PROGRAMME SPECIFICATION

KEY FACTS

<table>
<thead>
<tr>
<th>Programme name</th>
<th>BEng Electrical &amp; Electronic Engineering (Avionics &amp; Control)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Award</td>
<td>BEng (Hons)</td>
</tr>
<tr>
<td>School</td>
<td>School of Mathematics, Computer Science &amp; Engineering</td>
</tr>
<tr>
<td>Department or equivalent</td>
<td>Electrical and Electronic Engineering</td>
</tr>
<tr>
<td>UCAS Code</td>
<td>N/A</td>
</tr>
<tr>
<td>Programme code</td>
<td>USEACB</td>
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<tr>
<td>Type of study</td>
<td>Full Time</td>
</tr>
<tr>
<td>Total UK credits</td>
<td>360</td>
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<tr>
<td>Total ECTS</td>
<td>180</td>
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<tr>
<td>Partnership</td>
<td>Articulation Agreement: Nanjing University of Aeronautics and Astronautics</td>
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PROGRAMME SUMMARY

The BEng in Electrical and Electronic Engineering (Avionics and Control) is a closed Bachelors undergraduate programme for students at Nanjing University of Aeronautics and Astronautics who wish to be matriculated at City University London for their final two years. This articulation route is aimed at preparing graduates to play substantial roles in a variety of engineering sectors, specifically involving electronics, avionics and control.

This programme is a specialisation of the BEng in Electrical and Electronic Engineering and shares the majority of its content. Each year consists of 120 credits composed of modules which typically carry 15 or 30 credits and delivered over 20 contact weeks. The Programme initially provides you with a broad knowledge base of Electrical and Electronic Engineering and its use in interdisciplinary engineering projects. Engineering mathematics, circuit design, electronics, and mechatronics are covered, as well as basics of control engineering, telecommunication systems, and numerical computing. In addition to this, as Electrical and Electronic Engineering (Avionics and Control) students, you will require management and presentation skills, and an awareness of the economic, environmental, and social implications of their activity. These issues are covered in Engineering management classes. You will be assigned a personal tutor, who guides you throughout your studies.

Programme Stage One
Programme Stage 1 of the programme (level 4) is undertaken in the first two years at NUAA.

Programme Stage Two
For all of you completing Programme Stage Two or the Diploma in Electrical and Electronic Engineering (Avionics and Control) you will build on your previous knowledge and experience. You will develop skills of enquiry in your subject and develop different approaches to problem-solving as well as identify the limitations of your knowledge. Modules include further engineering mathematics, analogue and digital electronics, communications systems, dynamics and control, mechatronics and engineering management.
Degree / Programme Stage Three

For all of you completing Programme Stage Three or the degree you will further develop a coherent systematic, detailed knowledge of your discipline. You will be able to develop techniques for practice drawing on research and scholarship demonstrating your role as a reflective practitioner. You will cover subject areas in electrical and electronic power systems, embedded and real-time systems, avionics and control system design, and engineering systems and will also undertake an individual final year project.

Aims

The overall aim of the BEng programme is to provide a well-rounded education and also specialised training for a professional career in the industries underpinned by the electrical, electronic, avionics and control disciplines. This will include the research, development, design, production, and management aspects of those industries.

WHAT WILL I BE EXPECTED TO ACHIEVE?

On successful completion of this programme, you will be expected to be able to:

Knowledge and understanding:
- demonstrate and apply a strong foundation in Mathematics and Physics relevant to Electrical and Electronic Engineering, Avionics and Control;
- demonstrate a comprehensive understanding of the fundamental concepts, principles and theories that are relevant to Electrical and Electronic Engineering, Avionics and Control as disciplines;
- demonstrate sufficient knowledge and understanding of the general principles of design and design techniques in engineering systems, especially those specific to Electrical and Electronic Engineering, Avionics and Control;
- discuss and apply detailed knowledge and understanding of the essential facts, concepts, principles and theories in the fields of: electronic circuit design, mechatronics, control engineering, avionics, telecommunication systems and related fields;
- demonstrate and apply the principles of Information and Communications Technologies (ICT) underpinning Electrical and Electronic Engineering, Avionics and Control;
- evaluate the role of the engineer in society and the business and management techniques that are relevant to Electrical and Electronic, Avionics and Control engineers.

