UNIVERSITY OF
SURREY

Engineering: Electronics

Postgraduate study 2014

Wonderful things are
discovered here.

Engineering: Electronics

From revolutionary approaches in spacecraft design and ingenious communications systems to nanostructures with incredible properties and the manipulation of light itself, our research in electronic engineering is at the most exciting edge of technological innovation.

Taught programmes:

- MSc Communications Networks & Software
- MSc European Masters Electronic Engineering
- MSc Medical Imaging
- MSc Microwave Engineering & Wireless Subsystem Design
- MSc Mobile Communications Systems
- MSc Mobile & Satellite Communications
- MSc Multimedia Signal Processing & Communications
- MSc Multimedia Technology & Systems
- MSc Nanotechnology & Nanoelectronic Devices
- MSc Signal Processing & Machine Intelligence
- MSc Space Technology & Planetary Exploration

Specific table notes

1 If your first language is not English, you will need to achieve a minimum IELTS requirement, or an equivalent, which varies by programme. You must achieve both our minimum overall band score and our minimum for each component.

2 This programme is offered subject to successful University validation.

3 This column indicates programmes that are currently either accredited or officially recognised by external organisations. Further information is available on our website.

Key

PT	Part-time
FT	Full-time
Prof. Rec.	Professional recognition
CPD	Continuing professional development
SC	Short courses

	Programme Leader or Director	IELTS min. overall [1]	IELTS min. by component [1]	Prof. Rec. [3]	Programme length	UK/EU fees (2014–15)	Overseas fees (2014–15)	CPD/SC
Engineering: Electronics								
MSc Communication Networks and Software	Michael Howarth	6.5	6.0	✓	FT 12 mths, PT 48 mths	FT £7,055, PT £670 per 15 credits	FT £16,550, PT £1,375 per 15 credits	✓
MSc European Masters Electronic Engineering [2]	Josef Kittler	6.5	6.0	✓	FT 24 mths	FT FT £4,705	FT £12,310	
MSc Medical Imaging	Kevin Wells	6.5	6.0	✓	FT 12 mths, PT 48 mths	FT £7,055, PT £590 per 15 credits	FT £18,460, PT £1,540 per 15 credits	
MSc Microwave Engineering and Wireless Subsystems Design	Tim Brown	6.5	6.0	✓	FT 12 mths, PT 48 mths	FT £7,055, PT £590 per 15 credits	FT £16,550, PT £1,375 per 15 credits	✓
MSc Mobile Communications Systems	Michael Howarth	6.5	6.0	✓	FT 12 mths, PT 48 mths	FT £7,055, PT £670 per 15 credits	FT £16,550, PT £1,375 per 15 credits	✓
MSc Mobile and Satellite Communications	Michael Howarth	6.5	6.0	✓	FT 12 mths, PT 48 mths	FT £7,055, PT £670 per 15 credits	FT £16,550, PT £1,375 per 15 credits	✓
MSc Multimedia Signal Processing and Communications	Josef Kittler	6.5	6.0	✓	FT 12 mths, PT 48 mths	FT £7,055, PT £590 per 15 credits	FT £16,550, PT £1,375 per 15 credits	✓
MSc Multimedia Technology and Systems	Josef Kittler	6.5	6.0	✓	FT 12 mths, PT 48 mths	FT £7,055, PT £670 per 15 credits	FT £16,550, PT £1,375 per 15 credits	✓
MSc Nanotechnology and Nanoelectronic Devices	David Carey	6.5	6.0	✓	FT 12 mths, PT 48 mths	FT £7,055, PT £590 per 15 credits	FT £16,550, PT £1,375 per 15 credits	
MSc Signal Processing and Machine Intelligence	Josef Kittler	6.5	6.0	✓	FT 12 mths, PT 48 mths	FT £7,055, PT £670 per 15 credits	FT £16,550, PT £1,375 per 15 credits	✓
MSc Space Technology and Planetary Exploration	Craig Underwood	6.5	6.0	✓	FT 12 mths, PT 48 mths	FT £7,055, PT £590 per 15 credits	FT £16,550, PT £1,375 per 15 credits	

Taught programmes

MSc Communication Networks and Software

Mobile and satellite communications and internet-based networking are now an essential part of everyday life. Long-term, we expect to see the development of infrastructure-less networks that support wireless handheld devices, bringing us closer to ubiquitous communications.

