

# Electrical Transportation Systems and Infrastructure Masters/MSc/PG Diploma/PG Certificate

## Electrical Transportation Systems and Infrastructure Masters/MSc/PG Diploma/PG Certificate

This Masters programme will develop your knowledge and skills in practical electrical engineering aspects of transportation systems, with a particular focus on automotive and rail vehicles, and on power system infrastructure. Graduates of this programme will have a clear understanding of what is needed to design, build and operate these electrical transport systems and will be in demand by organisations world-wide in vehicle design, development and manufacture, and in the infrastructure to support electric transportation systems.

The course will be provided jointly by the University of Birmingham and the University of Nottingham, bring together expertise from both institutions and enabling students to access excellence from two research-intensive universities. Students will choose whether to base their studies from Birmingham or Nottingham: this choice will then inform the supervision of the research project which takes place during the summer period. The Autumn term will be taught at Birmingham and the Spring term, in Nottingham; the timetable will give the flexibility needed for part-time learning or for single modules to be studied as Continuing Professional Development.

**[Study here and find out why the University of Birmingham has been awarded The Times and The Sunday Times University of the Year 2013-14 \(http://www.birmingham.ac.uk/news/latest/2013/09/20-sep-Birmingham-announced-as-University-of-the-Year.aspx\)](http://www.birmingham.ac.uk/news/latest/2013/09/20-sep-Birmingham-announced-as-University-of-the-Year.aspx)**

### Course fact file

**Type of Course:** Continuing professional development, taught

**Study Options:** Full time, part time

**Duration:** 1 year full-time; 2-3 years part-time.

**Start date:** September/October

### Related courses

**[Postgraduate degree courses - Electronic, Electrical and Computer Engineering \(/schools/eece/postgraduate/index.aspx\)](/schools/eece/postgraduate/index.aspx)**

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**[School of Electronic, Electrical and Computer Engineering \(/schools/eece/index.aspx\)](/schools/eece/index.aspx)**

### Details

This is a unique, dual-site course, developed and delivered under the Midlands Energy Graduate School and the research-led Midlands Energy Consortium. Students will benefit from electrical engineering expertise from two leading UK universities, studying Semester 1 modules at the University of Birmingham and Semester 2 modules at the University of Nottingham, which allows for flexibility for part-time study.

Study will be undertaken on the electrical engineering of transportation, various transport systems and technologies, the study of motion, power systems and energy storage systems. Research projects may be taken at the student's registered university or, where possible, in industry.

For students taking the PG Certificate, this will comprise the Birmingham modules.

### Related links

- **[Postgraduate degree courses - Electronic, Electrical and Computer Engineering \(/schools/eece/postgraduate/index.aspx\)](/schools/eece/postgraduate/index.aspx)**
- **[Postgraduate degree courses FAQ \(/schools/eece/postgraduate/faq.aspx\)](/schools/eece/postgraduate/faq.aspx)**
- **[Midlands Energy Graduate School \(http://www.megs.ac.uk\)](http://www.megs.ac.uk)**
- **[University of Nottingham Department of Electrical & Electronic Engineering \(http://www.nottingham.ac.uk/engineering/departments/eee/index.aspx\)](http://www.nottingham.ac.uk/engineering/departments/eee/index.aspx)**

### Why study this course

This programme aims to meet the demand for skilled multi-disciplinary electrical engineers for the transport systems and infrastructure industry. Innovations in adapting electric technology have led to wide-reaching applications of electric vehicles and infrastructure, across rail, automotive, aerospace, and marine applications. As a result, there is a demand for engineers with the practical skills to implement and integrate these applications.

Students will gain an appreciation of the underlying fundamental science which govern electrical transport applications, upon which they will go on to build knowledge and understanding of specific applications and technologies. Graduates are expected to take up employment within one of these sectors, or to go onto higher research degrees.

## Modules

This is a comprehensive programme, made up of 11 taught modules worth 120 credits, as follows, followed by a 60-credit research project.

