Programme Specification

BSc (Hons) Electronic Engineering

Valid from: September 2015

Faculty of Technology, Design & Environment

SECTION 1: GENERAL INFORMATION

Awarding body:	Oxford Brookes University
Teaching institution and location:	Oxford Brookes University, Wheatley Campus
Final award:	BSc (Honours)
Programme title:	Electronic Engineering
Interim exit awards and award titles:	BSc
Brookes course code:	LN
UCAS/UKPASS code:	H600
JACS code:	H600
Mode of delivery:	On campus
Mode/s of study:	Full time (1 year), part time (2 years)
Language of study:	English
Relevant QAA subject benchmark statement/s:	Subject benchmark for engineering: QAA Engineering Benchmark Statement February 2015 Engineering council specification: Engineering Council UK SPEC February 2016 onwards
External accreditation/recognition: *(applicable to programmes with professional body approval)*	Not Applicable
Faculty managing the programme:	Technology, Design and Environment
Date of production (or most recent revision) of specification:	7/27/2018 (incorrect module number)

SECTION 2: OVERVIEW AND PROGRAMME AIMS

2.1 Rationale for/distinctiveness of the programme

This course is a one year top-up programme designed to enable students from *the* Foundation Degree (Science) in Electrical and Electronic Engineering to obtain a BSc (Hons) in Electronic Engineering.

It has been developed within the Oxford Brookes University Modular *Programme* and has a large project element so that students can tailor their course to the needs of industry. In addition the part-time mode has been designed so that students can continue to work whilst studying for their degree.

2.2 Aims of the programme

The principal aim of this course is to provide an education in electronic engineering, producing graduates who have the necessary range of skills and depth of understanding to successfully pursue careers as Incorporated Engineers working in the industry.

A distinguishing feature of this course is its practical and applied electronics emphasis, which it derives from industries local to the University and the expertise of the staff. Graduates of the course should be able to work effectively in industry as part of design, development or research teams with the skills necessary to turn concepts into drawings and through to the manufacturing and assembly processes.

SECTION 3: PROGRAMME LEARNING OUTCOMES

Knowledge, understanding and skills:

This course*,* together with the Foundation Degree in Electrical and Electronic Engineering at Solihull and Abingdon and Witney Colleges*,* has been designed in accordance with the Engineering Council's policy Statement and the QAA Benchmark Statements summarised in UK-SPEC February 2016*,* so that a graduate with Honours in the BSc Electronic Engineering will be able to meet the requirements for an Incorporated Engineer.

In particular, the course extends the student's professional knowledge of electronic engineering by further studies in the areas of analog and digital electronics and by applying the theoretical concepts to practical applications in various industries; thereby enabling the students to become members of the professional community in their specialist area.

At the end of the programme, students will be able to:

3.1 Academic literacy

a.   Critically analyse and design advanced analog and digital systems.
b.   Apply engineering theory to complex analytical and design problems.
c.   Synthesise data or concepts to reach novel solutions.
d.   Design and critically evaluate systems using Operational Amplifier Architecture.

3.2 Research literacy

a.   Undertake and critically evaluate literature surveys for mini-projects and the main project.
b.   Formulate procedures to solve novel digital and analog problems.

c.   Evaluate and critically present results of projects using different media.
d.   Coordinate and use engineering facilities in order to achieve specified objectives.
e.   Apply engineering principles to the solution of complex or novel problems.

3.3   Critical self-awareness and personal literacy

a.   Organise, execute and evaluate projects with minimal supervision.
b.   Demonstrate and use advanced presentation skills.
c.   Plan effective time and workload allocations.
d.   Demonstrate initiative and creative ability.

3.4   Digital and information literacy

a.   Design and critically evaluate analog and digital systems using simulation software.
b.   Undertake and critically evaluate literature surveys.
c.   Demonstrate skills of planning and running an effective search strategy to identify and source information resources and documents relevant to a given to obtain the required data and information.

3.5   Active Citizenship

a.   Work effectively and creatively with students from different ethnic and cultural backgrounds.
b.   Produce sustainable, ethical designs for industrial and commercial use and evaluate their risks.
c.   Interface with scientific and engineering communities.

SECTION 4: PROGRAMME STRUCTURE AND CURRICULUM

4.1 Programme structure and requirements:

The structure of the full-time course is shown by the subject diagram for the modules currently being offered.