We are placing ever greater demands on the internet, and traditional telecommunication infrastructures are migrating to internet-based architectures and protocols. Our MSc in Communication Networks and Software covers the key aspects of the changing internet environment, in particular the convergence of computing and communications underpinned by software-based solutions.

Entry requirements

An honours degree in electronic engineering, mathematics, computing or physical sciences. Our minimum entry level is a 2.2 from a UK university, or overseas equivalent. Relevant industrial experience will also be considered.

MSc European Masters Electronic Engineering
(subject to validation)

- Communication Networks & Software
- Medical Imaging
- Microwave Engineering & Wireless Sub-systems Design
- Mobile Communication Systems
- Mobile & Satellite Communications
- Multimedia Signal Processing & Communications
- Multimedia Technology & Systems
- Signal Processing & Machine Intelligence
- Electronic Engineering
- Space Technology & Planetary Exploration
- Nanotechnology & Nanoelectronic Devices

This set of MSc EuroMaster programmes are designed for students with an interest in gaining further qualifications in advanced, cutting-edge techniques and technologies in the selected pathway, with enhanced project, as well as training in transferable skills including business awareness and management.

The advanced taught technical content, which is identical to the corresponding standard one-year MSc programmes, is in sub-disciplines of electronic engineering closely aligned with the internationally-leading research conducted in the four Research Centres of the EE Department. The main distinguishing feature of this two-year programme is the professional training content and the potential of gaining experience of working in industry.

This course complies with the structure defined by the Bologna Agreement. Consequently, it facilitates student exchanges with our partner universities in the Erasmus Mundus Exchange programme.

Entry requirements

An honours degree in mathematics, computing, physical sciences or engineering disciplines is required. Our minimum entry level is a 2.2 from a UK university or overseas equivalent. Relevant industrial experience will also be considered.

MSc Medical Imaging

The term 'medical imaging' may invoke images of brain slices acquired from modern scanners. However, the breadth of this subject is far wider. Applications include the creation of 3D graphical models for facial reconstruction from scan data, the visualisation of complex vascular (blood vessel) structures to assist keyhole surgical procedures, techniques for creating patient-specific 3D modelling of human organ shapes and image-based methods designed to detect various pathologies and disease states in humans.

Medical imaging is a rapidly growing discipline within the healthcare sector, involving clinicians, physicists, computer scientists and those in the IT sector. This is fuelled by the rapid development of 3D medical imaging systems over the last few decades, matched by an exponential rise in computing power. This has allowed the development of new methods for the acquisition, reconstruction, processing and display of digital medical image data with unprecedented speed, resolution and contrast: a trend which can only continue.

The MSc Medical Imaging is aimed at training graduates for careers in this exciting multidisciplinary area and provides a judicious mix of theoretical and applied topics.

Entry requirements

An honours degree in electronic engineering, mathematics, computing or physical sciences. Our minimum entry level is a 2.2 from a UK university, or overseas equivalent. Relevant industrial experience will also be considered.

MSc Microwave Engineering and Wireless Subsystems Design

There is a great shortage of skilled radio frequency (RF) and microwave engineers in industry at the present time and the demand for the implementation of conceptually new wireless systems is growing.

This programme covers a range of modern theories and techniques, accompanied by other modules that consider communication systems allied to your interests. It also includes all ranges of wireless frequencies and sizes of RF and microwave devices, from the lowest frequencies used in radio frequency identification (RFID) systems through to systems used at microwave frequencies that can have applications in satellite communication systems and communication systems demanding high spectrum bandwidth.

Theoretical concepts including radio design and radio systems are established in the lectures, which are complemented by practical implementation in the laboratory sessions. Computer-aided design (CAD) is an essential feature of modern RF and microwave systems, so students are also given hands-on experience of industry-standard software. A wide range of facilities and expertise can be accessed via student projects.

Entry requirements

An honours degree in electronic engineering, mathematics, computing or physical sciences. Our minimum entry level is a 2.2 from a UK university, or overseas equivalent. Relevant industrial experience will also be considered.

