Programme Specification

Electrical Engineering, Mechatronic Engineering and Electromechanical Engineering (2017-18)

This specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if s/he takes full advantage of the learning opportunities that are provided.

Awarding Institution	University of Southampton
Teaching Institution	University of Southampton
Mode of Study	Full Time
Duration in Years	3 Years BEng
	4 Years MEng
Accreditation details	Currently accredited by the Institution of Engineering and Technology (IET)
Final award	Master of Engineering (MEng)
Name of award	Electrical Engineering, Mechatronic Engineering, Electromechanical Engineering.
Interim Exit awards	Bachelor of Engineering (BEng)
	Bachelor of Engineering (BEng Ordinary)
	Diploma of Higher Education (DipHE)
	Certificate of Higher Education (CertHE)
FHEQ level of final award	Level 7
UCAS code	H601 MEng Electrical Engineering
	H620 BEng Electrical Engineering
	HH62 MEng Electrical Engineering with Industrial Studies
	HHH6 MEng Mechatronic Engineering
	HH36 BEng Mechatronic Engineering
	H36H MEng Mechatronic Engineering with Industrial Studies
	HHH6 MEng Electromechanical Engineering
	HH36 BEng Electromechanical Engineering
	H36H MEng Electromechanical Engineering with Industrial Studies
QAA Subject Benchmark or other external reference	Quality Assurance Agency (QAA) Engineering Benchmark
	QAA Framework for Higher Education Qualifications (FHEQ)
	Engineering Council (UK-SPEC)
Programme Coordinator	Prof. Paolo Rapisarda
Date specification was written	10/06/2015
Date Specification last updated	07/12/2017

Programme Overview

Please note: The Electromechanical Engineering programmes have been re-titled to Mechatronic Engineering from 2017-18 for new entrants only. The Electromechanical Engineering Programmes are closed for entry from 2017-18. Students who have applied for, and entered under, the Electromechanical Engineering title will continue with the degree title and award.

Brief outline of the programme

Electrical and Mechatronic/Electromechanical engineering study the theories of electricity, electronics, and electromagnetism and apply them in the operation of electrical and mechatronic/electromechanical devices. At Southampton, we see educating the next generation of engineers as a key role and will ensure that you have a thorough grounding in a wide range of technologies.

All programmes have a number of compulsory modules to ensure the students are exposed to key topics in electrical engineering and mechatronic/electromechanical engineering but have been designed to maximise students' choice by allowing the students to tailor the structure to suit their own interests. The students can choose areas that reflect their personal interests and work on an individual research oriented project. All of these will stand you in good stead as you move into your career. We offer outstanding facilities in our labs and teaching is based on the latest research, ensuring that, at the end of your programme, your skills will be highly regarded by leading employers. We are proud of the depth of analytical treatment and the specialised optional subjects we offer within our degree programmes.

Please note: As a research-led University, we undertake a continuous review of our programmes to ensure quality enhancement and to manage our resources. As a result, this programme may be revised during a student's period of registration, however, any revision will be balanced against the requirement that the student should receive the educational service expected. Please read our **Disclaimer** to see why, when and how changes may be made to a student's programme.

Programmes and major changes to programmes are approved through the University's programme validation process which is described in the University's Quality handbook.

Learning and teaching

These intellectual skills are taught mainly through coursework and individual and group project work. A range of learning and teaching methods are used on this programme, including:

- Staff-led lectures, demonstrations, laboratories and seminars

- Directed reading

- Student-led seminars and presentations

- Specification, design, analysis, implementation and verification exercises

- Revision for written examinations

- Staff and post-graduate supervision of your research dissertation

- Industrial placements

Assessment

All subject specific skills are assessed through a combination of unseen written examinations and problem solving exercises. Experimental, research and design skills (2-4, 6) are tested through laboratory reports, laboratory logbooks, design exercises, essays and individual and group projects.

Feedback

A range of feedback methods are used on this programme to enable students to gauge their progress in meeting the intended learning outcomes, including:

- Feedback from personal tutor

- Written feedback for large courseworks

- Instant oral feedback on presentations, tutorials and practical laboratories

- Feedback on the overall class performance in particular modules

- Marked coursework

Educational Aims of the Programme

The aims of this programme are to:

- Provide you with a solid foundation that will develop the skills needed for a wide range of professional engineering careers as a high quality practitioner and leader in business, technology, or research.
- Provide you with a balance of theoretical, design and practical subjects which will allow you to exploit your individual talents.
- Provide a flexible academic structure which is relevant and attractive to you, your colleagues and industry and which is responsive to advances in technology and the needs of the industrial and academic community.
- To be at the leading edge of scholarship in Electrical and Mechatronic/Electromechanical Engineering.
- To introduce you to the particular requirements of High Voltage Engineering and Power Systems, in generation, transmission and utilisation.
- Provide you with an environment which develops independent learning and an ethos of lifelong professional development.
- Provide you with a well-found learning environment with sufficient laboratories containing appropriate up-to date equipment and experimental facilities.
- Provide you with a supportive pastoral environment with opportunities for social and recreational activities.

Programme Learning Outcomes

Knowledge and Understanding

Having successfully completed this programme you will be able to:

A1. Demonstrate knowledge and understanding of underpinning key mathematics and science skills appropriate to Electrical or Mechatronic/Electromechanical Engineering,

A2. Demonstrate knowledge and understanding of underpinning principles and concepts applicable to Electrical or Mechatronic/ Electromechanical Engineering,

A3. Demonstrate specialised technical knowledge in chosen specialist applications of engineering,

A4. Demonstrate knowledge of practical, computational and programming skills relating to engineering, and compatible with current industrial practice,

A5. Apply the knowledge and understanding outlined above to the development and evaluation of possible solutions to engineering problems,

A6. Demonstrate awareness of major issues in Electrical or Mechatronic/ Electromechanical engineering research and development, and their possible exploitation to enhance current practices,

A7. Demonstrate awareness of financial, economic, social and environmental factors of significance to engineering.

A8. (For the "with Industrial Studies" variant) How to apply your academic skills and knowledge to solving problems in industry.

A9. (For the "with Industrial Studies" variant) The relevance of the learning outcomes listed above to a successful career in industry.

Teaching and Learning Methods

Courses are taught mainly through Lectures and Directed Reading that are reinforced through Tutorials and Supervisions (in the first two years), Design exercises (in the first two years), Coursework Assignments, and Project Work (both individual and in groups in years two, three and four).

Assessment methods

Testing of the knowledge acquired is through a combination of unseen written examinations (A1-3,A5-7) and assessed coursework in the form of problem solving exercises (A1-5), laboratory reports (A2-4), design exercises (A3-5), essays (A6,7) and individual and group projects (A1-5, A7). Depending on the coursework students undertake a laboratory experiment, open ended investigation or the development of computer code.

Subject Specific Intellectual and Research Skills

Having successfully completed this programme you will be able to:

B1. Integrate knowledge of mathematics, science, information technology, businesses context and engineering practice, to develop analytical and innovate solutions to engineering problems,

B2. Critically analyse and evaluate the extent to which designs and products meet the criteria defined for their current use and future development, taking account of the impact of new and advancing technology to enhance current practice,

B3. Apply in an appropriate manner computer-aided tools in the design process so as to aid understanding of design trade-offs, and recognise capabilities and limitations of computer-based methods for engineering problem solving,

B4. Present effectively to audiences (orally, electronically or in writing) rational and reasoned arguments that address a given engineering problem or opportunity, including assessment of the impact of new technologies,

B5. Recognise the professional, moral and ethical issues involved in the exploitation of technology and science and be guided by the adoption of appropriate professional, ethical and legal practices,

B6. Assess technical and commercial risks, and take appropriate steps to manage those risks in the context of engineering design and solutions.

Teaching and Learning Methods

These intellectual skills are taught mainly through coursework and individual and group project work. Relevant material will be covered in lectures and (for fourth year MEng students) seminars. The School uses Guest Lecturers across a number of courses to bring current industrial and academic thinking into courses.