Skills:
- demonstrate proficiency with analytical, computational and experimental techniques (including assessing the limitations of the results obtained), coupled with experience and decision-making, to solve problems relevant to electrical and electronic engineering, avionics and control systems;
- demonstrate proficiency in the application of analytical, computational and CAD techniques specifically to the analysis and design of electronic systems;
- gather, integrate and critically evaluate information from various sources including technical literature.
• exercise professional judgement in electrical and electronic engineering and in avionics & control and take account of non-technical issues such as economics and benefit to society
• plan and perform safely experimental work in a laboratory and appropriate clinical environment
• use laboratory equipment for data measurement, processing, interpreting and analysis
• work effectively with IT tools - to program and to use computational packages for modelling, design and simulation of electronic systems
• communicate effectively in technical and non-technical languages, written, oral and graphical forms to individuals and large audiences
• demonstrate proficiency in the use of scientific and technical literature effectively and research for information to create ideas for future development
• demonstrate the capacity to build team working skills and work with other staff in the academic or industrial environment
• apply initiative, creativity and innovation to design, construct and test a system, component or process to meet specifications
• demonstrate the ability to adapt to new technologies and their implementation in the engineering environment.

Values and attitudes:
• show appreciation of the value of electrical, electronic, avionics and control engineering to society and to the global economy
• demonstrate a willingness to take on the responsibilities of an electronics engineer in enforcing and maintaining safety standards and for human use and management of electronic equipment
• show commitment to continuous improvement to enhance professional skills and benefit society
• maintain and develop an awareness of safety and environment
• put the needs of the team ahead of your own needs
• demonstrate a willingness to take on the professional and ethical responsibilities of engineers in society.

HOW WILL I LEARN?

The programme is designed to enable you to acquire and develop generic and subject-specific knowledge and understanding, thinking, practical and transferable skills. This is assured by a diverse and carefully planned teaching and learning styles based upon lectures, tutorials, practical work and design projects.

Taught modules, which may be single or double, are designed to provide the bulk of the formal teaching of mathematical and subject-specific engineering subjects. Single taught modules normally comprise minimum of 20 hours of lectures, 10 hours of problem solving, example and revision classes, a minimum of 15 hours of coursework and/or laboratory classes, and on average at least 60 hours of independent study. Laboratory work runs in parallel with the lectures and tutorials. This work provides you with engineering skills appropriate for electrical and electronic engineers. In
laboratories, your work will be supervised by academic staff with support from research students and technicians.

All modules have a theoretical and practical (design and development) part. Detailed laboratory exercises are in place which will enable you to understand further the underlying theory of a particular subject.

The final year provides a more specialised insight into advanced topics in Electrical and Electronic Engineering, Avionics and Control. You will be required to solve advanced design issues in laboratory work. Advanced modelling and design techniques are covered, as well as practical software development tools and techniques.

The final year includes a significant Final Year Project, which expects you to work independently (with academic advice and supervision) to solve an advanced engineering design problem, develop a prototype or simulation and present the work in the form of detailed project thesis and presentation. Engagement in the Final Year Project allows you to interact with members of the School's various research teams, working alongside researchers on highly relevant and exciting projects.

WHAT TYPES OF ASSESSMENT AND FEEDBACK CAN I EXPECT?

Assessment and Assessment Criteria

Assessment of your knowledge, skills and understanding is based on the usual range of assessment methods: written examinations, formal laboratory reports, technical reports and essays, class tests and oral presentations of project or software development work.

The programme consists of a taught element at NUAA and two Programme Stages taught at City University London. For information about NUAA please refer to the documentation. Each part taught at City University is delivered in one full academic year and totals 120 academic credit points. Each Programme Stage consists of route core modules, which are listed elsewhere in the Programme Specification. Majority of the modules has at least two independent assessments (typically a written examination and a coursework). Pass mark for all assessment is 40%.

Assessment Criteria will be made available to you to support you in completing assessments. These may be provided in programme handbooks, module specifications, on the virtual learning environment or attached to a specific assessment task.

Feedback on assessment

The feedback is essential for you to evaluate the quality of your work and to develop your skills, both in terms of knowledge and understanding and in terms of presentation. Feedback will be provided for each assessment component for each module. Depending on the assessment method and criteria, the feedback will be a combination of immediate feedback (in the case of oral presentations), detailed written feedback (in the case of written coursework assignments), or by providing model answers and discussing these (in the case of written examinations). Feedback on assessment is
considered to be an essential method of the development of student’s ability to complete the Programme.

You will normally be provided with feedback within three weeks of the submission deadline or assessment date. This would normally include a provisional grade or mark. For end of module examinations or an equivalent significant task (e.g. an end of module project), feedback will normally be provided within four weeks. At the end of each examination period the Assessment Board is organised to make final decisions on the student progress. The School will formally inform you about all the module marks and about your progression, typically within 5-6 weeks after the last examination. The full feedback policy can be found at City University web site.