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Full programme details
surrey.ac.uk/pgt/commsnetworks

Full programme details
surrey.ac.uk/pgt/eeeurom

Full programme details
surrey.ac.uk/pgt/medicalimaging

Full programme details
surrey.ac.uk/pgt/microwaveeng

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Taught programmes

MSc Mobile Communications Systems

Mobile and satellite communications and internet-based networking are now an essential part of everyday life. Long-term, we expect to see the development of infrastructure-less networks that support wireless handheld devices, bringing us closer to ubiquitous communications.

Mobile telephony is reaching saturation in the most technologically advanced countries and is rapidly becoming the main telecommunication infrastructure in the rest of the world. Our MSc in Mobile Communications Systems gives you a thorough understanding of the engineering aspects of this rapidly developing field as well as newly emerging systems that support broadband mobile internet.

Entry requirements

An honours degree in electronic engineering, mathematics, computing or physical sciences. Our minimum entry level is a 2.2 from a UK university, or overseas equivalent. Relevant industrial experience will also be considered.

MSc Mobile and Satellite Communications

Mobile and satellite communications and internet-based networking are now an essential part of everyday life. Long-term, we expect to see the development of infrastructure-less networks that support wireless handheld devices, bringing us closer to ubiquitous communications.

Mobile communications provide terrestrial coverage in densely populated areas, while satellite communications enable wireless communication in regions where mobile networking is not cost-effective. The MSc in Mobile and Satellite Communications gives you an in-depth understanding of the engineering aspects of these important current and future technologies.

Entry requirements

An honours degree in electronic engineering, mathematics, computing or physical sciences. Our minimum entry level is a 2.2 from a UK university, or overseas equivalent. Relevant industrial experience will also be considered.

MSc Multimedia Signal Processing and Communications

Digital technology and computing have revolutionised the way we access and enjoy information. The delivery of multimedia content relies on many layers of sophisticated signal engineering that can process images, video, speech and audio.

This programme explains the algorithms and intricacies surrounding transmission and delivery of audio and video content. Particular emphasis is given to networking and data compression, in addition to the foundations of pattern recognition.

Entry requirements

An honours degree in electronic engineering, mathematics, computing or physical sciences. Our minimum entry level is a 2.2 from a UK university, or overseas equivalent. Relevant industrial experience will also be considered.

MSc Multimedia Technology and Systems

Digital technology and computing have revolutionised the way we access and enjoy information. The delivery of multimedia content relies on many layers of sophisticated signal engineering that can process images, video, speech and audio.

Core modules include the fundamentals of how to represent speech, audio, image and video information digitally, including processing, coding and compression techniques. An important aspect of the programme is the software architecture of such processes, complemented by options to study communications systems and audiovisual technology in greater detail.

Entry requirements

An honours degree in electronic engineering, mathematics, computing or physical sciences. Our minimum entry level is a 2.2 from a UK university, or overseas equivalent. Relevant industrial experience will also be considered.

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Full programme details
surrey.ac.uk/pgt/mobilecomms

Full programme details
surrey.ac.uk/pgt/mobilesatcomms

Full programme details
surrey.ac.uk/pgt/mspc

Full programme details
surrey.ac.uk/pgt/mts

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Taught programmes

MSc Nanotechnology and Nanoelectronic Devices

Nanotechnology is a term that has captured the public imagination and lies at the heart of the transistor found in every computer, laptop and mobile phone. It is the key to unlocking renewable energy supplies and promises new and lighter materials with added strength.

The aim of this one-year MSc programme is to show how nanotechnology and nanomaterials can be used for our benefit with real-world applications. The programme is designed to provide you with the knowledge, skills and practical experience to understand how nanotechnology can change our lives.

Taught by internationally-recognised experts within the University's Advanced Technology Institute (ATI), the programme has as its broad theme the practical implementation of nanoscience and quantum engineering, nanomaterials and nanotechnology. The programme covers the fundamentals behind nanotechnology and moves on to discuss its implementation using nanomaterials (the advanced tools of nanotechnology which allow us to see at the nanoscale) before discussing future trends and applications.

You will gain specialised, practical skills through an individual research project within our research groups, using state-of-the-art equipment and facilities. Completion of the programme will provide you with unique skills to further your career in this rapidly emerging field.