Assessment methods

All subject specific skills are assessed through a combination of unseen written examinations and problem solving exercises. Experimental, research and design skills (B2-4, B6) are tested through laboratory reports, laboratory logbooks, design exercises, essays and individual and group projects

Transferable and Generic Skills

Having successfully completed this programme you will have the following transferable or general skills:

C1. Make effective use of IT tools including word processing, spreadsheets, CAD drawing packages and CAD modelling and analysis packages. In addition you will be familiar with a programming language, currently C,

C2. Ability to consider given information, extract that which is pertinent to a routine problem and use it in the solution to the problem,

C3. Make effective presentations of technical and related information,

C4. Work independently on a significant technical task,

C5. Ability to work as part of a team, managing both your contribution and the overall tasks,

C6. Effectively present technical material and arguments clearly and correctly in writing and orally,

C7. Work and communicate with others at all levels,

C8. Apply competence in the management of projects, people, resources and time.

Teaching and Learning Methods

Numeracy, general proficiency with IT, and time management pervade the degree; they are not specifically taught. Information retrieval and organisational skills are taught as part of the individual and group projects. Professional development is covered in lectures.

Assessment methods

Transferable skills are assessed throughout the course as follow:

Skill C1 is assessed through out the course, the computing skills are largely taught at levels C and I, though addition skills might be involved in level H and M projects.
Skills C2 and C6 are assessed through project and extended essays.
Skills C3 and C7 are assessed through oral and written project work at C, H and M level.
Skills C4, C5, C7 and C8 are assessed through project work, largely at level H for individual skills and at Level M for group skills.

Subject Specific Practical Skills (optional)

Having successfully completed this programme you will be have the following practical skills:

D1. Ability to specify, design, and construct Electrical or Mechatronic/Electromechanical systems, taking account of commercial and industrial constraints,

D2. Ability to evaluate designs in terms of general quality attributes and possible trade-offs presented within the given problem,

D3. Ability to use CAD and simulation tools to aid in the design of Electrical or Mechatronic/ Electromechanical systems, report and comment on results,

D4. Ability to use test and measurement instrumentation appropriate to the discipline including awareness of measurements accuracy,

D5. Ability to recognise any risks or safety aspects that may be involved in the operation of equipment within a given context,

D6. Can search for information related to a design solution and present it for discussion,

D7. Can develop a project plan, identifying the resource requirements and the timescales involved, including presentation skills both written and oral.

Teaching and Learning Methods

These skills are taught mainly through course and extended project work.   Relevant material is also covered in Lectures, Laboratory Sessions and Guest Lectures.

Assessment methods

Transferable skills are assessed throughout the course as follow:

Skills D1 and D2 are assessed at level H in specific design orientated exercises linked to industrial case studies.
Skill D3 is assessed through specific course work.
Skills D4 and D5 are assessed through laboratory-based coursework at levels C and I. In addition specific shills particularly in High Voltage Engineering are taught as required to project students at level H
Skills D6 and D7 are assessed through project work at level H and M.

Graduate Attributes

Graduate Attributes are the personal qualities, skills and understanding you can develop during your studies. They include but extend beyond your knowledge of an academic discipline and its technical proficiencies. The Graduate Attributes are important because they equip you for the challenge of contributing to your chosen profession and may enable you to take a leading role in shaping the society in which you live.

We offer you the opportunity to develop these attributes through your successful engagement with the learning and teaching of your programme and your active participation in University life. The skills, knowledge and personal qualities that underpin the Graduate Attributes are supported by your discipline. As such, each attribute is enriched, made distinct and expressed through the variety of learning experiences you will experience. Your development of Graduate Attributes presumes basic competencies on entry to the University.

There are six Graduate Attributes:

Global Citizenship
Global Citizens recognise the value of meaningful contribution to an interconnected global society and aspire to realise an individual's human rights with tolerance and respect.

Ethical Leadership
Ethical Leaders understand the value of leading and contributing responsibly to the benefit of their chosen professions, as well as local, national and international communities.

Research and Inquiry
Research and Inquiry underpin the formulation of well-informed new ideas and a creative approach to problem resolution and entrepreneurial behaviours

Academic
Academic attributes are the tools that sustain an independent capacity to critically understand a discipline and apply knowledge

Communication Skills
Communication Skills encompass an individual's ability to demonstrate knowledge, and to express ideas with confidence and clarity to a variety of audiences

Reflective Learner
The Reflective Learner is capable of the independent reflection necessary to develop their learning and continuously meet the challenge of pursuing excellence

The following table shows the mapping between the University's Graduate Attributes, and a key subset of the core and compulsory modules that form the degree programme.

Code	Module Title	Global Citizenship	Ethical Leadership	Research and Inquiry	Academic	Communication Skills	Reflective Learner
	Part 1 labs	●	●			●	
COMP3200	Individual Project			●	●	●	●
COMP3219	Engineering Management and Law	●	●				
ELEC3200	Industrial Studies			●	●	●	●
COMP6200	Group Design Project			●	●	●	●

Programme Structure

The current course structure is given in Appendix I.

You will study 60 credits under the European Credit Transfer and Accumulation System (ECTS), in years 1, 2, 3 and 4. These credits are at level 4 (Certificate) in year 1, level 5 (Intermediate) in year 2, and level 6 (Honours) in year 3, and level 7 (Masters) in year 4.

In year 4 you are required to take all your 60 credits in level 7 subjects.

A number of exit points are defined:
Students who pass level 4 may exit with a Certificate in Higher Education
Students who pass level 5 may exit with a Diploma in Higher Education
Students who pass 30 ECTS in level 6 may exit with an Ordinary Degree

The main areas covered in the first two years are the core electrical and mechanical topics required by Electrical and Mechatronic/ Electromechanical Engineers. In years three and four, the core material covers professional practice, with major individual and group projects, and taught modules covering industrial practice and engineering management. There is also a range of optional modules available. Options such as Robotic Systems give an overview of a specific topic, while others such as High Voltage Insulation Systems and Power Systems Analysis provide students with detailed technical insight to an industrial problem.

Students intending to graduate with MEng degrees are encouraged to spend 20 weeks in industry, usually as two 10-week summer placements. Alternatively, any students may suspend their studies after two years to take a year out in industry or abroad.

Special Features of the programme

Students on the "with Industrial Studies" variant will complete a year at a recognised partner company. This year may be taken between parts 2 and 3, or between parts 3 and 4 (MEng only). During this year, students must complete one or more projects, as agreed between the partner company and the School. The placement will be assessed by a report and other activities, as described in the module specification (ELEC3200). This module is core, and must be passed for the award of the "with Industrial Studies" degree title, but marks for this module will not contribute to the final degree classification.

Programme details

Course Structure

The information in the appendix is liable to change in minor ways from year to year. It is accurate at the time of writing. For the latest information see the ECS Student Handbook, either in the courses office, or on-line at https://secure.ecs.soton.ac.uk/ug/handbook/. Some of these modules are subject to pre-requisites and exclusions that, for brevity, are not given here.

It should be noted that it may not be possible to run some optional modules if the number of students registered on the module is very small. It should also be noted that optional module choice can be restricted by the University Timetable, which varies from year to year: some optional modules may clash with other optional or compulsory modules. Please be aware that many modules are shared between different cohorts; and the class size depends on cohort size, which varies from year to year.

The module requirements for each programme (identified by UCAS code) are shown for each Part below; modules are either core (must be taken and passed), compulsory (must be taken) or optional (may be taken).

The modules in Part I, Part II, Part III and Part IV are each worth 7.5 ECTS or the multiples of 7.5 ECTS.

Part 1

In your first year, you will take 60 ECTS at NQF Level 4, 30 ECTS in each semester as shown below. Note that all Part I modules are core, and must be passed in order to progress.

Module Code	Module Title	ECTS	Semester	BEng: Electrical MEng: Electrical *BEng: Mechatronic/ Electromechanical* *MEng: Mechatronic/ Electromechanical*
ELEC1200	Electronic Circuits	7.5	1	core
ELEC1201	Programming	7.5	1	core
ELEC1202	Digital Systems and Microprocessors	7.5	1	core
ELEC1203	Mechanics	7.5	2	core
ELEC1205	Solid State Devices	7.5	2	core
ELEC1206	Electrical Materials and Fields	7.5	1,2	core
ELEC1207	Electronic Systems	7.5	2	core
MATH1055	Mathematics for Electronics and Electrical Engineering I	7.5	1,2	core

Part 2

In your second year, you will take 60 ECTS at NQF Level 5, 30 ECTS in each semester.

