

## Computer Vision Engineering

### Programme Outline

Of the 180 credits, 135 are from core modules and 45 are from choice modules consisting of various application areas and alternative software tools. The organisation of the programme is listed in the following table.

Code	Title	Credits	Semester	Assessment
COM6509	Machine Learning	15	1	Exam + Coursework
EEE6218	Visual Information Processing	15	1+2	Exam + Coursework
EEE6219	Computer Vision	15	1+2	Exam + Coursework
EEE6085	Selected Topics in Computer Vision Engineering	15	1+2	Continuous
EEE6225	Systems Design	15	1+2	Continuous
EEE6602	MSc Individual Project	60	2+Summer	Dissertation/Oral

One of the following

Code	Title	Credits	Semester	Assessment
EEE6207	Advanced Computer Systems	15	1+2	Exam + Coursework
EEE6208	Advanced Integrated Electronics	15	1+2	Exam + Coursework
EEE6209	Advanced Signal Processing	15	1+2	Exam + Coursework
EEE6221	Data Coding Techniques for Communications and Storage	15	1+2	Exam

One of the following

Code	Title	Credits	Semester	Assessment
COM6503	3D Computer Graphics	15	1	Exam + Coursework
COM6516	Object Oriented Programming and Software Design	15	1	Exam + Coursework

Thirty credits from the following

Code	Title	Credits	Semester	Assessment
COM6471	Foundations of Object Oriented Programming	15	1	Exam + Coursework
INF6060	Information Retrieval: Search Engines and Digital Libraries	15	1	Continuous
MAT6750	Bio-Photonics and Bio-Imaging	15	2	Exam + Coursework
PSY6310	Brain Imaging	15	1	Exam + Coursework

## Data Communications

### Programme Outline

The course comprises compulsory core modules worth 75 credits and choice modules from which each student is required to select 45 credits. Each student will be allocated an individual project, worth 60 credits, which will run from February until the end of August.

Code	Title	Credits	Semester	Assessment
COM6063	Network and Inter-Network Architectures	15	1	Exam + Coursework
COM6515	Network Performance Analysis	15	2	Exam
EEE6221	Data Coding Techniques for Communications and Storage	15	1+2	Exam
EEE6222	Advanced Communication Principles	15	1+2	Exam
EEE6224	Mobile Networks and Physical Layer Protocols	15	1+2	Exam

units to the value of *fifteen* credits from the following

Code	Title	Credits	Semester	Assessment
COM6471	Foundations of Object-Oriented Programming	15	1	Exam + Coursework
COM6516	Object-Oriented Programming and Software Design	15	1	Exam + Coursework

units to the value of *thirty* credits from the following

Code	Title	Credits	Semester	Assessment
COM6501	Computer Security and Forensics	15	2	Exam + Coursework
COM6503	3D Computer Graphics	15	1	Exam + Coursework
COM6510	Software Development for Mobile Devices	15	1	Continuous
COM6514	JAVA E-Commerce	15	2	Continuous

EEE6085	Selected Topics in Computer Vision Engineering	15	1+2	Continuous
EEE6209	Advanced Signal Processing	15	1+2	Exam + Coursework
EEE6223	Antennas, Propagation and Satellite Systems	15	1+2	Exam
EEE6217	Optical Communication Devices and Systems	15	1+2	Exam
EEE6218	Visual Information Processing	15	1+2	Exam + Coursework
EEE6219	Computer Vision	15	1+2	Exam + Coursework
EEE6431	Broadband Wireless Techniques	15	1+2	Exam + Coursework
EEE6432	Wireless Packet Data Networks and Protocols	15	1+2	Exam + Coursework
EEE6225	Systems Design	15	1+2	Continuous

One of the following

Code	Title	Credits	Semester	Assessment
COM6915	MSc Data Communications Project	60	2+Summer	Dissertation/Oral
EEE6600	MSc Data Communications Project	60	2+Summer	Dissertation/Oral

## Project Outline

Project allocation is carried out in Semester 1 and the project is carried out beginning with investigative work from January onwards with the project work continuing through the summer from the end of Semester 2 to the end of August, when you will be able to work full time on your chosen topic.