Entry requirements

An honours degree in electronic engineering or physics. Our minimum entry level is a 2.2 from a good UK university, or overseas equivalent. Material science graduates with a background in advanced materials or those with strong industrial experience will also be considered.

MSc Signal Processing and Machine Intelligence

Digital technology and computing have revolutionised the way we access and enjoy information. The delivery of multimedia content relies on many layers of sophisticated signal engineering that can process images, video, speech and audio.

This programme examines ways in which man-made systems have developed to extract relevant information from digital data streams. Along with a basis of image and audio processing, it provides a grounding in artificial intelligence, with related elements that include voice recognition and neural networks.

Entry requirements

An honours degree in electronic engineering, mathematics, computing or physical sciences. Our minimum entry level is a 2.2 from a UK university, or overseas equivalent. Relevant industrial experience will also be considered.

MSc Space Technology and Planetary Exploration

The University of Surrey is at the forefront of a revolution in space, utilising new advances in technology to decrease the cost of space exploration. It was the pioneer of sophisticated 'micro-satellites' in the 1980s and has gone on to have a sustained programme of building complete satellites, performing mission planning, working with international launch agencies and providing in-orbit operations.

We have a unique concentration of academic staff experienced in the satellite area, as well as developed contacts with all the major satellite manufacturers, operators and service providers. Industry participates in the MSc programme in both lecturing and projects, and facilitates excellent engagement for our students.

Our own spin-out company, Surrey Satellite Technology Ltd, is situated close by on the Surrey Research Park and provides ready access to satellite production and industrial facilities. In addition, we have a strategic relationship with EADS Astrium Europe-wide and several other major communications companies. Graduates from this MSc are to be found in key positions in the satellite industry and continue to be much in demand.

Our Space Technology and Planetary Exploration programme is designed to give you the specialist multidisciplinary knowledge and skills required for a career working with space technology and its applications. Surrey students have access to all aspects of the design and delivery of spacecraft and payloads and are very attractive to companies in the space-related industries.

Entry requirements

An honours degree in electronic engineering, mathematics, computing or physical sciences. Our minimum entry level is a 2.2 from a UK university, or overseas equivalent. Relevant industrial experience will also be considered.

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Full programme details
surrey.ac.uk/pgt/nanotech

Full programme details
surrey.ac.uk/pgt/spmi

Full programme details
surrey.ac.uk/pgt/spacetech

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Fees and financial support

There are a lot of things to consider when deciding to further your study – what subject, full-time or part-time study and how much it will cost. At Surrey, we understand what a big undertaking this is. These pages provide information about postgraduate fees and potential sources of funding and the financial support available for your postgraduate studies.

Payment of fees

Fees are payable for each academic year, or part thereof, or each stage of the programme, where fees are not payable on an annual basis, and are revised (increased) subject to annual review. Fees are payable by students continuing on programmes of study in subsequent years.

The University reserves the right to cancel the registration of a student who has not paid the requisite annual composition fees, or who owes the University any sums of money. In the event of a student failing, for any reason, to complete a programme of study, the University will not be under any obligation to return any part of the fees paid by, or on behalf of, the student.

Certain programmes may need additional expenditure for special equipment, field courses, study periods overseas, and so on. Modest charges are made by some faculties or departments for supplementary materials or services, for example, photocopied handouts. Details of these expenses may be obtained from the appropriate faculty or department.

Classification of students for fees purposes

For some programmes of study, the University charges different fees, depending on a student's status as a 'Home' or 'overseas' student. The classification of students for fees purposes is based on the Education (Fees and Awards) Regulations 2007. Further information on eligibility criteria and general guidance on fees classification is available from the UK Council for International Student Affairs (UKCISA).

In general, in order to qualify as 'Home' for fees purposes, a student must have a relevant connection with the UK, or qualify as an 'excepted candidate' under these regulations, for example, as a national of an EU member state.

If you would like to enquire further about your own classification, please contact:

Admissions Services

T: +44 (0)1483 682222
E: admissions@surrey.ac.uk

Continuing fees for students pursuing taught programmes of study

In general, students on postgraduate taught programmes are not required to pay continuing fees, although extension fees may be payable for certain programmes. In such cases, the faculty will notify students of the arrangements.