Module Code	Module Title	ECTS	Semester	BEng: Electrical MEng: Electrical	BEng: Mechatronic/ Electromechanical MEng: Mechatronic/ Electromechanical
ELEC2220	Control and Communications	7.5	1	C	C
ELEC2210	Applied Electromagnetics	7.5	1	C	
ELEC2208	Power Electronics and Drives	7.5	2	C	C
ELEC2213	Electrical Machines	7.5	2	C	C
ELEC2215	Power Circuits	7.5	1	C	
ELEC2209	Engineering Design	7.5	1, 2	C	C
MATH2047	Mathematics for Electronic and Electrical Engineering II	7.5	1	C	C
ELEC2214	Circuits and Systems	7.5	1		C
ELEC2211	Electromechanical Energy Conversion	7.5	1		C
ELEC2206	Materials	7.5	2	C	C

C – Compulsory

Year in Industry: 30 credit points at FHEQ level 6

Students on the "with Industrial Studies" variant will complete a year at a recognised partner company. This year may be taken between years 2 and 3, or between years 3 and 4 (MEng only). During this year, students must complete one or more projects, as agreed between the partner company and the School. The placement will be assessed by a report and other activities, as described in the module specification (ELEC3200). This module is

core, and must be passed for the award of the "with Industrial Studies" degree title, but marks for this module will not contribute to the final degree classification.

Part 3

In your third year, you will take 60 ECTS at NQF Level 6, 30 ECTS in each semester. A major element is the Individual Project, which runs all year. In semester 1, students intending to graduate with a MEng degree must take COMP3219 Engineering Management and Law. Finally, students should select optional modules to make up the total to 60 ECTS. Besides COMP3200 and specialised modules, a maximum of 2 other "externally taught" modules (COMPxxxx, OPTOxxxx, ENTRxxxx, FRENxxxx, GERMxxxx, LANGxxxx, LAWSxxxx MANGxxxx, UOSMxxxx and MATHxxxx) may be chosen.

Module Code	Module Title	ECTS	Semester	BEng: Electrical	BEng: Mechatronic/ Electromechanical	MEng: Electrical	MEng: Mechatronic/ Electromechanical
COMP3219	Engineering Management and Law	7.5	1	O	O	C	C
ELEC3214	Power Systems Technology	7.5	1	C	C	C	C
ELEC3213	Power Systems Engineering	7.5	2	O	O	O	
ELEC3211	High Voltage Engineering	7.5	2	C	O	C	
ELEC3201	Robotic Systems	7.5	1	O	O	O	O
ELEC3205	Control Systems Design	7.5	1	O	O	O	O
ELEC3210	Design Studies	7.5	1	O	O	O	O
COMP3200	Individual Project	22.5	1,2	Core	Core	Core	Core
ELEC3215	Fluids and Mechanical Materials	7.5	2		C		C
ELEC3206	Digital Control System Design	7.5		O	O	O	O
ELEC3216	Mechanical Power Transmission and Vibration	7.5	2		C		C
ELEC3223	Introduction to Bionanotechnology	7.5	1	O	O	O	O
ENTR3002	New Venture Development	7.5	2	O	O	O	
SESG3024	Manufacturing and Materials	7.5	1		O		O
SESM3031	Automobile Systems	7.5	1		O		O
SESM3032	Heat Transfer and Applications	7.5	2		O		
FREN3xxx	French for Engineers	7.5	1	O	O	O	O
GERM3xxx	German for Engineers	7.5	1	O	O	O	O
SPAN3xxx	Spanish for Engineers	7.5	1	O	O	O	O
LANG3xxx	Other Language for Engineers	7.5	1	O	O	O	O
MATH3083	Advanced Partial Differential Equations	7.5	1	O	O	O	O
MATH3084	Integral Transform Methods	7.5	2	O	O	O	
MATH3081	Operational Research	7.5	1	O	O	O	O
MATH3082	Optimisation	7.5	2	O	O	O	

Part 4

In your fourth year, you will take 60 ECTS at NQF Level 7, 30 ECTS in each semester. A major element is the Group Design Project, which runs all year. Students should select optional modules to make up the total to 60 ECTS. Besides COMP6228 and specialised modules, a maximum of 2 other "externally taught" modules (COMPxxxx, OPTOxxxx, ENTRxxxx, FRENxxxx, GERMxxxx, LANGxxxx, LAWSxxxx MANGxxxx and MATHxxxx) may be chosen. Students must select a 30:30 ECTS balance between semesters.

Alternatively, semester II of Part IV may be taken at a partner institution overseas, which has been approved by the Erasmus coordinator. In this case, ELEC6247 Group Design Project (Overseas Placement) should be taken instead of ELEC6200 Group Design Project during semester I. In this case, ELEC6247 is core and carries 15 ECTS credits. The modules selected at the overseas institution must be approved by the programme leader. The module selection must include at least 30 ECTS (or equivalent) at masters level, that is relevant to the degree title. In 'with X' programmes, the requirement to take 15 ECTS credits specific to the specialisation must be met across the two semesters. The marks awarded by the overseas institution will be converted to equivalent UK marks by the Erasmus coordinator.

Module Code	Module Title	ECTS	*Semester*	*MEng: Electrical*	*MEng: Mechatronic/ Electromechanical*
ELEC6200	Group Design Project	22.5	1,2	Core	Core
ELEC6220	Power Systems Analysis	7.5	1	O	O
ELEC6221	Power Generation: Technology and Impact on Society	7.5	1	O	O
ELEC6222	Power and Distribution	7.5	1	O	O
COMP6228	Individual Research Project	7.5	2	O	O
ELEC6203	Introduction to MEMs	7.5	1	O	O
ELEC6204	Microfluidics & Lab on a Chip	7.5	1	O	O
ELEC6205	Bionanotechnology	7.5	1	O	O
ELEC6245	Wireless Networks	7.5	1	O	O
ELEC6227	Medical Electrical and Electronic Technologies	7.5	2	O	O
ELEC6228	Applied Control Systems	7.5	2	O	O
ELEC6208	Bio/Micro/Nano Systems	7.5	2	O	O
ELEC6210	Biosensors	7.5	2	O	O
ELEC6224	Advanced Electrical Materials	7.5	2	O	O
ELEC6225	High Voltage Insulation Systems	7.5	2	O	O

ELEC6226	Power Electronics for DC Transmission	7.5	2	O	O
ELEC6212	Biological Inspired Robotics	7.5	2	O	O
MATH6149	Modelling with Differential Equations	7.5	2	O	O
MATH6141	Numerical Methods	7.5	1	O	O

Additional Costs

Students are responsible for meeting the cost of essential textbooks, and of producing such essays, assignments, laboratory reports and dissertations as are required to fulfil the academic requirements for each programme of study. Costs that students registered for this programme typically also have to pay for are included in Appendix 2.

Progression Requirements

The programme follows the University's regulations for ***Progression, Determination and Classification of Results: Undergraduate and Integrated Masters Programmes*** and Academic Regulations - Faculty of Physical Sciences and Engineering as set out in the University Calendar.

Intermediate exit points (where available)

A number of exit points are defined:
Students who pass level 4 may exit with a Certificate in Higher Education
Students who pass level 5 may exit with a Diploma in Higher Education
Students who pass 30 ECTS in level 6 may exit with an Ordinary Degree

for undergraduate programmes

You will be eligible for an interim exit award if you complete part of the programme but not all of it, as follows:

Qualification	Minimum overall credit in ECTS credits	Minimum ECTS Credits required at level of award
Honours degree - BEng (hons)	at least 180	45
Ordinary degree - BEng	at least 150	30
Diploma of Higher Education - DipHE	at least 120	45
Certificate of HE - CertHE	at least 60	45

Support for student learning

There are facilities and services to support your learning some of which are accessible to students across the University and some of which will be geared more particularly to students in your particular Faculty or discipline area.

The University provides:

- library resources, including e-books, on-line journals and databases, which are comprehensive and up-to-date; together with assistance from Library staff to enable you to make the best use of these resources

- high speed access to online electronic learning resources on the Internet from dedicated PC Workstations onsite and from your own devices; laptops, smartphones and tablet PCs via the Eduroam wireless network. There is a wide range of application software available from the Student Public Workstations. Students can also access SVE (Southampton Virtual Environment), a virtual Windows University of Southampton desktop that can be accessed from personal devices such as PCs, Macs, tablets and smartphones from any location.