This module is assessed by an interim report discussing the work done and your project plans at the end of Semester 2. At the end of the project you will submit a dissertation and have an oral examination during a poster session.

## Assessment

The MSc degree is split into eight 15 credit units, called modules, and a project, which is worth 60 credits. For the award of a degree you should pass the modules and project, (a total of 180 credits) although discretion can and is applied if students are sufficiently close to this standard.

The modules are assessed by a variety of means, including formal examinations, and coursework/reports. The formal exams are held at the end of semester 2 for those modules running across semesters 1+2 whilst subjects running across one semester are examined at the end of the semester in which they occur. Coursework deadlines are given out during a course by the member of staff concerned.

Each module is marked in terms of a percentage and these are averaged to give your weighted score, which can determine if you are eligible for a distinction for example.

## The Departments

### The Department of Electronic and Electrical Engineering

The Department of Electronic and Electrical Engineering has an international reputation. Combined with a 93% overall satisfaction rating from its students in the 2014 National Student Survey, the last RAE (2008) results confirm a position as one of the leading EEE departments in the UK. The research of over 92% of its academic staff was submitted to the recent Research Assessment Exercise (RAE 2008), the results of which were published on 18 December 2008. 60% of the Department's research activity was classed as either world-leading or

internationally excellent, and nearly all (95%) was classed as being internationally recognised and higher.

The Department's research interests are diverse, but broadly split into three main areas: Semiconductor Devices and Materials, Communications and Electrical Machines and Drives. Two of these areas have direct relevance to Data Communications. The semiconductor group have interests in a variety of devices, including compact lasers and high speed transistors which are key technologies at the heart of modern communication systems. The communications group have interests in antenna design, signal processing and coding and mobile communications technologies.

The Department has excellent facilities for students. All students will also be able to make use of the Student Workroom facilities. For project work there are microelectronics laboratories, clean room facilities, anechoic chambers for measurements on antennas, as well as a large number of networked computers with the latest software packages available.

## Electronic and Electrical Engineering Course Structure

### Programme Outline

This programme is designed to give students a solid understanding of an area of Electronic and Electrical Engineering of their choice.

Of the 180 credits, students are required to take 60 compulsory credits (a project) and 120 elective credits, choosing modules from the full range that we offer.

Code	Title	Credits	Semester	Assessment
EEE6602	MSc Individual Project	60	2+Summer	Continuous

units to the value of *one hundred and twenty* credits from the following

Code	Title	Credits	Semester	Assessment
EEE6085	Selected Topics in Computer Vision Engineering	15	1+2	Continuous
EEE6200	AC Machines	15	1+2	Exam
EEE6201	Advanced Control of Electric Drives	15	1+2	Exam
EEE6202	Energy Storage Management	15	1+2	Exam
EEE6203	Motion Control and Servo Drive Systems	15	1+2	Exam
EEE6204	Permanent Magnet Machines and Actuators	15	1+2	Exam
EEE6205	Power Electronics Converters	15	1+2	Exam
EEE6206	Power Semiconductor Devices	15	1+2	Exam + Coursework
EEE6207	Advanced Computer Systems	15	1+2	Exam + Coursework
EEE6208	Advanced Integrated Electronics	15	1+2	Exam + Coursework
EEE6209	Advanced Signal Processing	15	1+2	Exam + Coursework
EEE6212	Semiconductor Materials	15	1+2	Exam + Coursework
EEE6213	Principles of Semiconductor Device Technology	15	1+2	Exam + Coursework
EEE6214	Packaging and Reliability of Microsystems	15	1+2	Exam + Coursework
EEE6215	Nanoscale Electronic Devices	15	1+2	Exam + Coursework
EEE6216	Energy Efficient Semiconductor Devices	15	1+2	Exam + Coursework
EEE6217	Optical Communication Devices and Systems	15	1+2	Exam
EEE6218	Visual Information Processing	15	1+2	Exam + Coursework
EEE6219	Computer Vision	15	1+2	Exam + Coursework
EEE6220	Electronic Communication Technologies	15	1+2	Coursework
EEE6221	Data Coding Techniques for Communications and Storage	15	1+2	Exam
EEE6222	Advanced Communication Principles	15	1+2	Exam
EEE6223	Antennas, Propagation and Satellite Systems	15	1+2	Exam

