UNIVERSITY OF EAST LONDON

UNDERGRADUATE PROGRAMME SPECIFICATION

BEng (Hons) Electrical & Electronic Systems - Extended

This programme is only offered at: **AMC Metropolitan College**

Final award	BEng (Hons) Electrical & Electronic Systems - Extended
Intermediate awards available	BEng, Dip HE, Cert HE
Mode of delivery	AMC on campus
Relevant QAA Benchmark statements	Engineering
UEL Academic School	Architecture, Computing and Engineering
Date specification last up-dated	January 2017

The summary

ENTRY REQUIREMENTS

The standard entry requirement **for Greek students** entering level 3 will be a Greek Secondary School diploma (Apolytirion of Lykeio) with a minimum average of 10 (equivalent of 50%). Non-Greek nationals who have obtained this qualification through attendance in the Greek schooling system will be eligible for admission on the same basis as Greek nationals. Greek nationals who have been schooled overseas may be admitted to the programme on demonstrating that:

1. They hold a qualification recognised by UEL for admission to undergraduate programmes, as documented in the current edition of the "Blue Book"

For students entering level 4, the standard entry requirement will be a Greek Secondary School diploma (Apolytirion of Lykeio) with a minimum Apolyterion average of 15.

AMC has an organized interviewing and admissions process which it follows for every academic programme it offers. Candidates are expected to sit one or more interviews with a qualified interviewer (who is usually the Programme Leader in the student's respective subject area of interest). Following the interview, candidates are required to fill out an application form which formalizes their request to be granted admission to their chosen programme of study. All decisions on student admission are then undertaken by a committee consisting of the Director, the Programme Leader, and selected course tutors.

Finally, students may be admitted through Accreditation of Experiential Learning (AEL) or Accreditation of Certificated Learning (ACL) processes.

For International Students:

- From A Level:
including passes at A2 in at least 2 subjects, must include Maths minimum grade C
- From Btec:
Extended Diploma (QCF) or Diploma (QCF) in a related subject grade MMM. Must include Merit in both Mathematics and Further Mathematics.
- From International Baccalaureate:
Diploma with 27 points including a minimum of 15 points at Higher Level and must include Maths and Physics at Higher Level

We would normally expect you to have Grade C in GCSE Mathematics, English and either Physics or Double Science.

English language requirements for all students:

Overall IELTS 6.0 with a minimum of 6.0 in Writing and Speaking; minimum 5.5 in Reading and Listening (or recognised equivalent).

ABOUT THE PROGRAMME

What is Electrical & Electronic Engineering?

Electrical & Electronics Engineering is at the heart of modern industries, power systems, control plants, medical systems, computer and communication systems, robotics, aeronautical

electronics, to name just few areas. Students that are awarded an Electrical & Electronic Systems degree will be able to work in a wide variety of disciplines. These include areas such as industrial process plants, electric power industry, general manufacturing industry, electric supply, electric machines and electric drives, power electronic systems, computer systems, telecommunications, integrated circuit design, embedded systems and so on. The programme features up-to-date modules in the new and emerging technologies in the subject areas of communications, microprocessors, signal processing, control and power. Hence, graduates will be equipped with the necessary knowledge, skills and competences to pursue among the traditional career paths in these subject areas other future and new emerging technologies in electrical and electronic engineering careers such as wireless sensor networks, smart buildings, smart grids, home automation, sustainability, human to machine interface and innovative equipment. Excellent graduates can pursue doctorate studies for academic careers through a number of advanced subject areas such as mechatronics, mobile roboticsoptical communications.

Electrical & Electronic Systems at AMC

The BEng (Hons) Electrical & Electronic Systems programme at AMC will give you the opportunity to develop an understanding of advanced knowledge and skill set. Through its modern and continually expanding facilities for laboratory and practical work you will be able to reinforce the advanced theories and practical studies providing 'hands on' experience. Our programme offers you the opportunity to study, understand, and apply theoretical knowledge into challenging problems and laboratory exercises, thus better preparing you for a career in Electrical & Electronic Engineering.

Programme structure

Study is based on three years of full-time study (four on the extended route, which includes the preparatory Year 0) (six years part-time) or four years on a sandwich programme. The sandwich option requires an industrial placement year between years two and three. The programme is modular and is based on core studies embracing communications, embedded systems, control and power disciplines.

