessible support structures for new and existing students.

The Student Information Desk (SiD, <http://beds.ac.uk/sid>) offers confidential advice on all aspects of academic study. It provides information about other areas of university-wide student support such as extenuating circumstances, housing, health, counselling, study support, special needs and disability advice, and careers service. The Personal Academic Development (PAD) provides workshops and one to one support for academic skills.

The university chaplaincy runs regular meetings, social events and trips. The Student Union provides additional support and activities.

Course specific support is also in place. In first year you will receive a comprehensive induction in the week prior to the commencement of the academic year. In addition to this, your course co-ordinator will meet with all students in your course to explain the course structure and other issues relating to the student experience. These introductions will give you outline of your course and units, a description of the ways you will be encouraged to develop your knowledge and skills, and signpost resources and materials to assist the process of your learning and success. An important part of this induction is the training to use BREO (Bedfordshire Resources for Education Online). BREO is your personalized virtual learning environment that contains lecture notes, links for online assignment submissions, staff contact details, links to central student services and much more. We expect that you use BREO regularly, and that you use your university email where we send you updates about all aspects of your course which need your attention.

You will be allocated a personal tutor when you join the course. This academic will be responsible for monitoring your academic progress throughout your first year and beyond, and will help you with any academic or personal issues that might come up. The personal tutor is your consistent point of contact for support and guidance, but will on occasion refer you to other university staff for specific issues.

Further support is provided by lecturers who have office hours and by the course administration team.

You may be required, at the discretion of the course coordinator, to undergo diagnostic testing for academic English language abilities, and may further be required, at the course coordinator's discretion, to participate in academic English support workshops or classes laid on by the University.

Our PAL (Peer Assisted Learning) scheme will provide additional support to new students from students at levels 5 and 6.

Additional Course costs

None

Course Equality Impact Assessment

Question	Y/N	Anticipatory adjustments/actions
The promotion of the course is open and inclusive in terms of language, images and location?	Y	
Are there any aspects of the curriculum that might present difficulties for disabled students? For example, skills and practical tests, use of equipment, use of e-learning, placements, field trips etc.	N	If so indicate the anticipatory adjustments and arrangements here
Are there any elements of the content of the course that might have an adverse impact on any of the other groups with protected characteristics ¹ ?	N	If so then indicate the anticipatory adjustments and arrangements here

¹ Age, Gender reassignment, Marriage and civil partnership, Pregnancy and maternity, Race, Religion and belief, Sex, Sexual orientation

If the admission process involves interviews, performances or portfolios indicate how you demonstrate fairness and avoid practices that could lead to unlawful discrimination?	Y	The interview process would involve various admission and academic staff that would fully follow University admission professional procedures and fairness, and avoid any possible discrimination.
Confirm that you have considered that the course learning outcomes and Graduate Impact Statements are framed in a non-discriminatory way.	Y	University of Bedfordshire professional practice will ensure that no-one is either directly or indirectly treated less favourably than others.
Confirm that the course handbook makes appropriate reference to the support of disabled students.	Y	

Administrative Information – Faculty completion	
Faculty	Creative Arts, Technologies & Science
Portfolio	Undergraduate Computer Science and Technology
Department/School	Computer Science and Technology
Course Coordinator	Dr Tahmina Ajmal
Trimester pattern of operation	Oct (Trimester 1), Feb (Trimester 2)
PSRB renewal date (where recognised)	2019
Version number	1/17
Approved by (c.f. Quality Handbook ch.2)	Periodic Review Panel
Date of approval (dd/mm/yyyy)	10 th Feb 2017
Implementation start-date of this version (plus any identified end-date)	09/2017
Study model type (e.g. study centre)	

Form completed by:

Name: ...Tahmina Ajmal.....Date: ...4th August 2017.....

Authorisation on behalf of the Faculty Teaching Quality and Standards Committee (FTQSC)

Chair:

Date:

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Course Updates		
Date (dd/mm/yyyy)	Nature of Update	FTQSC Minute Ref:

Administrative Information – Academic Registry completion	
Route code (post approval)	
JACS / HECoS code (KIS)	
SLC code (post approval)	
Qualification aim (based on HESA coding framework)	



Annexes to the Course Information Form

*These annexes will be used as part of the approval and review process and **peer academics** are the target audience.*

General course information

Course Title	Electronic Engineering Electronic Engineering (with Professional Practice Year)
Qualification	BEng (Hons)
Route Code (SITS)	BEELEAAF+ BEEEPAAF
Faculty	<i>Creative Arts and Technology</i>
Department/School/Division	<i>Computer Science and Technology</i>
Version Number	2/16

Annex A: Course mapping of unit learning outcomes to course learning outcomes

Unit code	CIS038-1	CIS018-1	CIS020-1	CIS034-1	CIS072-2	CIS071-2	CIS047-2	CIS048-2	CIS097-2	CIS013-3	CIS020-3	CIS015-3	CIS017-3
Level	4	4	4	4	5	5	5	5	5	6	6	6	6
Credits	30	30	30	30	30	30	30	30	30	30	30	30	30
Core or option	Core	Core	Core	Core	Core	Core	Core	Core	Optional	Core	Core	Core	Core
Course Learning Outcome (number)	<i>Insert LO1 and/or LO2 for each unit into cell corresponding to the course learning outcome</i>												
1	LO1	LO1						LO1		LO1	LO1		LO1
2			LO1	LO2		LO1	LO1						
3			LO2		LO1			LO1			LO2		
4				LO1		LO2							
5	LO2	LO2		LO2	LO2		LO2			LO2		LO1	
6	LO2					LO2		LO2		LO2		LO2	LO2
7		LO2										LO1	LO1
8		LO2	LO2							LO2	LO2	LO1	LO2
9									LO1,2				

Annex B: Named exit or target intermediate qualifications

This annex should be used when Schools wish to offer intermediate qualifications which sit under the main course qualification as named exit or target awards, rather than unnamed exit/default awards.

