

## Embedded

The ImpEE project seeks to embed the concept of Engineering for Sustainable Development (ESD) throughout the entire broad engineering curriculum touching 100% of the student cohort. We believe that the way to do this is not as a clumsy "bolt-on" to the curriculum, such as an extra ESD lecture which would tend to marginalise ESD, making it seem an afterthought. Rather than merely being told what to do, we want the students to experience - and therefore take it for granted - *that ESD is an integral part of modern engineering culture*.

This can be achieved by implementing elements scattered throughout all courses and labs that, when taken as a whole over the entire program, succeed in conveying a convincing, coherent message.

## Engineering for Sustainable Development

A large portion of the student body actively seek ESD experience as part of their undergraduate learning and many engineering firms now expect such skills from graduates. The current UK-SPEC professional engineering accreditation provides specific incentives for demonstrating the teaching of ESD in the curriculum. ImpEE seeks to operate at a broad-based introductory level, and as a result, the depth of ESD education to be delivered is relatively simple to attain. The ESD themes that enshrine the purpose of this project are:

- Awareness of ESD issues: for a given engineering topic, what are the ESD issues related to it that makes it notable?
- Impact of Engineering on Society: how do engineering decisions impact on our global society, economy, and environment from the perspective of the engineering profession. What are the larger, global consequences when decisions are made in a smaller engineering space?
- Role of Engineers in making our society sustainable: what can the engineer, as a principal in this process, do to contribute towards a sustainable society?
- Developing a Global Perspective: both literally (seeing our communities not in isolation but as part of a planet) and metaphorically (broadening the student's perspectives from the narrow sterile engineering metrics of the problem at hand to include a more complete view of drivers including societal, economic and environmental factors).

Each resource contains one or more Instructor Resource Modules that include slide presentations with teaching notes, sample examples papers, case studies, or project ideas that illustrate teaching ESD.

# **Transferable Skills**

The ImpEE project is using ESD as a medium to introduce transferable skills into the curriculum in a transparent manner; teaching ESD means that a number of transferable skills are included in the process. Where appropriate, the transferable skills being taught are clearly labeled.

## Lecturers

It is key to realise that the purpose of ImpEE is *not* to teach sustainability, but rather to *enable* lecturers to teach ESD. This is a subtle but key distinction. The resources are designed to suit a broad variety of lecturing styles and needs as well as being easy to apply in a non-disruptive manner.

ImpEE resources have been designed to make it easy for a lecturer to incorporate the teaching of professional engineering skills, provide engineering context-based teaching, and to enthuse and motivate students - all at the same time!

#### "Everyone, especially engineers, should have sustainability literacy as a basic skill." Lord Sainsbury of Turville, Minister for Science and Innova-

ter for Science and Innova tion. Dept. of Trade and Industry, 21st Sept, 2003.

Our aim is to develop web-based resources for lecturers that will assist them in embedding the lessons of transferable skills into the undergraduate curriculum through the medium of engineering for sustainable development.

# Web-based Resources

The ImpEE project is developing a number of resources to inspire lecturers to include the teaching of ESD into their existing curriculum. These resources are intended to be *web-based* and not merely web-accessible. The website has been designed to provide two services: it allows the users to browse and easily find the resources they are seeking and also enables them to make the best use of the resource once they have located it.

Resources are presented as multi-disciplinary engineering topics but also contain disciplinespecific modules; users can search for resources however they prefer. Materials range from complete slide show presentations down to images and the raw data - with references, of course.

For further details, see the companion brochure "Using the ImpEE On-Line Resource".

#### http://www-g.eng.cam.ac.uk/impee

ImpEE is based at the Department of Engineering at the University of Cambridge and is funded by the CMI Institute.





# THE MARKET BEER

### Who we are and what we do.



Gutta cavat lapidem, non vi sed saepe cadendo

*The drop excavates the stone, not with force but by falling often.*