Learning environment

The programme benefits from access to purpose built laboratories and computer suites for use by students studying Electrical & Electronics based programmes. Teaching is delivered through formal lectures, tutorials, and laboratory sessions. Lectures are supported by core texts and course notes and material uploaded to AMC virtual learning environment that allow you to concentrate on the lecture and to aid independent study. Group work is encouraged and is used to good effect during the second year module Group Design and Employability

Assessment

Assessment varies from module to module and meets UEL and AMC assessment criteria. Assessment may include exams (end of module examinations), time constrained assignments (time restricted or on-line tests within the regular period that modules' are taught), coursework (usually related to laboratory work and technical or research reports), individual and group project work and tests of competence in theoretical and practical sessions.

Students with disabilities and/or particular learning needs should discuss assessments with the Programme Leader to ensure they are able to fully engage with all assessment within the programme.

Work experience/placement opportunities

The School of Architecture, Computing and Engineering at AMC has strong links with industry and endeavors in either hosting or arranging for a number of visits at which informal interviews for full and part time employment opportunities take place. An employment liaison officer can assist students in making applications for the optional sandwich year, although this is a competitive process and a placement cannot be guaranteed.

Project work

Project work is an important feature of this programme. Throughout your studies you will undertake small projects as part of the module assessment. During the final year of the programme you will be required to complete an independent body of work with substantial research and study of a technical subject in the form of a final year project. This project will be supervised by a member of the academic staff with an interest in the subject and will normally include laboratory work or the analysis of an advanced engineering problem. The project often requires students to take an idea through to a working model.

Added value

The programme allows students to either pursue a career in an engineering subject area, or to apply for a number of postgraduate programmes (e.g. MSc or MPhil/PhD). The programme will also be of benefit by contributing to students' transferable skills and encouraging students to learn how to study and embark on continuous professional development. During level 6 project work, students demonstrate that they can take an idea through research, design and development to produce a functional solution to a given problem. The programme also benefits from the use of modern laboratories which are used for electronics, communicastions, control systems, microprocessors and digital signal processing. In addition, there are facilities for electronic computed-aided design right through to printed circuited fabrication and testing. Students can also benefit from an extended PC network which are connected to the university network and allow students to use software for simulation of engineering systems as well as design. Specialised computer rooms are also available with software for advanced electrical / electronic simulation and design.

IS THIS THE PROGRAMME FOR ME?

If you are interested in.......

Digital and Analogue Electronics

Microprocessors and Embedded Systems

Control Engineering

Communications Engineering

Signal Processing

RF Electronics

Power Systems

If you enjoy....

Design and Construction of Electrical/Electronic circuits
Mathematics
Science Physics
Information Technology

If you want....

A traditional degree with a real practical emphasis geared to meet the needs of employers and the opportunity to study a broad range of subjects including power or control or communications engineering.

Your future career

Career opportunities are available in civil and military electrical/electronic engineering, the manufacture of a wide variety of products plus IT and computer or microprocessor-based activities. Graduates have also successfully undertaken careers in business, management, marketing and finance.

How we support you

The School prides itself on its student support systems. We operate an open door policy with students encouraged to consult with their tutors. Personal Tutors and Programme Tutors will monitor your progress and provide assistance and advice with academic and personal problems. We are pleased for students to consult whichever tutor they are comfortable talking to. The school facilities include dedicated computer laboratories and equipment that you are free to use whenever it is not being used for a class. All formal laboratory classes are supported by lecturers and tutors. Employer links are maintained through our industrial Liaison Group and employers are invited to attend the University to talk to students about careers in engineering. We also endeavour in having local engineering employers to judge final year projects on an annual showcase event for final year students. This is an optional opportunity for our final year students.

Programme aims and learning outcomes

What is this programme designed to achieve?
This programme is designed to give you the opportunity to:

Be a competent engineer equipped with the current knowledge, competences and skills to be able to contribute to future challenges in the new and emerging technologies in the subject areas of communications, control and power

Be aware of the economic, social, environmental issues facing electrical/electronic engineers

Understand the importance of professionalism, engineering ethics and engineering management processes

What will you learn?

Knowledge

Knowledge and understanding of electrical and electronic principles, control theory, electrical systems, communication systems, computing techniques, analogue and digital electronics, microprocessor systems and software engineering, embedded systems and digital signal processing, radio frequency design, all underpinned by mathematics and physics.

Substantial knowledge and understanding in digital communications, control engineering, power engineering, embedded systems, signal processing, wireless propagation, RF design, Wide knowledge of analytical, mathematical, problem solving.

Ability to design and construct a coherent testing project using established techniques.

Thinking skills

Application of critical thinking to a variety of problems.

Application of knowledge and skills to a variety of complex electrical/engineering problems

Subject-Based Practical skills

Ability to use of information technology as a problem solving tool.

Ability to use laboratory equipment and instrumentation to complete various laboratory experiments and to critically analyse data.