- computer accounts which will connect you to a number of learning technologies for example, the Blackboard virtual learning environment (which facilitates online learning and access to specific learning resources)

- standard ICT tools such as Email, secure filestore and calendars.

- access to key information through the MySouthampton Student Mobile Portal which delivers timetables, Module information, Locations, Tutor details, Library account, bus timetables etc. while you are on the move.

- Central IT support is provided through a comprehensive website, telephone and online ticketed support and a dedicated helpdesk in the Hartley Library foyer

- Enabling Services offering assessment and support (including specialist IT support) facilities if you have a disability, dyslexia, mental health issue or specific learning difficulties

- the Student Services Centre (SSC) to assist you with a range of general enquiries including financial matters, accommodation, exams, graduation, student visas, ID cards

- Career Destinations, advising on job search, applications, interviews, paid work, volunteering and internship opportunities and getting the most out of your extra-curricular activities alongside your degree programme when writing your CV

- a range of personal support services : mentoring, counselling, residence support service, chaplaincy, health service

- a Centre for Language Study, providing assistance in the development of English language and study skills for non-native speakers.

The Students' Union provides

- an academic student representation system, consisting of Course Representatives, Academic Presidents, Faculty Officers and the Vice-President Education; SUSU provides training and support for all these representatives, whose role is to represent students' views to the University.
- opportunities for extracurricular activities and volunteering
- an Advice Centre offering free and confidential advice including support if you need to make an academic appeal
- Support for student peer-to-peer groups, such as Nightline.

Associated with your programme you will be able to access:

- Course books for each year of the programme.
- Library information retrieval seminar.
- Laboratory facilities for experimental work
- Limited mechanical and electrical workshop facilities for project work.
- Small group tutorials in Year 1,
- Supervision classes in Years 1 and 2 of the programmes.
- Faculty computer workstations and helpdesk
- Personal tutors to assist you with personal problems and to advise on academic issues.
- High developed web site for dissemination of course information and other teaching material
- Access to all academic staff through an open door policy as well as timetabled tutor meetings, appointment system and e-mail.
- Access to one of the largest High Voltage facilities in Europe for projects.
- Research Seminars and invited lectures.
- Information about the membership of the Institution of Engineering Technology.

Methods for evaluating the quality of teaching and learning

You will have the opportunity to have your say on the quality of the programme in the following ways:

- Completing student evaluation questionnaires for each module of the programme
- Acting as a student representative on various committees, e.g. Staff: Student Liaison Committees, Faculty Programmes Committee OR providing comments to your student representative to feed back on your behalf.
- Serving as a student representative on Faculty Scrutiny Groups for programme validation
- Taking part in programme validation meetings by joining a panel of students to meet with the Faculty Scrutiny Group

The ways in which the quality of your programme is checked, both inside and outside the University, are:

- Regular module and programme reports which are monitored by the Faculty
- Programme validation, normally every five years.
- External examiners, who produce an annual report
- Professional body accreditation/inspection
- A national Research Assessment Exercise (our research activity contributes directly to the quality of your learning experience)
- Institutional Review by the Quality Assurance Agency

Your views matter to us. We have a high reputation for quality of delivery, and we aim to keep it that way. The most important form of feedback comes through direct, personal contact, and we encourage you to talk to us if anything becomes a concern at any stage. If you find it difficult to talk directly to the member of staff with whom you have immediate contact, you are encouraged to talk to someone else in the teaching team, the Senior Tutor, or the Faculty's Student Office, but we do encourage you to talk about it immediately. In addition, there is always a formal evaluation of each module by questionnaire at the end of the semester. These questionnaires are analysed and peer reviewed, and must be responded to formally, both to you and to the University. We also hold Student-Staff Liaison Committee meetings at least twice a year. Anyone is welcome to these meetings, but depending on the circumstances, it may be more effective to elect programme representatives who will make your views known. This then enables you to have an element of anonymity should you be embarrassed in any way about the idea of speaking up.

Criteria for admission

The University's Admissions Policy applies equally to all programmes of study. The following are the typical entry criteria to be used for selecting candidates for admission. The University's approved equivalencies for the requirements listed below will also be acceptable.

Undergraduate programmes

Qualification	Grades	Subjects required	Subjects not accepted	EPQ Alternative offer (if applicable)	Contextual Alternative offer (if applicable)
GCE A level	(BEng) AAB including A in Maths and A in Physics ; (MEng) AAA inc Maths and Physics	Maths, Physics Preference for 3rd A level in natural science/IT subjects. In exceptional circumstances Physics may be substituted by Electronics (preferably)/Chemistry/ICT/Computer Science/Further Maths provided an A is achieved in A-level Maths modules Mechanics1 and Mechanics2	General Studies and Critical Thinking For Electrical and Mechatronic programmes we accept the first language as the 3rd A level. But we normally ask AA in Maths and Physics for such candidates		(BEng) AAB including A in Maths and B in Physics (MEng) AAB including A in Maths and A in Physics
GCSE	C	English, Maths			
BTEC	(BEng) Level 3 ND Recommend Foundation Year/ Level 4 HNC with DD overall plus A grade in A level maths, A level Maths must have A grades in Mechanics 1 and Mechanics 2 modules / Level 5 HND DDD overall with Distinctions in Analytical				

	Methods, Further Analytical Methods, Eng Science and Electrical & Electronic Principles, Further Electrical Power (MEng) Level 3 ND Recommend Foundation Year / Level 4 HNC with DD plus A grade in A levels Maths, A level Maths must have grades A in Mechanics 1 and Mechanics 2 modules / Level 5 HND DDD overall with Distinctions in Analytical Methods, Further Analytical Methods, Eng Science and Electrical & Electronic Principles, Further Electrical Power				
International Baccalaureate	(BEng) 34 points overall with 17 at Higher Level including 6 in Maths, 6 in Physics at High Level (MEng) 36 points overall with 18 at Higher Level including 6 in Maths, 6 in Physics at High Level				
European Baccalaurea	(BEng) 80% overall with				

	85% in Maths and Physics				
te	(MEng) 85% overall with 85% in Maths and Physics				

Postgraduate programmes

Qualification	Grade/GPA	Subjects requirements	Specific requirements
Bachelor's degree	N/A	N/A	N/A
Master's degree	N/A	N/A	N/A

Mature applicants

Applications from mature students (over 21 years in the October of the year of entry) are welcome. Applications will be considered on an individual basis.

English Language Proficiency

Overall	Reading	Writing	Speaking	Listening
6.5	5.5	5.5	5.5	5.5

Career Opportunities

Major employers worldwide are keen to employ our graduates – in electrical power/energy sectors, in electronics industries, in health services and in the finance. We have strong relationships with employers, run our own Careers Hub website (www.ecs.soton.ac.uk/careers) and hold our own annual careers fair.

Transfer policy

In addition to Electrical and Mechatronic/Electromechanical Engineering programmes, we have other programmes such as Electronic Engineering (EL) and Electrical & Electronic Engineering (EEE). The entry requirements are different. Likewise, MEng programmes have higher entry requirements than BEng programmes. Part 1 of the above-listed programmes are identical, with the exception that EE and EM students take ELEC1203 Mechanics, while EL students take ELEC1204 Advanced Programming and while EEE students have the choice of either ELEC1203 or ELEC1204. Parts 1 and 2 of BEng programmes are identical to those of the corresponding MEng programmes, but they diverge in part 3. These issues impose complications upon transfers between these programmes, which are resolved as follows.

Students who are thinking about transferring between EL, EEE, EE and EM are encouraged to discuss this with their academic tutors at the earliest possible opportunity. Transfers between these programmes can be arranged at any time, at the discretion of the programme leader of the destination programme. Additionally, the programme leaders will guarantee transfers between BEng EL, EEE, EE and EM at the end of part 1, for students that have passed that part with an overall average (before referral marks are capped) of at least 58% (without rounding up). Likewise, the programme leaders will guarantee transfers between MEng EL, EEE, EE and EM at the end of part 1, for students that have met the same criterion. However, students seeking transfer to EM will also

need to have taken ELEC1203, in order to meet this criterion. Students seeking transfer to EE will not need to have taken ELEC1203, in order to meet this criterion, although in this case they are advised to study the topics of ELEC1203 during the summer before beginning part 2. Likewise, students seeking transfer to EL will not need to have taken ELEC1204, in order to meet this criterion, although in this case they are advised to study the topics of ELEC1204 during the summer before beginning part 2.