Section 1: General course information

Intermediate Qualification(s) and titles	<p><i>Specify the intermediate qualifications which are named exit or target qualifications (award types) AND what the qualification titles will be, as stated in the course information section of the associated CIF</i></p> <p><i>It is not necessary for the intermediate qualifications to have the same titles as the overall award, but the title must reflect the units taken to achieve it.</i></p>
Mode(s) of Study and Duration	<p><i>Indicate whether each intermediate qualification will be offered full time, part time or both, and the standard amount of time a student will take to complete each target qualification.</i></p>
Type of Intermediate Qualification(s)	<p><i>State whether the intermediate qualifications are named exit and/or target awards.</i></p> <p><i>Students register for target awards at the commencement of their study. Named exit awards provide an opportunity to gain a named qualification when a student fails to complete the main qualification for which they were registered or because they do not achieve the requirements of their original main qualification.</i></p>
Route Code(s) (SITS) of Intermediate Qualification(s)	

Section 2: Qualification unit diet

One table to be used for each intermediate qualification

Confirmation of unit diet for:	<i>Insert intermediate qualification and title</i>	
The units to achieve the credits required may be taken from any on the overall diet for the main course qualification		<input type="checkbox"/>
A combination of units from a restricted list must be taken to achieve the credits required (specify the list below)		<input type="checkbox"/>
A specific set of units must be taken to achieve the credits required (specify units below)		<input type="checkbox"/>

List of units (if applicable):-

Annex C: Course mapping to FHEQ level descriptor, subject benchmark(s) and professional body or other external reference points

One set of mapping tables to be produced for the course and each named intermediate qualification

Course (or intermediate) qualification and title	BEng (hons) Electronic Engineering
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FHEQ Descriptor for a higher education qualification	<i>QAA FHEQ Level descriptors (QAA Frameworks for Higher Education Qualifications in England Wales and Northern Ireland, August 2008)</i>	Course Learning Outcome(s)								
		1	2	3	4	5	6	7	8	9
i.	A systematic understanding of key aspects of their field of study, including acquisition of coherent and detailed knowledge, at least some of which is at, or informed by, the forefront of defined aspects of a discipline.	X	X			X				
ii.	An ability to deploy accurately established techniques of analysis and enquiry within a discipline		X	X						X
iii.	Conceptual understanding that enables the student: <ul style="list-style-type: none"> - to devise and sustain arguments, and/or to solve problems, using ideas and techniques, some of which are at the forefront of a discipline - to describe and comment upon particular aspects of current research, or equivalent advanced scholarship, in the discipline 			X	X					
iv.	An appreciation of the uncertainty, ambiguity and limits of knowledge	X			X					
v.	The ability to manage their own learning, and to make use of scholarly reviews and primary sources (for example, refereed research articles and/or original materials appropriate to the discipline).					X				
vi.	Typically, holders of the qualification will be able to apply the methods and techniques that they have learned to review, consolidate, extend and apply their knowledge and understanding, and to initiate and carry		X				X			X

	out projects								
vii.	Typically, holders of the qualification will be able to critically evaluate arguments, assumptions, abstract concepts and data (that may be incomplete), to make judgements, and to frame appropriate questions to achieve a solution - or identify a range of solutions - to a problem		X				X		
viii.	Typically, holders of the qualification will be able to communicate information, ideas, problems and solutions to both specialist and non-specialist audiences.							X	X
ix.	And holders will have the qualities and transferable skills necessary for employment requiring the exercise of initiative and personal responsibility; decision-making in complex and unpredictable contexts; the learning ability needed to undertake appropriate further training of a professional or equivalent nature.			X			X	X	X

Subject Benchmark Statement(s)	QAA subject benchmark for Engineering February 2015	Evidence and/or Course Learning Outcome(s) <i>How the course takes account of relevant subject benchmark statements</i>
I. be pragmatic, taking a systematic approach and the logical and practical steps necessary for, often complex, concepts to become reality		LO1, LO5, LO6,
II. seek to achieve sustainable solutions to problems and have strategies for being creative, innovative and overcoming difficulties by employing their skills, knowledge and understanding in a flexible manner		LO2, LO3
III. be skilled at solving problems by applying their numerical, computational, analytical and technical skills, using appropriate tools		LO2, LO3
IV. be risk, cost and value-conscious, and aware of their ethical, social, cultural, environmental, health and safety, and wider professional responsibilities		LO7
V. be familiar with the nature of business and enterprise in the creation of economic and social value		LO5,LO7
VI. appreciate the global dimensions of engineering, commerce and communication		LO5,LO7
VII. be able to formulate and operate within appropriate codes of conduct,		LO1,LO7

when faced with an ethical issue	
VIII. be professional in their outlook, be capable of team working, be effective communicators, and be able to exercise responsibility and sound management approaches.	LO8

The format of the following mapping tables may be adjusted.

Qualification Characteristic		Evidence <i>How the course takes account of relevant qualification characteristics documents</i>

Professional body or other external reference points	<i>(insert title and year)</i>	Evidence <i>How the course takes account of Professional body or other external reference points</i>