Assessment Regulations

In order to pass your Programme, you should complete successfully or be exempted from the relevant modules and assessments and will therefore acquire the required number of credits. You also need to pass each Programme Stage of your Programme in order to progress to the following Programme Stage.

The Programme Stages are weighted to calculate the final degree classification – the weights are presented elsewhere in this specification.

The pass mark for each module is 40%. To pass a module, you need to obtain at least 40% mark in all the components of the module. The only exception to this is engineering mathematics. Details of progression for Engineering Mathematics can be found in the module specifications.

If you fail an assessment component or a module, the following will apply:

1. Compensation: where you fail up to a total of one sixth of the total credits of a Programme Stage at first or resit attempt, you may be allowed compensation if:
   - Compensation is permitted for the module involved (see the What will I Study section of the programme specification), and
   - It can be demonstrated that you have satisfied all the Learning Outcomes of the modules in the Programme Stage, and
   - A minimum overall mark of no more than 10% below the module pass mark has been achieved in the module to be compensated, and
   - An aggregate mark of 40% has been achieved for the Programme Stage.

Where you are eligible for compensation at the first attempt, this will be applied in the first instance rather than offering a resit opportunity.

If you receive a compensated pass in a module you will be awarded the credit for that module. The original component marks will be retained in the record of marks and your original module mark will be used for the purpose of your Award calculation.

2. Resit: where you are not eligible for compensation at the first attempt, you will be offered one resit attempt.

If you are successful in the resit, you will be awarded the credit for that module. The mark for each assessment component that is subject to a resit will be capped at the
pass mark for the module. This capped mark will be used in the calculation of the final module mark together with the original marks for the components that you passed at first attempt.

If you do not meet the pass requirements for a module and do not complete your resit by the date specified you will not progress to the next Programme Stage and the Assessment Board will require you to be withdrawn from the Programme.

If you fail to meet the requirements for a particular Programme Stage or the Programme, the Assessment Board will consider whether you are eligible for an Exit Award as per the table below.

If you would like to know more about the way in which assessment works at City, please see the full version of the Assessment Regulations at http://www.city.ac.uk/__data/assets/word_doc/0003/69249/s19.doc

WHAT AWARD CAN I GET?

Bachelor's Degree with Honours:

<table>
<thead>
<tr>
<th>Programme Stage</th>
<th>HE Level</th>
<th>Credits</th>
<th>Weighting (%)</th>
<th>Class</th>
<th>% required</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<td>120</td>
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<td>I</td>
<td>70</td>
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<td>120</td>
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<td>II upper division</td>
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<tr>
<td>3</td>
<td>6</td>
<td>120</td>
<td>67</td>
<td>II lower division</td>
<td>50</td>
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Ordinary Degree:

<table>
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<tr>
<th>Programme Stage</th>
<th>HE Level</th>
<th>Credits</th>
<th>Weighting (%)</th>
<th>Class</th>
<th>% required</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
<td>120</td>
<td>0</td>
<td>With distinction</td>
<td>70</td>
</tr>
<tr>
<td>2</td>
<td>5</td>
<td>120</td>
<td>33</td>
<td>With Merit</td>
<td>60</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
<td>60</td>
<td>67</td>
<td>With Pass</td>
<td>40</td>
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</table>

WHAT WILL I STUDY?

Programme Stage 1

Students take two years of taught modules at NUAA. The most relevant modules equivalent to Programme Stage 1 BEng EEE modules are listed below. In addition, NUAA students take a number of nontechnical modules as part of their normal curriculum.

08101120 Higher Mathematics II(1)
03101020 Intro to Automation Discipline
011J0010 Introduction to Aeronautics (optional)
08101130 Higher Mathematics II(2)
08101240 Linear Algebra
05101140 Engineering Graphics IV
08201220 College Physics I(1)
08301020 College physics Experiments I(1)
16901220 Programming in C Language
Programme Stage 2

Programme Stage 2 consists of 8 compulsory modules (8 at HE2 level), totalling 120 credit points. To pass Programme Stage 2, a student must have acquired 120 credits.

<table>
<thead>
<tr>
<th>Module Title</th>
<th>SITS Code</th>
<th>Module Credits</th>
<th>Core/Elective</th>
<th>Can be compensated?</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dynamics and Control</td>
<td>EE2401</td>
<td>15</td>
<td>C</td>
<td>Y</td>
<td>5</td>
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<tr>
<td>Communication Systems</td>
<td>EE2402</td>
<td>15</td>
<td>C</td>
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<td>5</td>
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<tr>
<td>Mechatronics</td>
<td>EE2410</td>
<td>15</td>
<td>C</td>
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<tr>
<td>Analogue Electronics</td>
<td>EE2514</td>
<td>15</td>
<td>C</td>
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<td>5</td>
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<tr>
<td>Digital Electronics</td>
<td>EE2507</td>
<td>15</td>
<td>C</td>
<td>Y</td>
<td>5</td>
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<tr>
<td>Numerical Computing and Statistics</td>
<td>EE2512</td>
<td>10</td>
<td>C</td>
<td>Y</td>
<td>5</td>
</tr>
<tr>
<td>Engineering Management 2</td>
<td>ET2052</td>
<td>15</td>
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<tr>
<td>Engineering Mathematics 2 (EEE)</td>
<td>EX2003</td>
<td>20</td>
<td>C</td>
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Programme Stage 3