Similarly, students who are thinking about transferring between BEng and MEng programmes are encouraged to discuss this with their academic tutors at the earliest possible opportunity. Transfers between BEng and MEng programmes can be arranged at any time, at the discretion of the programme leader of the destination programme. Additionally, the programme leaders will guarantee transfers between BEng and MEng programmes at the end of part 2, for students that have passed that part with an overall average (before referral marks are capped) of at least 58% (without rounding up).

External Examiners(s) for the programme

Parts 1 and 2
Name: Jan Maciejowski
Institution: University of Cambridge

Parts 3 and 4
Name: Prof Joseph Spencer
Institution. University of Liverpool

Students must not contact External Examiner(s) directly, and external examiners have been advised to refer any such communications back to the University. Students should raise any general queries about the assessment and examination process for the programme with their Course Representative, for consideration through Staff: Student Liaison Committee in the first instance, and Student representatives on Staff: Student Liaison Committees will have the opportunity to consider external examiners' reports as part of the University's quality assurance process.
External examiners do not have a direct role in determining results for individual students, and students wishing to discuss their own performance in assessment should contact their personal tutor in the first instance.

Please note: This specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if s/he takes full advantage of the learning opportunities that are provided. More detailed information can be found in the programme handbook (or other appropriate guide) or online at (give URL).

Appendix 1: Learning outcomes and Assessment Mapping

Module Code	Module Title	Knowledge and Understanding																Subject Specific Intellectual Skills							Transferable/Key Skills						Subject Specific Practical Skills				
		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	C5	C6	D1	D2	D3	D4	D5
ELEC1206	Electrical Materials and Fields	O																							O									O	O
MATH1055	Mathematics for Electrical & Electronic Engineering I	O											O	O	O										O									O	O
ELEC1200	Electronic Circuits		O		O														O	O		O	O		O		O		O		O	O	O	O	O
ELEC1201	Programming			O	O																	O	O		O		O		O		O	O	O	O	O
ELEC1202	Digital Systems & Microprocessors		O	O	O											O			O	O		O	O		O		O		O		O	O	O	O	O
ELEC1204	Advanced Programming			O	O											O									O										
ELEC1205	Solid State Electronics	O											O		O										O							O		O	
ELEC1207	Electronic Systems		O											O	O				O						O							O		O	
ELEC2202	Digital Systems and Communications	O											O	O	O				O	O					O							O	O	O	
ELEC2203	Control	O									O (when part 2 is 2 is restructured)			O	O	O		O	O	O					O		O					O	O	O	
ELEC2212	Electromagnetism for Communications	O												O	O							O	O		O		O		O					O	O
MATH2047	Mathematics for Electrical & Electronic Engineering II	O											O									O	O		O		O		O					O	O
ELEC2201	Devices	O											O												O								O	O	
ELEC2204	Computer Engineering		O													O			O	O					O							O	O	O	O
ELEC2205	Electronic Design		O	O	O		O											O	O	O	O				O	O	O		O		O	O	O	O	O
ELEC2216	Advanced Electronic Systems		O															O	O	O	O				O	O	O				O	O	O	O	O
	Year in Industry								O	O															O					C6 O						
COMP3200	Individual Project				O	O		O	O				O	O	O	O	O	O	O		O		O	B7?	O	O	O		O		O					O
COMP3201	Cyber Security											O													O						O					
COMP3206	Machine Learning															O									O											
COMP3215	Real-time Computing and Embedded Systems										O					O			O	O	O				O							O	O			
ELEC3201	Robotic Systems															O			O	O	O				O							O	O			
ELEC3203	Digital Coding and Transmission												O							O					O											
ELEC3205	Control System Design		O																	O					O											
ELEC3207	Nanoelectronic Devices												O		O					O					O							O				
ELEC3218	Signal and Image Processing													O		O				O	O				O											
ELEC3221	Digital IC and Systems Design						O									O			O	O	O				O		O					O				
MANG3067	Engineering Management and Law																							O	O	O		O								
MATH3024	Advanced PDEs	O																			B4 O				O		O									
MATH3027	Operational Research	O															O								O		O									
COMP3212	Computational Biology		O																						O		O									
COMP3214	Principles and Practice of Computer Graphics										O														O		O					O				
COMP3216	Safety-Critical Systems										O														O		O									
COMP3217	Secure Systems												O												O		O									
ELEC3202	Green Electronics													O	O				O	O					O								O			
ELEC3204	Wireless and Optical Communications													O	O				O	O					O							O				
ELEC3206	Digital Control System Design																		O	O					O											
ELEC3208	Analogue and Mixed Signal Electronics														O				O	O					O							O				
ELEC3217	Photonics												O			O			O	O					O								O			
ELEC3219	Advanced Computer Architecture																		O	O					O											
MATH3025	Transform Methods	O																		O					O		O					O				
MATH3028	Optimisation	O																O							O		O					O				
ELEC6200	Group Design Project			O		O	O	O	O												O				O	O	O	O	O	O	O	O				
COMP6202	Evolution of Complexity		O														O								O						O					
COMP6204	Software Project Management and Development			O																					O		O	O	O	O	O					
ELEC6201	Microfabrication				O								O		O					O					O											

Module Code	Module Title	Coursework 1	Coursework 2	Coursework 3	Coursework 4	Exam
ELEC1206	Electrical Materials and Fields	20% - Practical Lab Sessions	5% - Maths tests and in-class test			25% - Exam, 1 hour(s) 50% - Exam, 2 hour(s)
MATH1055	Mathematics for Electronic and Electrical Engineering I	20% - Coursework mark generated from 18 tests at end of each weekly topic.				10% - Exam, 1 hour(s) 70% - Exam, 2 hour(s)
ELEC1200	Electronic Circuits	20% - Practical Lab Sessions	15% - Lab project	30% - Problem Sheets	35% - In Class Test	
ELEC1201	Programming	20% - Practical Lab Sessions: C Programming	25% - Practical Lab Sessions: Embedded C Programming	15% - Project		20% - Exam, 1 hour(s) 20% - Exam, 1 hour(s)
ELEC1202	Digital Systems & Microprocessors	20% - Practical Lab Sessions	10% - Design Exercise	10% - Problem Sheets		60% - Exam, 2 hour(s)
ELEC1203	Mechanics	10% - Practical Lab Sessions	5% - Problem sheet on dynamics of particles	10% - Problem sheet on statics and dynamics of rigid bodies		75% - Exam, 2 hour(s)
ELEC1205	Solid State Electronics	20% - Practical Lab Sessions	10% - Coursework Assignment			70% - Exam, 2 hour(s)
ELEC1207	Electronic Systems	15% - Practical Lab Sessions	10% - Coursework Assignment			80% - Exam, 2 hour(s)
ELEC2208	Power Electronics and Drives	5% - Practical Lab Session	10% - Coursework			70% - Exam, 2 hour(s)
ELEC2220	Control and Communications	15% - Practical Lab Sessions	10% - Coursework			75% - Exam, 2 hour(s)
ELEC2210	Applied Electromagnetics	10% - Practical Lab Sessions	20% - Coursework	20% - Coursework		50% - Exam, 2 hour(s)
MATH2047	Mathematics for Electronics and Electrical Engineering II	20% - Coursework				80% - Exam, 2 hour(s)
ELEC2209	Engineering Design	5% - Practical Lab Sessions	10% - Coursework on Robot programming	85% - Coursework (group project)		
ELEC2213	Electrical Machines	10% - Practical Lab Sessions	20% - Coursework			70% - Exam, 2 hour(s)
ELEC2214	Circuits and Systems	10% - Practical Lab Sessions				90% - Exam, 2 hour(s)
ELEC2215	Power Circuits	15% - Practical Lab Sessions				85% - Exam, 2 hour(s)
ELEC2211	Electromechanical Energy Conversion	10% - Practical Lab Sessions	20% - Coursework	20% - Coursework		50% - Exam, 2 hour(s)
ELEC2206	Materials					100% - Exam. 2 hour(s)
	Year in Industry	100% - Project report				
COMP3200	Individual Project	10% - Progress Report	80% - Final Report	10% - Viva		
ELEC3214	Power Systems Technology	5% - Coursework Assignment Identify faults in web based security	20% - Coursework Assignment Identify and fix faults in web based security			75% - Exam, 2 hours
COMP3206	Machine Learning	30% - 3 x small courseworks	20% - Large coursework			50% - Exam, 2 hours