Surrey and Santander Country and University Scholarships

With nearly 4,000 international students from over 140 different nationalities studying with us, we are one of the most culturally diverse universities in the country. We are also a member of Santander Universities, a worldwide network of over 800 tertiary education institutions. Santander Universities Global Division generously supports Surrey's international engagement through sponsorship of student and staff mobility, language programmes and entrepreneurship initiatives.

We have recently introduced three new scholarship schemes aimed at further enhancing our cultural diversity:

• Surrey Country Scholarships
• Santander Country Scholarships
• Santander University Scholarships

For full information on eligibility and how to apply, please visit: **surrey.ac.uk/postgraduate/fees**

Discounts for Surrey graduates

If you are a self-funded UK, EU or international student who has studied for an undergraduate degree at the University of Surrey campus in Guildford, you will be eligible for a 10% discount on our taught postgraduate Masters programme fees.

For more information, contact the Student and Fees and Funding office:

feesandfunding@surrey.ac.uk

Indonesia-UK DIKTI Scholarship Scheme

This programme is open for lecturers at Indonesian universities and administrative staff at universities and at the Indonesian Ministry of Education and Culture - Directorate General of Higher Education (DIKTI). The programme will fund up to 750 academics to come and study in the UK over the next five years. All academic subjects are eligible for funding under the DIKTI programme. For more information visit

international.ac.uk/dikti

Tullow Oil Scholarship Scheme

The University of Surrey is delighted to announce it has recently been selected to participate in the Tullow Oil Scholarship Scheme.

If you are a prospective Masters student from one of the following countries, you may be eligible to apply for this scholarship:

• Cote D'Ivoire
• Ethiopia
• French Guinea
• Gabon
• Ghana
• Kenya
• Mauritania
• Uganda

For full details on eligibility and how to apply please v isit

tullowgroupscholarshipscheme.org

Career Development Loans

A Professional and Career Development loan offers financial assistance while you improve your prospects.

Career Development loans are available directly via Barclays Bank and the Co-operative Bank.

Your Application

To apply for a programme, you'll need to complete and submit our online application form, which you can access via the specific programme profile pages on our website: surrey.ac.uk

How to apply

Prior to making your application you should refer to the specific programme profile page on the website for a list of the mandatory documents that you will be required to provide as part of your application.

While there is no formal application or deadline for the majority of our programmes, it's best to apply as early as possible to avoid disappointment. Where a programme does have an application deadline, the date is detailed on the specific programme profile page on the website.

Shortly after submitting your application, you will be emailed details of how to access the applicant portal where you will be able to track the status and outcome of your application.

Admissions policy and selection

The University of Surrey offers a high-quality learning environment which supports you in achieving your full potential in your academic discipline and prepares you for your career and lifelong learning. It is University policy that all applicants are considered primarily on merit and their academic potential. We welcome applications from people who, in addition to any formal qualifications, can demonstrate:

• Intellectual ability (sufficient to profit from the vigorous demands of a degree programme)
• Suitability for their chosen programme of study
• Motivation to study
• Interest in their chosen subject

To be considered for an offer, you will usually be expected to have achieved, or be predicted to achieve, our minimum entry requirements or above. However, we are unable to guarantee that meeting the grades stated in our entry requirements will be enough to enable us to make you an offer. All aspects of your application will be taken into account when deciding to make an offer to you.

Admission to the University is subject to your acceptance and observance of the University's rules and regulations. Our full Admissions Policy, including information on the Contract of Admission and complaints procedure, can be found on our website:

surrey.ac.uk/admissionspolicy

International applicants

English language requirements

To benefit fully from a postgraduate programme, you will need a good standard of English and will have to provide evidence of your ability. The minimum standard required is shown below, which applies to the majority of programmes. Where a higher level is required, this will be detailed within the taught programmes table at the beginning of this brochure.