Module title Detail

- **Maths, Physics and Electrical Principles (10 credits)**  
Studied at Birmingham, comprises study towards MSc, PG Diploma and PG Certificate
- **Study Skills (10 credits)**  
Studied at Birmingham, comprises study towards MSc, PG Diploma and PG Certificate
- **Kinematics of Transportation (20 credits)**  
Studied at Birmingham, comprises study towards MSc, PG Diploma and PG Certificate
- **Railway Traction Systems (10 credits)**  
Studied at Birmingham, comprises study towards MSc, PG Diploma and PG Certificate
- **Energy Conversion Systems (10 credits)**  
Studied at Birmingham, comprises study towards MSc, PG Diploma and PG Certificate
- **Advanced Power Conversion (10 credits)**  
Studied at Nottingham, comprises study towards MSc and PG Diploma
- **Advanced AC Drives (15 credits)**  
Studied at Nottingham, comprises study towards MSc and PG Diploma
- **Power Systems for Aerospace (15 credits)**  
Studied at Nottingham, comprises study towards MSc and PG Diploma
- **Technologies for the Hydrogen Transport Economy (10 credits)**  
Studied at Nottingham, comprises study towards MSc and PG Diploma
- **Advanced Electrical Machines (10 credits)**  
Studied at Nottingham, comprises study towards MSc and PG Diploma
- Major Research Project (60 credits)  
Studied at Birmingham OR Nottingham, according to university of registration

The research project is taken at the university at which the student is registered and cannot be changed. It is important, therefore to consider the research topic likely to be studied.

- Typical projects at Birmingham include: Railway Power Systems, Railway Traction Systems, Grid Connected Charging Systems, Hydrogen Hybrid Systems
- Typical projects at Nottingham include: Marine Electrical Propulsion, Aircraft Power Systems, Advanced Electric Drives for Propulsion

Please enquire to discuss your research interests if you are unsure.

## Fees and funding

**Tuition fees for 2014/2015 are as follows:**

Programme	UK/EU	International
MSc	£6,010	£17,500
PG Diploma	£4,007	£11,667
MSc	£6,010	£17,500
PG Certificate	£2,003	£5,833

### Part-time programmes

Part-time programmes: most part-time study is taken over two years and fees are one half of the published full-time programme fees. Part-time study is not available for international students.

**Non-standard fees apply:** fees are standardised between the Universities of Birmingham and Nottingham.

### Further funding information

- fees and funding
- fees and funding
- **[Fees for international students \(/International/students/finance/fees.aspx\)](#)** .

### Scholarships and studentships

Scholarships may be available. International students can often gain funding through overseas research scholarships, Commonwealth scholarships or their home government.

For further information contact the School directly or email [financialsupport@bham.ac.uk](mailto:financialsupport@bham.ac.uk) (<mailto:financialsupport@bham.ac.uk>)

## Entry requirements

Applicants will be expected to hold (or be expecting to attain) a first degree with at least a good second class honours, or an equivalent qualification in an electrical engineering discipline. Evidence of relevant personal, professional and educational experience may also be taken into account.

Learn more about [entry requirements \(/postgraduate/requirements-pgt/index.aspx\)](#).

## International students

We accept a range of qualifications from different countries – learn more about [international student entry requirements \(/postgraduate/requirements-pg/international/index.aspx\)](#). Standard English language requirements apply.

## How to apply

Learn more about [applying \(/postgraduate/courses/apply-pg/index.aspx\)](#)

When clicking on the Apply Now button you will be directed to an application specifically designed for the programme you wish to apply for where you will create an account with the University application system and submit your application and supporting documents online. Further information regarding how to apply online can be found on the [How to apply pages \(http://www.birmingham.ac.uk/students/courses/postgraduate/apply-pg/index.aspx\)](#)

[Apply now \(https://pga.bham.ac.uk/lpages/EPS096.htm\)](https://pga.bham.ac.uk/lpages/EPS096.htm)

## Related links

[Postgraduate degree courses - Electronic, Electrical and Computer Engineering \(/schools/eece/postgraduate/index.aspx\)](#)

[Postgraduate degree courses FAQ - Electronic, Electrical and Computer Engineering \(/schools/eece/postgraduate/faq.aspx\)](#)

[Electronic, Electrical and Computer Engineering MSc and MRes brochure \(PDF 3.7MB\) \(/Documents/college-eps/eece/brochures/eece-msc-mres-brochure.pdf\)](#)

[electrical-transportation-systems-infrastructure \(/Documents/college-eps/eece/brochures/electrical-transportation-systems-infrastructure.pdf\)](#)

## Learning and teaching

This programme provides a solid basis for a career in electrical engineering in the transportation industry. Comprising lectures, seminars, tutorials, workshops, coursework and group project work, it addresses the management of technical (engineering) activities, the development of personal, interpersonal and project management skills, and provides a fundamental understanding of relevant electrical engineering technology and its applications in the transport industry.