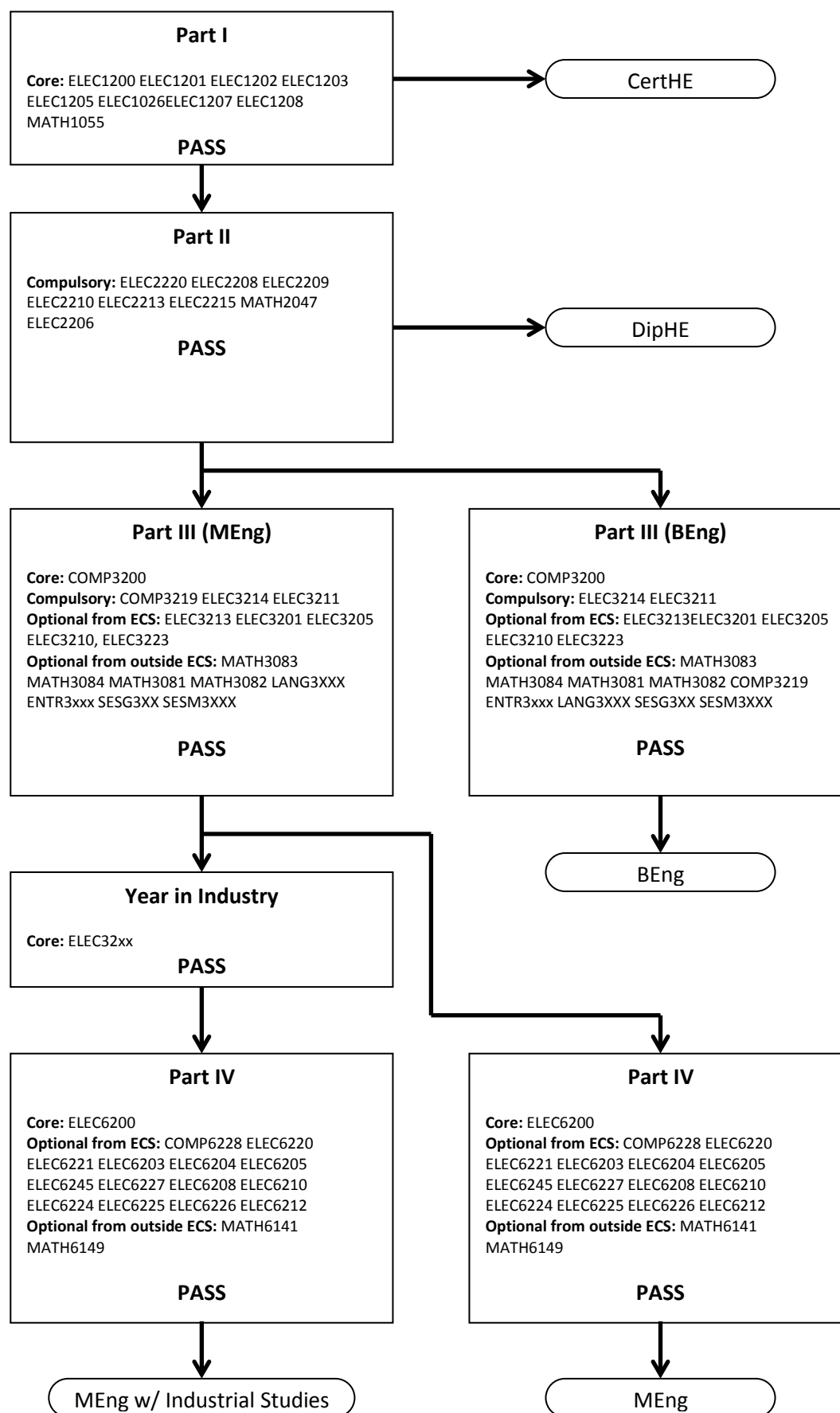|						
COMP3215	Real-time Computing and Embedded Systems	30% - Real-time laboratories				70% - Exam, 2 hours
ELEC3201	Robotic Systems	25% - Kinematic design and analysis of robotic systems				75% - Exam, 2 hours
ELEC3203	Digital Coding and Transmission					100% - Exam, 2.5 hours
ELEC3205	Control System Design	20% - 4 problem sheets				80% - Exam, 2 hours
ELEC3207	Nanoelectronic Devices	30% - SILVACO finite element simulation				70% - Exam, 2 hours
ELEC3218	Signal and Image Processing					100% - Exam, 3 hours
ELEC3221	Digital IC and Systems Design	10% - L-Edit Gate Design	10% - Digital Systems Design			80% - Exam, 2 hours
COMP3219	Engineering Management and Law	33% - Formative coursework assessing Accounting for Engineering Decision Making	33% - Summative computer mediated testing assessing Law in Engineering	33% - Formative coursework assessing Managerial Decisions, Marketing, Human Resource Management and Entrepreneurship		
MATH3083	Advanced Partial Differential Equations					100% - Exam, 2 hours
MATH3081	Operational Research	20% - 4 coursework assignments				80% - Exam, 2 hours
COMP3212	Computational Biology	30% - short assignments	40% - major assignment	30% - Best two of three in-class quizzes		
COMP3214	Principles and Practice of Computer Graphics	10% - Two 3 hour labs introducing low level 2D and basic 3D Computer Graphics	10% - Introduction to OpenGL coursework	5% - Introduction to physics based modeling coursework	25% - 3D world Simulation, using OpenGL and modeling where appropriate	50% - Exam, 1.5 hours
COMP3216	Safety-Critical Systems	30% - Coursework				70% - Exam, 2 hours
COMP3217	Secure Systems	80% - Labs				20% - Exam, 1 hour
ELEC3202	Green Electronics	30% - Photo-voltaic exercise				70% - Exam, 2 hours
ELEC3204	Wireless and Optical Communications	5% - Space time coding parametrisation and design in Matlab	5% - OFDM parametrisation and design in Matlab	5% - Modelling of material and fibre dispersion in Matlab		85% - Exam, 2.5 hours
ELEC3206	Digital Control System Design	20% - 4 problem sheets				80% - Exam, 2 hours
ELEC3208	Analogue and Mixed Signal Electronics	10% - Analogue Circuit Design coursework				90% - Exam, 2 hours
ELEC3217	Photonics					100% - Exam, 2.5 hours
ELEC3219	Advanced Computer Architecture	35% - Architecture simulation				65% - Exam, 2 hours
ELEC3223	Introduction to Bio nanotechnology	30% - Written Assignment				70% - Exam, 2 hours
MATH3084	Integral Transform Transforms	20% - 4 coursework assignments				80% - Exam, 2 hours
MATH3082	Optimisation	15% - Computer based coursework assignment				85% - Exam, 2.25 hours