The level and status of the modules are:

Module code	Module title	Credit	Level	Status
U04570	Man Ethics Energy and Sustainability	30	6	Compulsory
U04591	Engineering Project	30	6	Compulsory
U04595	Advanced Digital Electronics	15	6	Compulsory
U04596	Advanced Analogue Electronics	15	6	Compulsory
U04671	Sensors and Data Logging	15	6	Compulsory
U04681	Advanced Automotive electronics	15	6	Compulsory
U04568	Independent Study in Mech/Auto/Motorsport Engineering	15	5	Acceptable

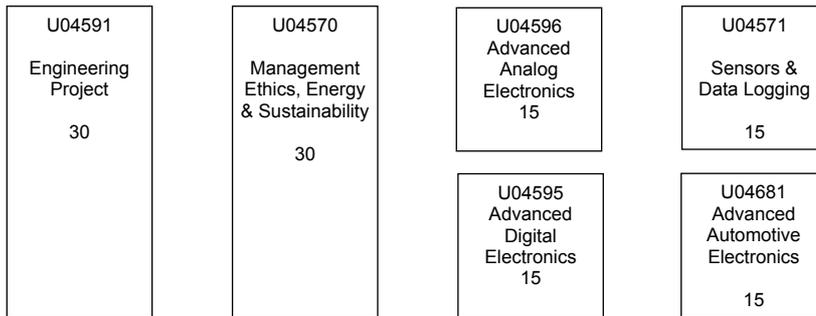**For the award of an ordinary degree a student must pass:**
- **One module from U04595, U04671**
- **One module from U04596, U04681**

4.2 Professional requirements

Not applicable.

4.3 Course Structure Diagram

Final Year

U04591 Engineering Project 30	U04570 Management Ethics, Energy & Sustainability 30	U04596 Advanced Analog Electronics 15	U04571 Sensors & Data Logging 15
		U04595 Advanced Digital Electronics 15	U04681 Advanced Automotive Electronics 15

Acceptable Modules Level 5

U04568 Independent Study Module 15
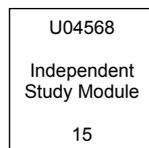
5.1   Teaching, Learning and Assessment

A fundamental philosophy guiding the design of the course is that teaching and learning takes place among a community of students and lecturers together seeking to pass on the principles, skills and knowledge associated with the profession of engineering. In this vein every effort is made to integrate subject material and show its use, effect and application across the course. As the majority of students who join the programme from Foundation Degrees have primarily been assessed by coursework the modules in this degree are also mainly assessed by coursework. The classifications that follow are general and should not be seen as exclusive.

There are currently two main strategies for assessment in the programme:
*   50% exam & 50% coursework
*   100% coursework

Typically examinations last for two hours. The strategy of assessment of learning outcomes is described in each module syllabus where the balance between analytic, design and creative skills, as well as personal development and professional skills, is outlined.

Coursework assignments are wide ranging and invariably challenging making use of strategies such as:
1.   Poster presentations and Oral presentations – sometimes videoed;
2.   Reports, Essays and other Descriptive Explanation;
3.   Design and feasibility studies;
4.   Problem sheets;
5.   Class tests;
6.   Written submissions of laboratory work and practical assessment of laboratory skills.
7.   Detailed reports of extended laboratory exercises (mini-projects)

The Project forms a major component of the final year and builds on work undertaken during two previous years of studying electronics. It provides an opportunity for students to demonstrate their understanding of research methods and extend their knowledge of a substantive area of electronics.

All modules in the course conform to the Brookes Assessment Compact, which implies that effective assessment is fundamental to learning and that there is no distinct boundary between learning and assessment and that feedback on assignments will be returned within two weeks of the assignment submission deadline. In all modules the assignments explicitly state the learning outcomes and the manner in which these outcomes will be assessed.

The five graduate attributes are addressed through teaching and assessment across all modules. The development of academic literacy is inherent in the synthesis of relevant theories with existing knowledge and practice in a range of class-based and independent learning experiences. Research literacy also underpins each module at Level 6 and students use a range of research and evaluation strategies in order to produce scientific and engineering solutions to complex problems.

One of the strengths of the course is its emphasis on critical self-awareness and personal literacy. In addition, digital and information literacy is enhanced through the use of practicals and problem classes which are undertaken in all the taught elements of the course. Students

are also expected to make significant use of online library resources as appropriate to their study topics.

In all modules students will develop an awareness of ethical and diversity issues. This emphasis on Active Citizenship is supported by the use of learning processes in a variety of contexts, plus a grounding in ethical and value management issues that arise in complex and diverse situations.

