Efficient Fossil Energy Technologies Masters/MSc

Postgraduate degree course in Efficient Fossil Energy Technologies Masters/MSc

The University of Birmingham, as a partner in The Midlands Energy Graduate School (MEGS), has launched a new taught Masters in Efficient Fossil Energy Technologies.

Consisting of core and optional modules, delivered by experts from the universities of Nottingham, Birmingham and Loughborough, this MSc will encourage and embed excellence in fossil energy technologies, carbon capture and efficient combustion. It will prepare future leaders and industrial engineers with knowledge and skills to tackle the major national and international challenges of implementing new fossil-based power plant and processes more efficiently, with near zero emissions and CO2 capture.

This course provides expert teaching from three leading universities in the UK a unique partnership to allow students to benefit from a wide range of expertise. Modules studied represent the academic specialism offered by each university and the research project, taken at the university where you register, will focus on specific aspects of fossil energy technologies: Birmingham specialises in managing chemical reactions, plant design and carbon capture technologies; Loughborough in materials technologies for power generation and high-temperature applications; and Nottingham will focus on combustion technologies, power generation, environmental control and carbon capture. **It is therefore important to select your choice of university carefully**. Full details of these options and specialisms are in the Modules section of the **Course Details tab (#CourseDetailsTab)** and all enquiries are welcome.

Chemical Engineering is dynamic and evolving. It provides many solutions to problems facing industries in the pharmaceutical, biotechnological, oil, energy and food and drink sectors. It is vital to many issues affecting our quality of life; such as better and more economical processes to reduce the environmental burden, and more delicious and longer lasting food due to the right combination of chemistry, ingredients and processing.

Birmingham is a friendly, self-confident, School which has one of the largest concentrations of chemical engineering expertise in the UK. The School is consistently in the top five chemical engineering schools for research in the country.

It has a first-class reputation in learning, teaching and research, and is highly placed in both ***The Guardian*** and ***The Times*** league tables. The School was recently awarded the **Queen's Anniversary Prize for Higher Education.**

THE QUEEN'S ANNIVERSARY PRIZES
FOR HIGHER AND FURTHER EDUCATION
2011

Course fact file

Type of Course: Taught

Study Options: Full time, part time

Duration: 1 year full-time, 2–3 years part-time

Start date: September

Contact

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School of Chemical Engineering (/schools/chemical-engineering/index.aspx)

Details

This programme will encourage and embed excellence in fossil energy technologies, carbon capture and efficient combustion. It includes modules on power generation and

technologies, industrial case studies, economics of energy and innovation and allows students to assimilate the contextual issues surrounding fossil-based energy alongside technical aspects. Coupled with the major research project, this core will thus promote enquiry-based learning which will be supplemented by a range of optional technical and contextual/managerial modules.
This course provides expert teaching from three leading universities in the UK a unique partnership to allow students to benefit from a wide range of expertise.

Related links

- **Postgraduate degree courses - School of Chemical Engineering (/schools/chemical-engineering/postgraduate/index.aspx)**
- **Taught postgraduate programmes - School of Chemical Engineering (/schools/chemical-engineering/postgraduate/taught-programmes.aspx)**
- **Midlands Energy Graduate School (http://www.megs.ac.uk)**
- **Centre in Carbon Capture & Storage and Cleaner Fossil Energy (http://www.efetedc.ac.uk/)**

Why study this course

The Midlands Energy Graduate School is unique to the UK and is a partnership between the universities of Nottingham, Birmingham and Loughborough to bring excellence and world-leading research into context within this MSc. Students will take modules at each of the universities, studying alongside other MEGS students registered at all three universities, thus benefiting from the best of three UK universities.

This multi-disciplinary programme aims to provide predominantly engineering and science graduates with a solid grounding in efficient fossil energy technologies. The programme will prepare future leaders and industrial engineers with knowledge and skills to tackle the major national and international challenges over the next 15 years: implementing new power plant to generate electricity more efficiently using fossil energy with near zero emissions; demonstration and deployment of CO_2 capture; reducing CO_2 emissions from coal utilisation, including iron making and similar manufacturing processes.