Code	Module					
ELEC6200	Group Design Project	50% - Group Report	10% - Group Presentation	10% - Individual Reflection	30% - Individual Report and Poster on Business Case Study	
ELEC6247	Group Design Project (overseas placement)	70% group report	15% group presentation	15% individual reflection		
COMP6202	Evolution of Complexity	0% - code a genetic algorithm	50% - reimplement a selected paper and extend			50% - Exam, 1.5 hours
COMP6204	Software Project Management and Development	25% - Project Management Plan				75% - Exam, 2 hours
ELEC6201	Microfabrication	30% - Fabrication report				70% - Exam, 2 hours
ELEC6202	Advanced Memory and Storage	50% - Advanced memory device and lab report				50% - Exam, 2 hours
ELEC6203	Introduction to MEMS	30% - laboratory report				70% - Exam, 2 hours
ELEC6204	Microfluidics and Lab-on-a-Chip	30% - Report on simulation laboratory and technology review				70% - Exam, 2 hours
ELEC6205	Bionanotechnology	30% - laboratory report				70% - Exam, 2 hours
ELEC6217	Radio Communications Engineering	5% - Software defined radio exercise	15% - Matlab simulation	50% - Transceiver System Design (group exercise)		30% - Exam, 1 hour
ELEC6230	VLSI Systems Design	25% - Mini design assignments with electronic submission of designs	75% - Design assignments with formal documentation	25% - Lab (attendance and log book assessment)		
ELEC6237	System on Chip Electronic Design Automation	50% - Analogue IC Design	50% - Digital IC design			
ELEC6245	Wireless Networks	20% - Tutorial presentation	80% - group coursework			
MATH6141	Numerical Methods	10% - class test	30% coursework			60% - Exam, 2 hours
MATH6149	Modelling with Differential Equations	75% - 3 group projects	25% - coursework			
COMP6206	Advanced Computer Vision	60% - Lecture material	40% - Group coursework			
COMP6208	Advanced Machine Learning	33.3% - Research Report				66.7% - Exam, 2 hours
COMP6210	Automated Software Verification	10% - Exercise in explicit state model checking	5% - Model checking exercise using CBMC	15% - Group exercise in using an OO software verification tool		70% - Exam, 2 hours
COMP6212	Computational Finance	100% - four computer labs				
COMP6228	Individual Research Project	75% - Literature search, interim and final report	25% - Poster			
ELEC6206	Nanofabrication and Microscopy	30% - Report about lithography simulation lab				70% - Exam, 2 hours
ELEC6207	Quantum Devices and Technology	50% - Advance logic device and lab report				50% - Exam, 2 hours
ELEC6208	Bio/Micro/Nano Systems	40% - Accelerometer lab	30% - Resonator lab report	30% - Glucose sensor lab report	25% - MEMS Lab report	

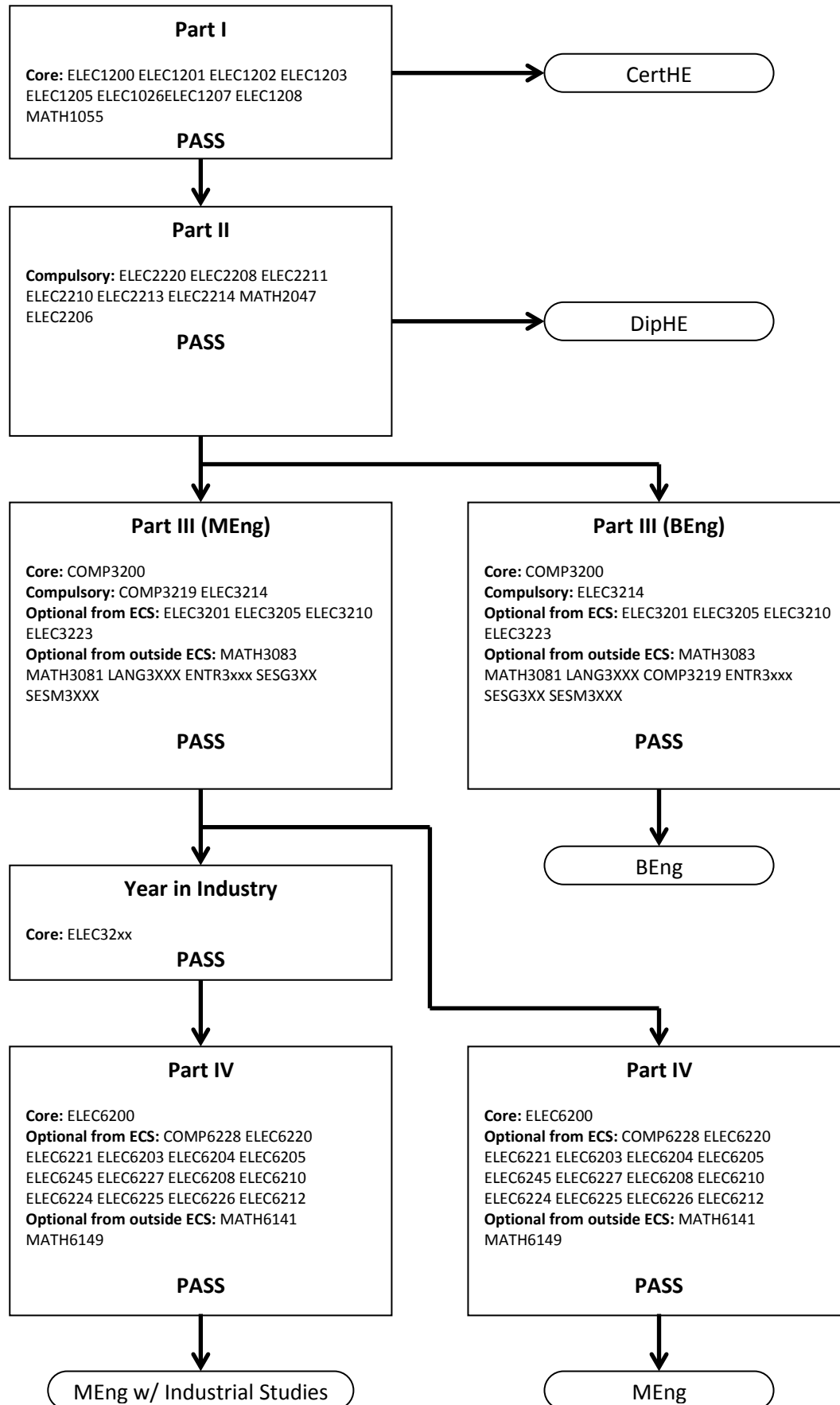|						
		report				
ELEC6209	Practical Applications of MEMS	10% - Two lab sessions	30% - Assignment 1: research, design, report	30% - Assignment 2: simulate, construct, report	30% - Assignment 3: characterisation/test report and analysis	
ELEC6210	Biosensors	50% - Report on laboratory work, data analysis and literature context				50% - Exam, 2 hours
ELEC6212	Biologically-Inspired Robotics	5%- Quality of initial plan	40%- Technical execution	30% - Documentation	20%- Individual contributions to Wiki or video 5% Individual reflection	
ELEC6213	Image Processing					100% - Exam, 2 hours
ELEC6214	Advanced Wireless Communication Networks and Systems					100% - Exam, 2 hours
ELEC6216	Personal Multimedia Communications	100% - progress report, individual presentation, final report				
ELEC6227	Medical Electrical and Electronic Technologies	50% - Report on Health Hazards of one electrical/electronic technology	25% - Report on one existing medical imaging technology and approaches being considered for improvement/development	25% - Report on new emerging medical technologies		
ELEC6228	Applied Control Systems	30% - Coursework sheet associated with each of the 3 control topics	50% - Group report of the experimental component	10% - Seminar presentation session given by each group	10% - Written critique of another group's work	
ELEC6231	VLSI Design Project	20% - Milestone Submissions	75% - Design Submission	5% - Individual Reflection		
ELEC6232	Analogue and Mixed Signal CMOS design	25% - Design Assignment				75% - Exam, 2 hours
ELEC6233	Digital System Synthesis	10% - Low Power Lab	40% - Complex system synthesis			50% - Exam, 2 hours
ELEC6235	System on Chip Design Project	100% - Main Report				
ELEC6242	Cryptography	35% - Cryptanalysis Investigation				65% - Exam, 2 hours

Electrical Engineering Programme Structure

Part I

Core: ELEC1200 ELEC1201 ELEC1202 ELEC1203 ELEC1205 ELEC1026ELEC1207 ELEC1208 MATH1055

PASS

→ CertHE

Part II

Compulsory: ELEC2220 ELEC2208 ELEC2209 ELEC2210 ELEC2213 ELEC2215 MATH2047 ELEC2206

PASS

→ DipHE

Part III (MEng)

Core: COMP3200
Compulsory: COMP3219 ELEC3214 ELEC3211
Optional from ECS: ELEC3213 ELEC3201 ELEC3205 ELEC3210, ELEC3223
Optional from outside ECS: MATH3083 MATH3084 MATH3081 MATH3082 LANG3XXX ENTR3xxx SESG3XX SESM3XXX

PASS

Part III (BEng)

Core: COMP3200
Compulsory: ELEC3214 ELEC3211
Optional from ECS: ELEC3213ELEC3201 ELEC3205 ELEC3210 ELEC3223
Optional from outside ECS: MATH3083 MATH3084 MATH3081 MATH3082 COMP3219 ENTR3xxx LANG3XXX SESG3XX SESM3XXX