The following qualifications are accepted by the University as evidence that you meet our minimum level of competence in English:

• Cambridge Certificate in Advanced English (grade B)
• Cambridge Certificate of Proficiency in English (grade C)
• International English Language Testing System (IELTS) (band 6.5 overall, with a minimum of 6.0 in each of the four components); the test must have been taken no earlier than two years before the start of your programme
• Test of English as a Foreign Language (TOEFL) with 92 overall in the internet-based test, with 22 or higher in each component (23 or higher in the speaking test); the test must have been taken no earlier than two years before the start of your programme

The University of Surrey has an IELTS test centre on campus. If you have IELTS at 0.5 below the required level for your programme and at no lower than 0.5 below the level in any single component, you will meet our English requirements upon subsequent successful completion of the University of Surrey's ten-week pre-sessional English programme, PS10, without the need to take another IELTS test.

surrey.ac.uk/englishlanguage

Visa applications

If you require a student visa, you need to apply through Tier 4 of the Points-based Immigration System. Full information about this new system can be found at:

ukba.homeoffice.gov.uk

ATAS

There is an extra permission that you may need to get when you are a postgraduate student researching or studying some science and engineering subjects, if you are a national of a country that is not part of the EU/EEA. This is called the Academic Technology Approval Scheme (ATAS).

You must get your ATAS certification before we can issue your Confirmation of Acceptance for Studies (CAS), which you will need to apply for your Tier 4 general student visa. Most PhD subjects in science and engineering need ATAS certification. At the time of publication, 14 Masters-level programmes at the University of Surrey require ATAS.

fco.gov.uk

Disabled and dyslexic students

It is University policy that all applicants are considered primarily on merit and their academic potential. However, it is essential for the University to know the nature of any impairments in advance, so that we may advise on what facilities and arrangements are available to you.

If you have a disability, dyslexia or medical condition which may affect your ability to study your chosen programme, please let us know on your application form.

Accommodation

When choosing a university, the choice, quality, location and cost of accommodation on offer will be important factors in your final decision. At Surrey, we offer a variety of good quality accommodation, with a choice of several price bands.

Our accommodation is arranged in groups of self-catered housing called Courts of Residence, and has been designed to meet your needs and provide you with a living space to make your own.

Guaranteed accommodation in your first year

As a new postgraduate student, you will be guaranteed a place in University accommodation. Living in the Courts of Residence is a great way to meet new people and find your feet. Our students find it easy to settle in when they first move to Surrey. You can be reassured that we do everything we can to make you feel at home.

You can access the University easily from all our Courts of Residence, whether on foot or by bus. Reflecting all the benefits of the Courts of Residence on the Stag Hill campus, our accommodation at nearby Manor Park is situated in an area of great natural beauty. Designed as a car-free student village, with a subsidised bus service, Manor Park is home to a first-class learning and living environment. In addition, Hazel Farm, on the edge of Guildford, provides an affordable option, with the added benefit of a free bus pass valid throughout the town.

The second year and beyond

In the second year and beyond, students normally find their own place to live in the Guildford area, and help and support can be provided by our experienced Accommodation Services staff. Private sector houses and rooms are readily available in Guildford and range in price from £75 to £99 per week. The University also manages property in the town which is let to students.

Continuing students can apply for University accommodation but are not guaranteed a room. The numbers housed vary from year to year, depending on current allocation policy and demand for places.

Our Accommodation Services staff will help you to find the right place to live, on or off campus, at an affordable rent, throughout your time at Surrey.

Our Courts of Residence offer five rent bands, so you will be able to find accommodation that suits your budget. As a guide, 2013–14 rents range from £65 to £148 per week, with typical standard rooms costing £98 and en suite £121.50 per week. The actual prices for 2014–15 rents will be confirmed in spring 2014.

Our rents are inclusive of utilities, broadband and insurance, so there is nothing extra to pay. To make life easy, rent can be paid once a term.

Accommodation for couples and families

If you plan to bring your family, we have some family accommodation available on the Stag Hill campus, at Hazel Farm and Manor Park. We regret that we cannot guarantee the availability of family accommodation.

Accommodation for students with disabilities

Specially adapted rooms are available for students with physical impairments, on campus and at Manor Park. Please contact Additional Learning Support to discuss your needs.

Accommodation facts

- About two thirds of our accommodation is on the Stag Hill campus and more than 50 per cent of rooms have en suite shower and toilet facilities
- Manor Park is less than a mile away. It has over 1,500 en suite rooms and easy access to Surrey Sports Park
- Students share a kitchen-dining room
- Access to free broadband
- Communal areas with TV room and mail racks
- Belongings insurance is included in the cost

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THE QUEEN'S
ANNIVERSARY PRIZES
FOR HIGHER AND FURTHER EDUCATION

2011