OUTER CORE MODULES (students must choose 2 from 4)
Module   ***ESD 600 Development Engineering***
Leader: Dr Heather Cruickshank

Timing: Lent Term
Structure: Eight 2-hour sessions in Weeks 1 to 8: plus coursework assignment

Synopsis

Engineering in the context of the developing world requires a different mindset to that often taught in mainstream engineering courses. This module explores issues pertinent to the project process as it applies to systems appropriate for developing world. This may not necessarily result in a low-tech or small-scale solution but a key element is effective needs assessment and problem definition in consultation with stakeholders. The module explores the context of development in which engineers have to work. Beginning with an overview of the need for development and the various intervention philosophies throughout the twentieth century to the present day the module goes on to look at development management and the role of engineering. It looks at methods of gathering data and tools for managing projects and draws on established participatory methods and assessment tools used in the developing world. The module addresses all these issues in terms of application of sustainable development principles to engineering interventions.

Key Themes:

The role of the engineer in delivering appropriate development interventions
The context of the modern aid industry, its objectives and limitations
Analysis of existing methodologies and application of technology
Use of common tools for facilitating stakeholder engagement
Effective evaluation of interventions with regard to contribution to sustainable development

Content

The need for development, examining issues pertinent to project processes as applied to systems appropriate for the developing world and an overview of the need for development through the various intervention philosophies implemented throughout the last century.

Development and management and the role of engineering exploring the **context of development** in which engineers have to work.

Data gathering and project tools including methods for effective needs assessment and problem definition in consultation with stakeholders.

Appropriate technology and examination of philosophies such as: "intermediate" or "appropriate" technologies starting with Schumacher's classic idea of "Small is Beautiful"; development that is simple, low cost, using local materials, and with a rural focus.

Public action including assessment of community needs, information gathering in poor communities, appropriate technological design within resource, skills and economic constraints.

Emergency to development transition, post-disaster response and disaster risk reduction including design for low maintenance and appropriate affordability.

Setting appropriate goals and effective evaluation using methods of gathering data and tools for managing projects drawing on established participatory methods.

Objectives

Provide a conceptual and institutional map of the history of development intervention to enable understanding of different positions and how they might change over time using this to build an understanding of different discourses about development. Begin to place the role of engineering in the bigger context of development, interpret and understand the context within which projects and programmes are implemented and reflect on multiple actor forms of public action. Operationalize and understand development as a process and use and evaluate framework planning tools as a means of clarifying and focussing development interventions. Develop and appreciate a range of skills associated with project design and planning and for investigation for information gathering and interpretation towards making a case for intervention. Provide a framework for thinking about the processes and effects of interventions in terms of sustainability and enable a sustainability approach to analysing and reflecting on the assumptions behind interventions. Develop a critical approach to performance assessment through monitoring and evaluation and demonstrate the importance of learning approaches to developing the capacities of development managers, organisations and beneficiaries of interventions.

Assessment 100% coursework