PASS

→ BEng

Year in Industry

Core: ELEC32xx

PASS

Part IV

Core: ELEC6200
Optional from ECS: COMP6228 ELEC6220 ELEC6221 ELEC6203 ELEC6204 ELEC6205 ELEC6245 ELEC6227 ELEC6208 ELEC6210 ELEC6224 ELEC6225 ELEC6226 ELEC6212
Optional from outside ECS: MATH6141 MATH6149

PASS

→ MEng w/ Industrial Studies

Part IV

Core: ELEC6200
Optional from ECS: COMP6228 ELEC6220 ELEC6221 ELEC6203 ELEC6204 ELEC6205 ELEC6245 ELEC6227 ELEC6208 ELEC6210 ELEC6224 ELEC6225 ELEC6226 ELEC6212
Optional from outside ECS: MATH6141 MATH6149

PASS

→ MEng

Mechatronic/ Electromechanical Engineering Programme Structure

Part I

Core: ELEC1200 ELEC1201 ELEC1202 ELEC1203 ELEC1205 ELEC1026ELEC1207 ELEC1208 MATH1055

PASS

→ CertHE

Part II

Compulsory: ELEC2220 ELEC2208 ELEC2211 ELEC2210 ELEC2213 ELEC2214 MATH2047 ELEC2206

PASS

→ DipHE

Part III (MEng)

Core: COMP3200
Compulsory: COMP3219 ELEC3214
Optional from ECS: ELEC3201 ELEC3205 ELEC3210 ELEC3223
Optional from outside ECS: MATH3083 MATH3081 LANG3XXX ENTR3xxx SESG3XX SESM3XXX

PASS

Part III (BEng)

Core: COMP3200
Compulsory: ELEC3214
Optional from ECS: ELEC3201 ELEC3205 ELEC3210 ELEC3223
Optional from outside ECS: MATH3083 MATH3081 LANG3XXX COMP3219 ENTR3xxx SESG3XX SESM3XXX

PASS

→ BEng

Year in Industry

Core: ELEC32xx

PASS

Part IV

Core: ELEC6200
Optional from ECS: COMP6228 ELEC6220 ELEC6221 ELEC6203 ELEC6204 ELEC6205 ELEC6245 ELEC6227 ELEC6208 ELEC6210 ELEC6224 ELEC6225 ELEC6226 ELEC6212
Optional from outside ECS: MATH6141 MATH6149

PASS

Part IV

Core: ELEC6200
Optional from ECS: COMP6228 ELEC6220 ELEC6221 ELEC6203 ELEC6204 ELEC6205 ELEC6245 ELEC6227 ELEC6208 ELEC6210 ELEC6224 ELEC6225 ELEC6226 ELEC6212
Optional from outside ECS: MATH6141 MATH6149

PASS

→ MEng w/ Industrial Studies

→ MEng

Appendix 2: Additional Costs

Students are responsible for meeting the cost of essential textbooks, and of producing such essays, assignments, laboratory reports and dissertations as are required to fulfil the academic requirements for each programme of study. In addition to this, students registered for this programme typically also have to pay for the items listed in the table below.

In some cases you'll be able to choose modules (which may have different costs associated with that module) which will change the overall cost of a programme to you. Details of such costs will be listed in the Module Profile. Please also ensure you read the section on additional costs in the University's Fees, Charges and Expenses Regulations in the University Calendar available at www.calendar.soton.ac.uk.

Main Item	Sub-section	PROGRAMME SPECIFIC COSTS
Approved Calculators		Candidates may use calculators in the examination room only as specified by the University and as permitted by the rubric of individual examination papers. The University approved models are Casio FX-570 and Casio FX-85GT Plus. These may be purchased from any source and no longer need to carry the University logo.
Stationery		You will be expected to provide your own day-to-day stationary items, e.g. pens, pencils, notebooks, etc). Any specialist stationery items will be specified under the Additional Costs tab of the relevant module profile.
T**extbooks**		Where a module specifies core texts these should generally be available on the reserve list in the library. However due to demand, students may prefer to buy their own copies. These can be purchased from any source. Some modules suggest reading texts as **optional** background reading. The library may hold copies of such texts, or alternatively you may wish to purchase your own copies. Although not essential reading, you may benefit from the additional reading materials for the module.
Equipment and Materials Equipment	Art Equipment and Materials: Drawing paper; painting materials; sketchbooks	
	Art Equipment and Materials: Fabric, Thread, Wool	
	Design equipment and materials:	
	Excavation equipment and materials:	
	Field Equipment and Materials:	
	Laboratory Equipment and Materials:	

Main Item	Sub-section	PROGRAMME SPECIFIC COSTS
	Medical Equipment and Materials: Fobwatch; stethoscopes;	
	Music Equipment and Materials	
	Photography:	
	Recording Equipment:	
IT	Computer Discs	
	Software Licenses	
	Hardware	
Clothing	Lab Coats	
	Protective Clothing: Hard hat; safety boots; hi-viz vest/jackets;	
	Fieldcourse clothing:	
	Wet Suits?	
	Uniforms?	
Printing and Photocopying Costs		In the majority of cases, coursework such as essays; projects; dissertations is likely to be submitted on line. However, there are some items where it is not possible to submit on line and students will be asked to provide a printed copy.
Fieldwork: logistical costs	Accommodation:	
	Insurance	
	Travel costs	
	Immunisation/vaccination costs	
	Other:	
Placements (including Study Abroad Programmes)	Accommodation	
	Insurance	
	Medical Insurance	
	Travel costs	
	Immunisation/vaccination costs	
	Disclosure and Barring Certificates or Clearance	
	Translation of birth certificates	
	Other	
Conference expenses	Accommodation	
	Travel	
Optional Visits (e.g. museums, galleries)		
Professional Exams		
Parking Costs		
Anything else not covered elsewhere		

Revision History

1. Minor revisions (including title) 10 July 2007 (SCK

2. New Brand added July 2008

3. Updated to reflect University restructuring June 2011 AB.

4. Revisions approved by Senate 19 June 2013 as part of new programme validation process

5. Minor changes made to form guidance on completion of Intended Learning Outcomes, and Learning outcomes and Assessment Mapping document template, for clarity; and changes to wording of support for student learning section, altering to second person throughout – agreed with the Chair and to be reported to UPC October 2013

6. Update to Support and Student Learning, IT Services - June 2015

7. Update to Language Requirements - June 2015

8. Approved by ECS Education Committee - 10 June 2015

9. Update to Programme Overview (CMA Changes) – 24 August 2015

10. Update to Programme Overview (CMA Changes) – 09 September 2015

11. Part 4 overseas study details (PR3), 29/10/2015

12. ELEC2206 changed from optional to compulsory, Paolo Rapisarda, 3/11/2015

13. ELEC3212 eliminated everywhere, Paolo Rapisarda, 9/11/2015.

14. MATH6148 module eliminated from available options (due to cancellation- low student numbers), P. Rapisarda, 28/1/2016.

15. P. Rapisarda, updated assessment for ELEC6212, 1/2/2016

16. P. Rapisarda, updated group design project (overseas placement), 1/2/2016.

17. P. Rapisarda, updated MATHXXXX codes and course titles, 21/3/2016.

18. P. Rapisarda, explicit mention of optional modules at the beginning of illustration of Part III and Part IV structures, 22/3/2016.

19. Updated for 2016/17 – CQA team 05/05/2016

20. Updated to include the new title of Mechatronic Engineering for 2017/18 – CQA Team 24/06/2016

21. Update to Programme Structure to update optional module viability – CQA Team 07/12/2016

22. P. Rapisarda, 15th December 2016, changed name to ELEC6237 and eliminated ELEC6241 (due to merging with ELEC3221).

23. P. Rapisarda, 20th February 2017, changed code of MANG3067 to COMP3219.

24. P. Rapisarda, 22nd February 2017, changed assessment and name of ELEC6208.

25. P. Rapisarda, 9th March 2017, changed name of ELEC2209 to "Engineering design".

26. CQA Team, 8th March 2017, FPC approval of 2017/18 draft.

27. CQA Team, 17th May 2017, removal of suspended module ELEC6215.

28. CQA Team, 7th December 2017, FPC approved optional module size caveat.