

OUTER CORE MODULES (students must choose 2 from 4)

Module *ESD 400 Economic, Legal and Regulation Issues*
Leader: Professor Nicholas Ashford (MIT)

Timing: pre Lent Term (January 9-17, 2012)

Structure: 6 x 2½-hour morning sessions (block module); plus coursework assignments.

Synopsis:

This module provides (1) a deep understanding of the evolution of industrial systems and technology, the processes of technological innovation and diffusion, and their impact on economic welfare, the environment, and employment, and (2) contrasts neoclassical developmental and environmental economics approaches with ecological economics, sustainable growth, and legal and regulatory approaches for achieving more sustainable development in the context of the “new economics” that questions the options for future growth in times of financial and social stress.

Content

Major systemic problems leading to unsustainability:

Fragmentation of the knowledge base and Inequality of access to economic & political power leading to suboptimal solutions; Path dependency and tendency for technological and political ‘lock-in’; High-throughput industrial systems biased towards increasing or maintaining consumption, advancing growth, and increasing labour productivity; Failure to reconcile the needs for essential goods and services, a healthy environment, and rewarding and meaningful employment.

The Strength and Weaknesses of Markets:

Prices inadequately reflect the total social costs of goods and services; Limitations of perfectly-working markets; Disparate time horizons - costs now, benefits later; Delay in recognizing problems (Limits to Growth); Inappropriate production & consumption patterns; Drivers of Economic Growth: (1) Technological Innovation (Schumpeter’s ‘waves of creative destruction’) exploiting innovative potential and (2) Trade (Ricardo’s theory of comparative advantage) exploiting excess capacity contrasted.

Technological change and globalization (trade) as drivers of change:

Implications of each for sustainable development; Sustaining (incremental) and disrupting (radical) innovation contrasted; Implications of innovation for products, processes, product-services, and systems contrasted; Regulation-induced technological change: the Porter and MIT Hypotheses contrasted; Employment consequences of technical change and trade contrasted.

Transformation processes:

The need for trans-disciplinary expertise; the emergence of new ways to meet the basic needs of the society; re-conceptualizing the basis of the economy; the avoidance of agenda and pathway capture or lock-in by incumbent actors and ideology; technological displacement and substitution of new for old technology; in some cases, the displacement of not only the dominant products and technologies, but also the incumbent firms and public institutions; co-optimization and mutual advance of essential social goals; co-evolution of technological and social systems; complementary and mutually-reinforcing technological, organizational, institutional, and societal innovations; system changes that cut across problem areas -- competitiveness, environment, and employment -- and therefore also cut across sectors and firm divisions, as well as government departments and missions; legal and economic instruments and policies contrasted.

Objectives:

The mastery of frameworks for understanding:

- (1) the drivers of industrial systems and technology,
- (2) the processes of technological innovation and diffusion,
- (3) the differences between neoclassical developmental & environmental economics, and ecological economics and limits to growth, and
- (4) the formulation of policy strategies involving both legal and economic approaches for achieving more sustainable development.

Assessment 100% coursework