Programme Stage 3 consists of 7 compulsory modules (all at HE3 level), totalling 120 credit points. To pass Programme Stage 3, a student must have acquired 120 credits.

<table>
<thead>
<tr>
<th>Module Title</th>
<th>SITS Code</th>
<th>Module Credits</th>
<th>Core/Elective</th>
<th>Can be compensated?</th>
<th>Level</th>
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<tbody>
<tr>
<td>Individual Project, BEng 3</td>
<td>EE3400</td>
<td>30</td>
<td>C</td>
<td>N</td>
<td>6</td>
</tr>
<tr>
<td>Embedded and Realtime Systems</td>
<td>EE3422</td>
<td>15</td>
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<td>Engineering Systems</td>
<td>EE3500</td>
<td>15</td>
<td>C</td>
<td>Y</td>
<td>6</td>
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<tr>
<td>Electric and Magnetic Fields</td>
<td>EE3520</td>
<td>15</td>
<td>C</td>
<td>Y</td>
<td>6</td>
</tr>
<tr>
<td>Avionics and Control Systems Design</td>
<td>EE3436</td>
<td>15</td>
<td>C</td>
<td>Y</td>
<td>6</td>
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<tr>
<td>Electrical and Electronic Power Systems</td>
<td>EE3503</td>
<td>15</td>
<td>C</td>
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<tr>
<td>Engineering Management 3</td>
<td>ET3051</td>
<td>15</td>
<td>C</td>
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TO WHAT KIND OF CAREER MIGHT I GO ON?

The knowledge and the skills you will gain by completing this programme will enable you to gain a range of jobs in a number of industries, including the electrical, telecommunications, avionics, and financial industries. Our graduates have excellent problem-solving, team-working and communication skills which makes them very attractive to modern interdisciplinary engineering companies. Potential careers include: avionics engineer; aerospace electronics engineering; manufacturing engineer; on-wing...
care engineer; avionics systems design engineer; radio frequency engineer; verification engineer; commercialisation manager; sales engineer.

In addition to this, our graduates are well received at major Universities in the United Kingdom and overseas, where they pursue advanced Masters and Doctorate courses in electrical and electronic engineering, control engineering, telecommunications, but also in software engineering and business and management studies.

City University London has excellent reputation for graduate employment. Students receive excellent support for industrial placement and careers throughout their studies and after they graduate. If you would like more information on the Careers support available at City, please go to: http://www.city.ac.uk/careers/for-students-and-recent-graduates.

WHAT STUDY ABROAD OPTIONS ARE AVAILABLE?

Students in this programme will spend their first two years at Nanjing University of Aeronautics and Astronautics.

WHAT PLACEMENT OPPORTUNITIES ARE AVAILABLE?

A valid placement is a period of Employment of at least six months full-time or equivalent in a role related to your course. You will be visited at least twice during the placement period, either by the Industrial Tutor or your Personal Tutor. The first visit should ideally take place within six weeks of the start of the placement and the second visit within six weeks of the end of the placement.

You will be helped by your Personal Tutor to arrange an industrially-linked final-year project with the Employer (where practical). You are required to organize the visits and send your Personal Tutor a summary of your current role within the placement company. You will also be required to submit a brief technical report upon your return to University and give a short presentation to your Personal Tutor and second-year Students. Currently the placement students receive an endorsement on their degree. There is no Academic credit assigned to the placement year.

WILL I GET ANY PROFESSIONAL RECOGNITION?

This is a new Programme (introduced in 2014) and has not been put forward for accreditation yet. The School will use the first available opportunity to put forward this Programme for accreditation to the Institute of Engineering and Technology, which has in the past accredited a number of our programmes.

HOW DO I ENTER THE PROGRAMME?

Students are admitted into the programme by successfully completing the first two years at NUAA, and meeting the English language requirement as specified by agreement between NUAA and City University. Admitted students can enter Programme Stage 2 at City.

Scholarship

A range of scholarships are on offer for overseas students. Scholarships are awarded mostly on academic merit. A range of awards is given to students with best academic