Skills for life and work (general skills)

Ability to communicate information effectively to a wide range of audience. Application of problem-solving techniques to a variety of problems.

Ability of time management and ability to plan and manage projects

Ability to initiate design, analysis and development in response to original problems. Ability to obtain information effectively, to think creatively and imaginatively,

Ability to co-operate with your peers and other professional and to instigate application of acquired knowledge in real world scenarios.

Ability for learning and developing scholarly concern for accuracy and awareness of economic, social environmental and ethical issues.

Ability for competitiveness and high academic achievement.

The programme structure

Introduction

All programmes are credit-rated to help you to understand the amount and level of study that is needed.

One credit is equal to 10 hours of directed study time (this includes everything you do e.g. lecture, seminar and private study).

Credits are assigned to one of 5 levels:

3   equivalent in standard to GCE 'A' level and is intended to prepare students for year one of an undergraduate degree programme
4   equivalent in standard to the first year of a full-time undergraduate degree programme
5   equivalent in standard to the second year of a full-time undergraduate degree programme
6   equivalent in standard to the third year of a full-time undergraduate degree programme
7   equivalent in standard to a Masters degree

Credit rating

The overall credit-rating of this programme is 360 credits.

Typical duration

The expected duration of this programme is 3 years full-time (4 years on extended route) or 6 years part-time.

It is possible to move from full-time to part-time study and vice-versa to accommodate any external factors such as financial constraints or domestic commitments. Many of our students make use of this flexibility and this may impact on the overall duration of their study period. A student cannot normally continue study on a programme after 4 years of study in full time mode unless exceptional circumstances apply and extenuation has been granted. The limit for completion of a programme in part time mode is 8 years from first enrolment.

How the teaching year is divided

The teaching year begins in October and ends in June

A typical student, in full-time attendance mode of study, will register for 120 credits in an academic year. A student in a part-time mode of study may register for up to 90 credits in any academic year.

What you will study when

A student registered in a full-time attendance mode will take 120 credits per year. Typically this will be comprised of four 30 credit modules. The exact number may differ if the programme is comprised of 15, 45 or 60 credits modules. An honours degree student will complete modules totaling 120 credits at level four, modules totaling 120 credits at level five and modules totaling 120 credits at level six.

Year 0 (Level 3, extended BEng only)

Level 3	EG3101 Mathematics [45 credits]	EG3102 Physical Science [45 credits]	EG3103 Engineering in Society [30 credits]

Level	Module Code	Module Title	Distance learning Y/N	Credits	Status*
4	EG4140	Engineering Computing and Mathematics I	No	30	Core
4	EG4141	Analogue and Digital Electronics I	No	30	Core
4	EG4142	Engineering Science and Applications	No	30	Core
4	EG4143	Circuit Analysis	No	30	Core
5	EG5145	Engineering Mathematics II	No	30	Core
5	EG5140	Analogue and Digital Electronics II	No	30	Core
5	EG5141	Group Design and Employability	No	15	Core
5	EG5142	Control and Electrical Systems	No	15	Core
5	EG5143	Software Engineering and Microprocessors	No	15	Core
5	EG5144	Analogue and Digital Communications	No	15	Core
P	EG5100	Industrial Sandwich Placement	No	120	Option
6	EG6140	Project and Research Skills	No	30	Core

6	EG6141	RF Electronics and Digital Communications	No	30	Core
6	EG6142	Digital Signal Processing and Embedded Systems	No	30	Core
6	EG6143	Control and Power Systems	No	30	Core

Please Note – A core module for a programme is a module which a student must have passed (i.e. been awarded credit) in order to achieve the relevant named award. An optional module for a programme is a module selected from a range of modules available on the programme.

The optional level P placement module EG5100 is required to obtain a sandwich degree, in addition to the other requirements, but does not count towards the classification.

Requirements for gaining an award

In order to gain a BEng with <u>Honours</u> degree you will need to obtain 360 credits
including:
   A minimum of 120 credits at level four or higher
   A minimum of 120 credits at level five or higher
   A minimum of 120 credits at level six or higher

In order to gain an <u>Ordinary degree</u> you will need to obtain a minimum of 300 credits including:
   A minimum of 120 credits at level four or higher
   A minimum of 120 credits at level five or higher
   A minimum of 60 credits at level six or higher

In order to gain the <u>Diploma of Higher Education</u> you will need to obtain at least 240 credits including a minimum of 120 credits at level four or higher and 120 credits at level five or higher

In order to gain the <u>Certificate of Higher Education</u> you will need to obtain 120 credits at level four or higher

