

A one year taught Masters programme

MPhil in Engineering for Sustainable Development

For details see: www-esdmphil.eng.cam.ac.uk/



UNIVERSITY OF
CAMBRIDGE
Department of Engineering



Department of Engineering
Centre for Sustainable Development

**Global
challenges**

"This is not an engineering degree but a course for engineers which fills in all the missing pieces".

Former MPhil student

**Environmental
limits**

People

Change

**Complex
systems**





“Engineering for Sustainable Development is about recognising that engineers have to operate within an increasingly complex set of constraints, and therefore must be capable of dealing with a range of challenges.

The subject is based on some very straightforward principles. It is about living within Earth’s finite limits and resources, helping everyone on the planet to achieve an acceptable quality of life, acting as stewards of the environment for future generations, and dealing with complexity and handling the many trade-offs which have to be made”.

Professor Dick Fenner
Course Director



“Our students are drawn from all over the world and bring with them a wealth of experiences and ideas. A key benefit of joining the course is the opportunity to collaborate, now and in the future, with this group and to gain insights into a number of different perspectives.

Cambridge is a very special place. I urge you to make the most of all it has to offer during your time here, both within the course and beyond. Many people find their time studying in Cambridge turns out to be truly life changing often in ways they had not anticipated so be ready for new experiences”

Dr Dai Morgan
Deputy Course Director



MPhil Programme Structure

See: www-esdmphil.eng.cam.ac.uk/about-the-programme/structure

Subject to annual review and amendment

Core Modules

All Students study two core modules which deal respectively with qualitative and quantitative aspects of engineering sustainability.

The first module deals with **Driving Change towards Sustainability** and investigates the ideas behind sustainable development which are relevant to engineers, including ethical issues, managing change within the industry and dealing with multiple stakeholders.

The second focuses on **Sustainability Methods and Metrics** and introduces such tools as life cycle analysis, systems dynamics, multi criteria analysis, ecosystem service valuation, environmental economics, agent based modelling and social science research methods.

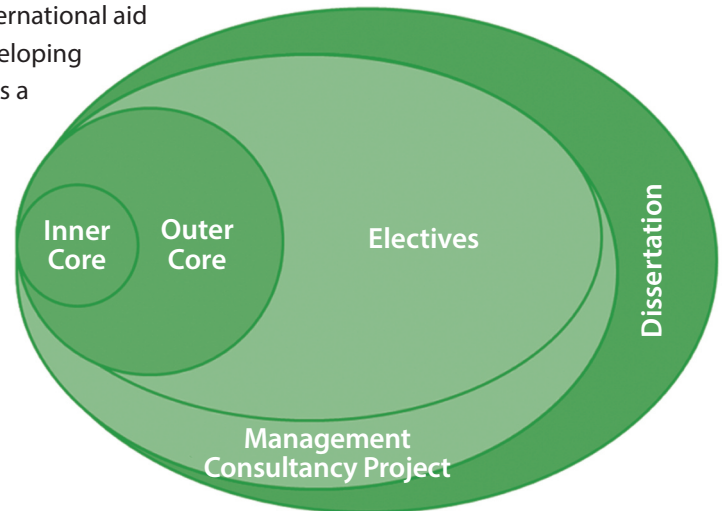
Outer Core Modules

Students choose two modules from a list of four topics which go deeper into specific aspects of the sustainability agenda.

These range from approaches to **Resilience and Hazard Mitigation in Future Cities**, to the way **Policy, Regulation and Government** sets the framework within which engineering solutions must be delivered. Principles which can be used to guide **Innovations in Sustainable Design and Manufacturing** form the basis of another module, whilst for those interested in international aid and work in developing countries there is a module which deals with **International Development**.

Management and Entrepreneurship

Delivered by the Judge Business School this module provides access to key management topics, and offers practical engagement on live industrial problems through the Client Consultancy project in the 2nd Term.



Elective Modules

students choose four modules with examples of modules available listed below

From the Centre for Sustainable Development

- Management of Resilient Water Systems
- Infrastructure Design of Poor Settlements in Developing Countries

From the Engineering Department

- Renewable Electrical Power
- Architectural Engineering
- Management of Technology
- Accounting and Finance
- Contaminated Land and Waste Containment
- Present and Future Energy Systems
- Advanced Building Physics
- Renewable Energy: Solar and Biomass
- International Business
- Strategic Management
- Biomimetics
- Electricity and the Environment
- Renewable Energy: Wind, Tide, Hydro
- Energy Systems and Efficiency
- Earthquake Engineering
- Construction Engineering
- Climate Change Mitigation

From the Judge Business School

- Technology Policy: Concepts and Frameworks
- Uncertainty and Real Options in System Design
- Negotiation Skills
- Business, Government and Technology in Emerging Markets
- Management of the Innovation Process

From other University Departments

- Sustainable Architecture and Urban Design
- Fundamentals of Environmental Economics
- Comparative Environmental Politics and Policy
- Energy and Climate Change



Individual Research Dissertation

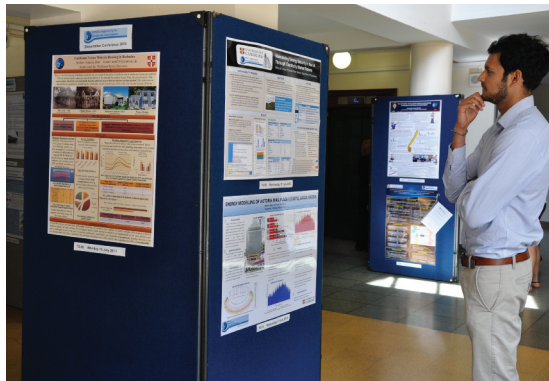
For abstracts of previous dissertations see:

www.esdmphil.eng.cam.ac.uk/about-the-programme/dissertations



The MPhil Dissertation takes place between May and August and provides an opportunity to study in depth a topic of individual interest to each student.

A progress report on each student's research is presented at the Dissertation Conference in mid July, which is followed by the Annual Course Dinner in a College. This event also welcomes alumni of the programme back to Cambridge.



Examples of topics completed recently include:

- Scoping the Potential of Stormwater as a Source of Energy
- Urban Resilience in Post-Disaster Recovery: A Case Study on the 2015 Nepal Earthquake
- Adaptivity of Urban Infrastructure to Rapid Population Growth
- Implications of Behavioural Economics for Urban Transport Policy
- Converting CO2 waste streams into value added products via Industrial Symbiosis
- The development potential of renewable energy in remote Indigenous communities
- Network reliability in sustainable food systems
- The circular economy in industry: closing the loop in the textile industry
- Climate Change Resilience in Low Income Communities in Developing Countries



Other Features of the MPhil



Role Plays and Simulation Games



Residential Field Courses



Site Visits



Weekly Seminar
Discussions



Change Challenges



Practitioner Viewpoint Series and
Guest Lectures

How to Apply

Details of how to apply can be found at:

www-esdmphil.eng.cam.ac.uk/prospective-students/how-to-apply



The course is a Professional Practice Programme designed for students from an engineering background.

Applicants are required to have a first or upper second class honours UK

degree in an engineering or science discipline, or an equivalent standard from an overseas university and preferably with some post graduate work experience in the engineering industry.

For full programme details see: www-esdmphil.eng.cam.ac.uk/



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