Modules

The Masters/MSc in Efficient Fossil Energy Technologies provides students with the expertise of three leading energy-research centres. Each university offers a pathway which draws on the strengths of the research and teaching available, making it as easy as possible to benefit from the chosen study location. A wide range of optional modules allows students to tailor their studies to meet the needs of their chosen career path and state-of-the-art video conferencing facilities enable students to take part in lectures delivered off-campus. Alternatively, students can attend in person at Nottingham and Loughborough.

This MSc comprises 60 credits of compulsory taught modules, 60 credits of optional modules and a 60-credit research project. The programme covers the core themes of power generation, carbon capture, innovation and the wider, societal/economics/policy aspect of energy generation and use. Students will choose some optional modules from a range of technical choices and some from a range of contextual/managerial choices, which provides a well-rounded range of study. It is available for study at all three Midlands Energy Graduate School universities, each of which offers a pathway as follows:

	University of Birmingham	University of Nottingham	Loughborough University
Core modules	• Power Generation and Carbon Capture • Innovation and Technology Transfer • Communication & Public Engagement Skills • Industrial Case Studies • Energy Systems and Policy • Research project		
Options pathway: combining technical and managerial options	• Advanced Reaction Systems • Systems Modelling • Conventional Energy Technology • Measurement Techniques • Process Engineering Fundamentals • Project Management	• Combined Heat and Power • Advanced Thermal Power Systems • Petroleum Production Engineering • Energy Storage • Environmental Project Management	• Surface Engineering • Ceramics: Properties and Processes • Metals: Properties and Processes • Materials Modelling • Sustainable Use of Materials • Teamwork and Leadership
	Further options from across the Midlands Energy Graduate School may be chosen, subject to timetabling and delivery methods		
Research project topics	• Modelling systems • Plant design • Supercritical reactions • Catalysts • Carbon capture technologies	• Combustion and power generation • Carbon capture & storage technologies • Multi-pollutant control Energy catalysis (CO2 conversion, gas reforming etc.) • Gasification • Environmental management • Reaction systems	• Materials for conventional power generation • Steels for ultra-supercritical steam powerplant applications • Coatings for superalloys for high temperature service • Degradation of materials at high temperatures
Apply to	**The University of Birmingham (https://pga.bham.ac.uk/lpages/EPS091.htm)**	See details on **UoN website (http://www.nottingham.ac.uk/pgstudy/courses/chemical-and-environmental-engineering/efficient-fossil-energy-technologies-msc.aspx)**	See details on **LU website (http://www.lboro.ac.uk/students/programme-specifications/2013/aeronautical-automotive-chemical-and-materials/mp/postgraduate/name-56603-en.html)** .

The taught element takes place between September and May and consists of lectures, seminars, tutorials and workshops. The individual project takes place in industry or at

the University of Birmingham, between May and August.

Research project

The research project will take place in Birmingham, based on one of the themes outlined above.

The research project must be taken at the university at which the student is registered.

Fees and funding

For entry in 2014/15

Programme	UK/EU	International
MSc (FT)	£6,250	£17,500
PG Diploma (FT)	£4,167	£11,667
PG Certificate (FT)	£2,083	£5,833

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.

Further funding information

Non-standard fees apply : fees are standardised between Birmingham Loughborough and Nottingham Universities

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 **sfo@contacts.bham.ac.uk (mailto:sfo@contacts.bham.ac.uk)**

Entry requirements

Applicants will hold, or be expecting to hold, a first class or upper second class Honours degree (or equivalent) in a relevant engineering subject. This may be Chemical Engineering, Materials Engineering or Mechanical Engineering. Relevant, significant, industrial experience may be considered.

Please contact us to enquire and discuss your situation.

International students:

- Above-standard English language requirements apply
- English Language requirements are as follows
- IELTS: minimum 6.5 in all bands
- PTE Academic: no less than 67 in all 4 skills

See **International student entry requirements (/postgraduate/requirements-pgt/index.aspx)** section for more information.

We accept a range of qualifications from different countries – learn more about **international entry requirements (http://www.birmingham.ac.uk/students/pg/requirements/international)** .