Modules taught at Birmingham are delivered in week-long blocks; those from Nottingham will take place on specific days/times throughout the term, facilitating part-time study.

## Related staff

[Dr Stuart Hillmansen \(/staff/profiles/eece/hillmansen-stuart.aspx\)](#)

## Employability

Graduates of this programme will have a clear understanding of what is needed to design, build and operate electrical transport systems. As a result they will be in demand, world-wide, by transport system operators, equipment manufacturers and transportation engineers.

This programme also provides an entry route to progress to PhD study upon successful completion (minimum grades apply).

## University Careers Network

Preparation for your career should be one of the first things you think about as you start university. Whether you have a clear idea of where your future aspirations lie or want to consider the broad range of opportunities available once you have a Birmingham degree, our Careers Network can help you achieve your goal.

Our unique careers guidance service is tailored to your academic subject area, offering a specialised team (in each of the five academic colleges) who can give you expert advice. Our team source exclusive work experience opportunities to help you stand out amongst the competition, with mentoring, global internships and placements available to you. Once you have a career in your sights, one-to-one support with CVs and job applications will help give you the edge.

If you make the most of the [wide range of services \(https://intranet.birmingham.ac.uk/as/employability/careers/college/eps/index.aspx\)](#) you will be able to develop your career from the moment you arrive.

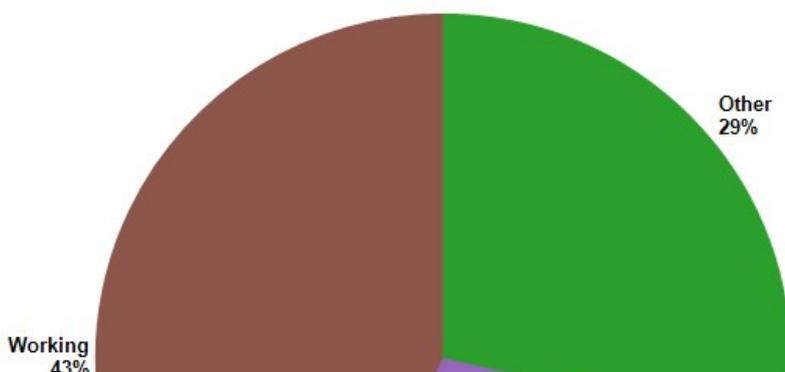
## Destinations of Leavers from Higher Education (DLHE) 2011/12 (postgraduate taught graduates)

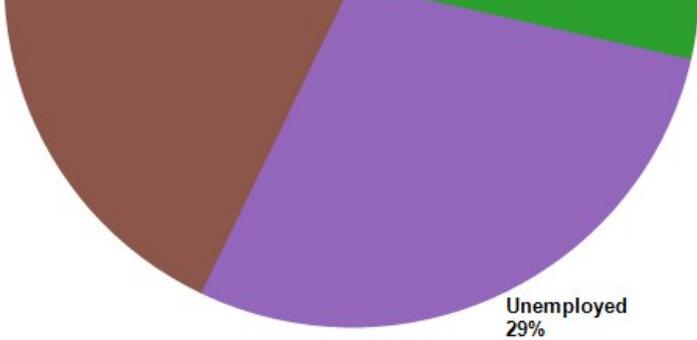
The DLHE survey is conducted 6 months after graduation.

### Examples of employers

- Aero Engine Controls
- Jaguar Land Rover
- Ministry of Defence
- Price Waterhouse Coopers
- Ernst and Young
- Arup
- Glaxo SmithKline
- NHS
- Talk Talk
- Autologic

### Examples of occupations





- Electronic Engineer
- Applications Engineer
- Communications (Electronic) Engineer - Officer
- Optimisation Consultant
- Manufacturing Engineer
- Junior Business Analyst
- Test Engineer
- Service Specialist
- IT Analyst
- Development Engineer

**Further study - examples of courses**

- MSc Project Management

- MSc Radio Frequency and Microwave Engineering
- MSc Electronic and Computer Engineering
- MSc Physics and Technology
- Postgraduate Certificate in Education - teaching
- AAT accountancy

Visit the **Careers section of the University website** (<https://intranet.birmingham.ac.uk/as/employability/careers/college/eps.aspx>) for further information.

**Professional accreditation**

This programme is new in 2014 and accreditation will be sought via the Institution of Engineering and Technology and the Energy Institute.