Degree Classification

Where a student is eligible for an Honours degree by passing a valid combination of module to comprise an award and has gained the minimum of 240 UEL credits at level 5 or level 6 on the current enrolment for the programme, including a minimum of 120 UEL credits at level 6, the award classification is determined by calculating;

The arithmetic mean of the best 90 credits at level 6	x	0.8	+	The arithmetic mean of the remaining credits at levels 5 and/or 6	x	0.2

and applying the mark obtained as a percentage, with all decimals points rounded up to the nearest whole number, to the following classification

70% - 100%	First Class Honours
60% - 69%	Second Class Honours, First Division
50% - 59%	Second Class Honours, Second Division
40% - 49%	Third Class Honours
0% - 39%	Not passed

Teaching, learning and assessment

Teaching and learning

The key teaching and learning methods used are listed below:

Knowledge is developed through
- Lectures & tutorials
- Assignments & projects
- Use of information technology (IT) and virtual learning environment (VLE)

Thinking skills are developed through
- Analytical assessment of data
- Critical assessment of information
- Problem-solving practical applications

Practical skills are developed through
- Laboratories and experimental work
- Research skills-based activities with feedback
- Computer-based modelling, simulation and analysis

Skills for life and work (general skills) are developed through
- Interactive communication exercises
- Planning activities with feedback
- Individual and group projects

Assessment

The following assessment methods are used:

Knowledge is assessed by
- Time constrained assignments or online tests
- Time constrained examinations
- Assignments and laboratory reports
- Project work which include a viva-voce

Thinking skills are assessed by
- Approach to solving problems
- Analysis of alternative solutions
- Practical solutions to complex tasks

Practical skills are assessed by
- Practical reports and experimental assessment
- Group project
- Application to practical problem - solving

Skills for life and work (general skills) are assessed by
- Project and group work
- Oral presentations
- Written communication exercises
- Problem solving and design work

How we assure the quality of this programme

Before this programme started

Before this programme started, the following was checked:
- there would be enough qualified staff to teach the programme;
- adequate resources would be in place;
- the overall aims and objectives were appropriate;
- the content of the programme met national benchmark requirements;
- the programme met any professional/statutory body requirements;
- the proposal met other internal quality criteria covering a range of issues such as admissions policy, teaching, learning and assessment strategy and student support mechanisms.

This is done through a process of programme approval which involves consulting academic experts including some subject specialists from other institutions.

How we monitor the quality of this programme

The quality of this programme is monitored each year through evaluating:
    external examiner reports (considering quality and standards);
    statistical information (considering issues such as the pass rate);
    student feedback.

Drawing on this and other information, programme teams undertake the annual Review and Enhancement Process which is co-ordinated at School level and includes student participation. The process is monitored by the Quality and Standards Committee.

Once every six years an in-depth review of the whole subject area is undertaken by a panel that includes at least two external subject specialists. The panel considers documents, looks at student work, speaks to current and former students and speaks to staff before drawing its conclusions. The result is a report highlighting good practice and identifying areas where action is needed.

The role of the programme committee

This programme has a programme committee comprising all relevant teaching staff, student representatives and others who make a contribution towards the effective operation of the programme (e.g. library/technician staff). The committee has responsibilities for the quality of the programme. It provides input into the operation of the Review and Enhancement Process and proposes changes to improve quality. The programme committee plays a critical role in the quality assurance procedures.

The role of external examiners

The standard of this programme is monitored by at least one external examiner. External examiners have two primary responsibilities:

    To ensure the standard of the programme;
    To ensure that justice is done to individual students.

External examiners fulfil these responsibilities in a variety of ways including:

    Approving exam papers/assignments;
    Attending assessment boards;
    Reviewing samples of student work and moderating marks;
    Ensuring that regulations are followed;
    Providing feedback through an annual report that enables us to make improvements for the future.

Listening to the views of students

The following methods for gaining student feedback are used on this programme:

Module evaluations
Feedback information analysis for programme and module evaluations
Student representation on programme committees (meeting 2 times per year)

Students are notified of the action taken through:

circulating the minutes of the programme committee
a newsletter published three times a year
providing details on the programme notice board and/or VLE
Individual responses to students as required
Review of actions of each programme committee meeting

Where you can find further information

Further information about this programme is available from: The UEL web site

(http://www.uel.ac.uk)

The AMC website (http://www.metropolitan.edu.gr)

Programme handbook

Module study guides

UEL Manual of General Regulations (http://www.uel.ac.uk/qa/policies/manual/) UEL

Quality Manual (http://www.uel.ac.uk/qa/policies/qualitymanual/)