How to apply

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/EPS091.htm)

Learning and teaching

This programme provides a solid basis for a career in fossil fuel-powered energy generation. 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 the wider social and economic aspects of energy generation and use.

Modules available from the universities of Nottingham and Loughborough are available either via state-of-the-art video-conferencing facilities, so students do not usually need to attend the other university, or in person. Should any student wish to travel to partake directly in some lectures, advice can be provided on appropriate travel and accommodation.

Modules taught at Birmingham are delivered in week-long blocks; those from Nottingham and Loughborough may be in blocks or may take place on specific days/times throughout the term. Please contact us (details to the right) about these if you would like more information about this.

Employability

Graduates of this programme will be in demand by power generation companies and partner organisations working on technologies for a near-zero-emission power plant. There is a world-wide demand for engineers and scientists with high-level education and skills in energy technologies, focussing on fossil fuels, as coal-fired power stations continue to be commissioned, built and operated. This programme also provides an entry route to progress to PhD study, upon successful completion (minimum grades apply).

University Careers Network

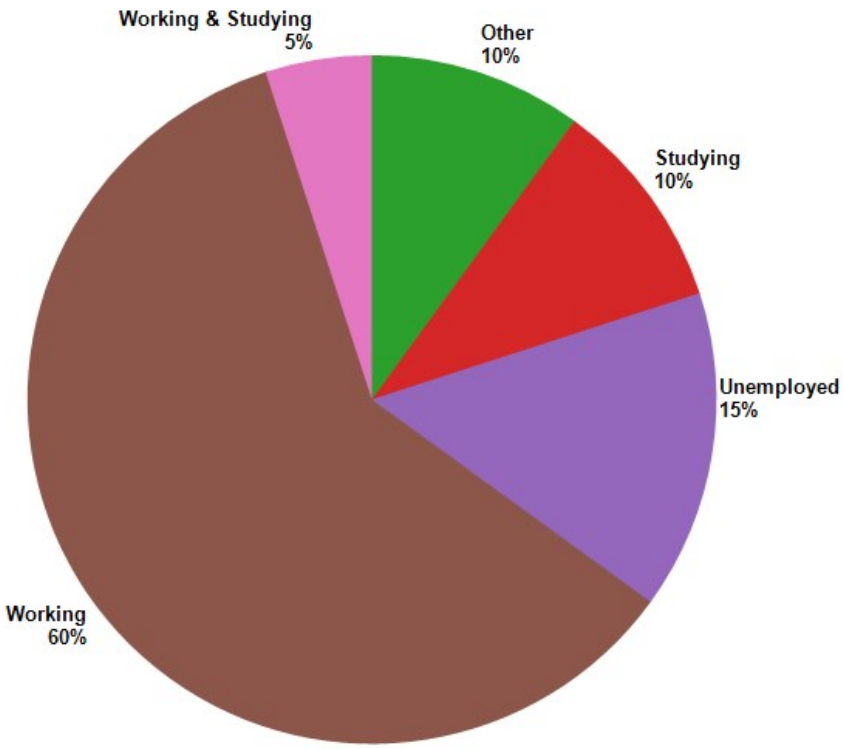
Preparation for your career should be one of the first things you think about as you start university. Whether you have a clear idea of where your future aspirations lie or want to consider the broad range of opportunities available once you have a Birmingham degree, our Careers Network can help you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

- BP
- British Gypsum
- Citi
- Coca-Cola
- Foster Wheeler Energy
- Jacobs Engineering
- Johnson Matthey
- KBR
- Pepsico
- RBC Capital Markets

Examples of occupations:

- Chemical Engineer
- Development Engineer
- Finance Analyst
- Market Analyst
- Performance Engineer
- Process Engineer
- Process Development Technologist
- Process Support Engineer
- Team Leader
- Test and Validation Engineer

Further study - examples of courses:

- MRes Chemical Engineering Science
- MSc Advanced Chemical Engineering
- MSc Biochemical Engineering
- MSc Chemical Engineering
- PhD Chemical Engineering
- PhD Formulation Engineering
- PhD Regenerative Medicine
- PGCE Mathematics

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

Professional accreditation

This programme is new in 2013 and accreditation will be sought via the appropriate professional institution.

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