EEE6224	Mobile Networks and Physical Layer Protocols	15	1+2	Exam
EEE6225	Systems Design	15	1+2	Continuous
EEE6431	Broadband Wireless Techniques	15	1+2	Exam + Coursework
EEE6432	Wireless Packet Data Networks and Protocols	15	1+2	Exam + Coursework

You may not be able to make an arbitrary choice of these modules due to the timetabling constraints and the need to meet the IET's outcomes (required for accreditation).

## Semiconductor Photonics and Electronics

### Programme Outline

This 12 month, full-time Masters course is broken down into a number of 15/30 credit taught modules, listed below. All taught modules are compulsory and are taken over two semesters followed by a research project that begins in Semester 2 and continues over the summer months. Modules are taught by leading professors, established academics and high-calibre researchers in the field from the Electronic and Electrical Engineering Department.

Code	Title	Credits	Semester	Assessment
EEE6212	Semiconductor Materials	15	1+2	Exam + Coursework
EEE6213	Principles of Semiconductor Device Technology	15	1+2	Exam + Coursework
EEE6214	Packaging and Reliability of Microsystems	15	1+2	Exam + Coursework
EEE6215	Nanoscale Electronic Devices	15	1+2	Exam + Coursework
EEE6216	Energy Efficient Semiconductor Devices	15	1+2	Exam + Coursework
EEE6217	Optical Communication Devices and Systems	15	1+2	Exam
EEE6395	Compound Semiconductor Device Manufacture	30	1+2	Continuous
EEE6602	MSc Individual Project	60	2+Spring	Dissertation/Oral

### Assessment

The MSc degree is split into a number of modules, and a project, which is worth 60 credits. For the award of a degree you should pass the modules and project, (a total of 180 credits) although discretion can and is applied if students are sufficiently close to this standard.

The modules are assessed by a variety of means, including formal examinations, and coursework/reports. The formal exams are held at the end of Semester 2 (typically in January and June). Coursework deadlines are given out during course by the member of staff concerned.

Each module is marked in terms of a percentage and these are averaged to give your weighted score, which can determine if you are eligible for a distinction for example.

Details of how each module is assessed can be found on the course content page.

## Avionic Systems

### Programme Outline

Modern avionics has been a catalyst to the significant growth in aviation, by facilitating safe and efficient high volume air transport. Advancements in modern Avionics have principally been the result of the significant developments in Electronic, Electrical, Control and Software engineering. Furthermore, the acceptance, by the aerospace industry, of the more-electric aircraft as more

efficient and cost-effective alternative, will undoubtedly boost the impact of avionics on aviation.

The department of Electronic and Electrical Engineering at the University of Sheffield undertakes internationally leading research, as evidenced by the last RAE (2008) results confirming a position as one of the leading EEE departments in the UK, and aerospace research represents a significant proportion of its research activities. The modules in the programme are delivered by expert academic staff, who are active at the forefront of aerospace related research in many aspects of avionics systems.

