Engineering

The University of Nottingham

MSc (by research) in Electromagnetics Design

www.nottingham.ac.uk/eee

The design and operation of modern devices and systems such as mobile commmunication requires a full understanding of electromagnetics. The course will provide students with a solid understanding of the scientific foundations and appreciation of up-to-date technological achievements in their chosen field.

Areas of interest covered by the course are:

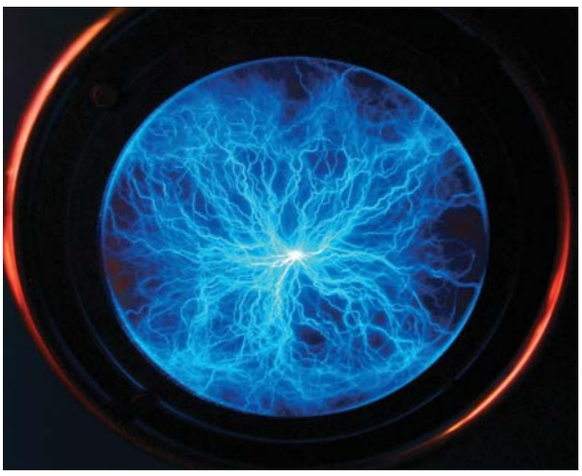
- full field simulation and characterization of systems at RF microwave and optical frequencies
- advanced hybrid models including circuits and fields, thermal and EM concurrent design, electronic and photonics circuits
- photonics and opto-electronics
- Signal Integrity (SI)
- multi-scale, complexity reduction and signal processing techniques in computational electromagnetics
- antennas, microwaves and propagation

Students will develop:

- project management skills in relation to the scientific and technological aspects of their chosen subject including design, data collection and analysis, report writing along with critical and decision making skills
- the ability to plan and undertake an individual project
- interpersonal, communication and professional skills
- the ability to communicate ideas effectively in written reports
- their awareness of contemporary challenges in their chosen area and be able to communicate effectively, discussing both present and futuristic solutions to both specialist and non-specialist audiences

Postgraduate study

MSc (by research) in Electromagnetics Design



Course structure

The MSc (by research) Electromagnetics Design course is project based, studied over one academic year. A total of 180 credits must be taken to complete the MSc.

The course comprises a compulsory taught 30 credit module, 20 credits of graduate school non-assessed taught modules and an individual research project worth 130 credits.

Research Techniques in Advanced Electromagnetics

This module covers a wide range of modelling and simulation techniques that are currently used in electromagnetics.

Learning Aims:

- knowledge and understanding of the physical principles underlying electromagnetics
- a knowledge and understanding of mathematical expansion techniques in Cartesian, cylindrical and spherical coordinate systems
- Eigensystems and Green's functions
- multi-scale and multi-resolution techniques
- wavelets, modal expansion and digital filter interface methods
- accuracy and stability issues surrounding generic methods

Individual project

The individual research project is taken over the full year with guidance from an academic member of staff. The project is tailored to the individual student's interests and can be defined to be theorectical, experimental or a combination of both. Typically students will examine a novel device and apply a suitable electromagnetic method to design and optimise its performance.

Previous research projects on this course have included:

- Modelling of time-varying phenomena in the transmission line modelling method
- Use of high-impendance surfaces in EMC applications

Funding opportunities

The Faculty offers a range of funding support for postgraduate courses, details of which can be found at:
www.nottingham.ac.uk/engineering/funding/postgraduate/funding

Details of other funding opportunities are available from the Graduate School at:
www.nottingham.ac.uk/gradschool

Employment prospects

Students of this course will be well equipped to enter into roles in design and development within major international companies or government agencies, consultancy posts with leading contract consultant companies and move into successful academic careers.

Entry requirements

Applicants should have a 2:1 honours degree (or international equivalent) in a related subject from a recognised university.

English language requirements:

- IELTS score of at least 6.0 with a minimum score of 5..0 in individual elements
- TOEFL (paper based) score of at least 550 with a minimum of 4.0 in the writing element
- TOEFL (IBT) score of 79 no less than 17 in any element

Contact us

If you are interested in this degree please apply through the University on-line application process at:
https://pgapps.nottingham.ac.uk/

For further details please look at the Department website:
www.nottingham.ac.uk/eee