5.2   Assessment regulations

The programme conforms to the University Regulations for BA, BSc and LLB Degree and Honours Degree, Graduate Diploma, DipHE, CertHE and Foundation Diploma Regulations which may be found at:

University Undergraduate Modular Programme Regulations

SECTION 6: ADMISSIONS

6.1 Entry criteria

Foundation Degree (Science) in Electrical and Electronic Engineering from Solihull, Abingdon and Witney Colleges.

Foundation Degrees from other Universities or Colleges will be admitted if their modules are equivalent.

Any other qualification deemed equivalent by the university.

6.2 CRB checks

Not applicable.

SECTION 7: STUDENT SUPPORT AND GUIDANCE

Upgrade is the University's study advice service for anyone who wants advice on:

- Study skills – planning and writing essays, assignments and dissertations
- Statistics and maths
- Finding information and literature searching

Tutors in study skills, statistics, maths and information skills offer on the spot advice, or you can book a tutorial (30 minutes) at a time to suit.
www.brookes.ac.uk/services/upgrade

Academic and Student Affairs and the Students' Union provide some of their services on the Wheatley Campus from the beginning of each academic year. These include counselling services, dyslexia and SpLD advisors, the Students' Union Advice Centre, Modular Management, the Academic Management Office and Upgrade. Full details can be found at:
Brookes Students

or around the administrative offices in the ECM Building (B). In addition Student Support Coordinators within the Faculty of Technology, Design and Environment are available in the Technology Building (R). Details can be found at:
https://www.brookes.ac.uk/tde/facilities-and-services/student-support-co-ordinators/

SECTION 8: GRADUATE EMPLOYABILITY

Many students entering this course are sponsored by industry having completed a Foundation Degree at Abingdon & Witney College. Amongst these employers are the RAF, BMW, CCFE Culham, Crown Packaging, Oxford Instruments and PERA. The students are working as engineers in design and development and the employers are keen that the students gain additional qualifications to enable them to perform at higher levels.

Other non-sponsored students are expected to work in the electronics industry as Incorporated Engineers.

The University provides advice and careers guidance. See:
http://www.brookescareerscentre.co.uk

All students are assigned to an Academic Adviser whose role is to offer help and advice throughout their course. This relationship is important since, in addition to academic counselling, the Academic Adviser is the first person for the student to contact in cases of illness, family problems and career responsibilities. More details are provided at

https://www.brookes.ac.uk/new-students/enrolment-and-induction/undergraduate-students/your-academic-adviser/

SECTION 9: LINKS WITH EMPLOYERS

The University has developed close links with many of the employers named above, as well as Texas Instruments, in running training courses, and undertaking joint research and consultancy. In addition the School of Engineering Computing and Mathematics has run successful employer events in the topic of sustainable engineering.

It is anticipated that the project module will provide opportunities for students to link with industry, particularly sponsored students, as many existing projects within the department already link with industry and procedures are established to manage such projects. Part-time students will be able to make their project work-based with immediate application to their industry.

Throughout the year the Faculty hosts events with visiting speakers through the Industrial Lecture Series (ILS), which students are invited to attend. In addition the Annual Research Students Conference is open to, and attended by, local employers who have often sponsored students in their research programmes.

SECTION 10: QUALITY MANAGEMENT

Indicators of quality/methods for evaluating the quality of provision

The BSc (Hons) degree in Electronic Engineering draws modules from the Schools suite of Engineering Programmes and in relation to those common modules the following quality indicators are applicable.

In the most recent accreditation visit the Institution of Engineering and Technology (IET) approved all the courses within the Department as meeting the academic requirements for Incorporated Engineer. They also made the following complimentary comments relating to the Department and its existing Engineering courses:

1.   The facilities available to students were excellent.
2.   There was good support given to students by staff.
3.   Students were articulate.
4.   There was good administration support.
5.   Good documentation was provided.
6.   There was a good application of hands on experience.
7.   There was a good thread of design throughout the programmes which included the 'S' level learning outcomes.

The programme adheres to the nationally accepted benchmark statements for Engineering at Incorporated Engineer Level.

The QAA has assessed the provision of Mechanical Engineering at Oxford Brookes University. The overall quality of observed teaching and learning was judged to be satisfactory Positive features include the good rapport and interaction between staff and

students, the integration of subject matter from different disciplines and the quality of project work.

Other indicators of quality are:
• Annual evaluations of the programme by the External Examiner;
• Feedback from students in the annual evaluations;
• Employment success rate of current and past graduates in engineering;
• Feedback obtained from the companies who employ our students.

The programme also conforms to the structure and regulations of the University's Undergraduate Framework. The course is subject to Annual Review and University quality assurance procedures.