The programme is designed to enable students to develop depth of knowledge and skills in various aspects of Avionic systems:

Code	Title	Credits	Semester	Assessment
ACS335	Real Time Embedded Systems	10	1	Exam + Coursework
ACS410	Flight Dynamics and Control	10	2	Exam
ACS424	Multi-Sensor Data Fusion	10	2	Exam
COM6506	Testing and Verification in Safety-Critical Systems	15	1	Exam + Coursework
EEE6220	Electronic Communication Technologies	15	1+2	Continuous
EEE6223	Antennas, Propagation and Satellite Systems	15	1+2	Exam
EEE6210	Aerospace Actuation	15	1+2	Exam
EEE6205	Power Electronics Converters	15	1+2	Exam
EEE6211	Avionic Technologies	15	1+2	Exam + Coursework
EEE6602	MSc Individual Project	60	2+Summer	Dissertation/Oral

## Wireless Communication Systems

### Programme Outline

The programme structure is modular and runs full time for 12 months. Students study 120 credits during the first and second semesters and, over the summer, prepare a dissertation worth a further 60 credits. The project dissertation is normally submitted in late August/early September with its examination in mid-September. The MSc degree is awarded upon accumulation of 180 credits.

The course is designed for students with an Electronic Engineering or a related Bachelors degree background. Of the 180 credits, 150 are from core modules and 30 are from choice modules. The organisation of the programme is listed in the following table.

Code	Title	Credits	Semester	Assessment
EEE6209	Advanced Signal Processing	15	1+2	Exam + Coursework
EEE6222	Advanced Communication Principles	15	1+2	Exam
EEE6223	Antennas, Propagation and Satellite Systems	15	1+2	Exam
EEE6224	Mobile Networks and Physical Layer Protocols	15	1+2	Exam
EEE6431	Broadband Wireless Techniques	15	1+2	Exam + Coursework
EEE6432	Wireless Packet Data Networks and Protocols	15	1+2	Exam + Coursework
EEE6602	MSc Individual Project	60	2+Summer	Dissertation/Oral

units to the value of *thirty* credits from the following

Code	Title	Credits	Semester	Assessment
EEE6085	Selected Topics in Computer Vision Engineering	15	1+2	Continuous
EEE6207	Advanced Computer Systems	15	1+2	Exam + Coursework
EEE6208	Advanced Integrated Electronics		1+2	Exam + Coursework
EEE6217	Optical Communication Devices and Systems	15	1+2	Exam
EEE6218	Visual Information Processing	15	1+2	Exam + Coursework

EEE6219	Computer Vision	15	1+2	Exam + Coursework
EEE6220	Electronic Communication Technologies	15	1+2	Coursework
EEE6221	Data Coding Techniques for Communications and Storage	15	1+2	Exam
EEE6225	Systems Design	15	1+2	Continuous

## AMPERE

### Programme Outline

The course consists of 150 credits of core material (including a project) and 30 credits of choice from a range of other 15 credit modules offered by the department.

Code	Title	Credits	Semester	Assessment
EEE6200	AC Machines	15	1+2	Exam
EEE6201	Advanced Control of Electric Drives	15	1+2	Exam
EEE6202	Energy Storage Management	15	1+2	Exam
EEE6203	Motion Control and Servo Drives	15	1+2	Exam
EEE6204	Permanent Magnet Machines and Actuators	15	1+2	Exam
EEE6205	Power Electronics Converters	15	1+2	Exam
EEE6602	MSc Individual Project	60	2+Summer	Continuous

units to the value of *thirty* credits from the following

Code	Title	Credits	Semester	Assessment
EEE6206	Power Semiconductor Devices	15	1+2	Exam + Coursework
EEE6207	Advanced Computer Systems	15	1+2	Exam + Coursework
EEE6208	Advanced Integrated Electronics	15	1+2	Exam + Coursework
EEE6209	Advanced Signal Processing	15	1+2	Exam + Coursework
EEE6214	Packaging and Reliability of Microsystems	15	1+2	Exam + Coursework
EEE6220	Electronic Communication Technologies	15	1+2	Coursework
EEE6221	Data Coding Techniques for Communications and Storage	15	1+2	Exam
EEE6225	Systems Design	15	1+2	Continuous