

Strategic Foresight in Engineering - PhD Course
17 - 21 September 2012 at the Technical University of Denmark

Introduction

Foresight has been a well-established field of practice for several decades. Foresight is rooted partly in American experiences on technological forecasting tradition in defence and aerospace from the 1940s and 1950s and partly in European experiences from dealing with grand societal challenges from the 1960s and 1970s. Increased globalization and the increased importance of science and technology for both firms and national economies during 1980's sat, among many other issues, the stage for increased interest in priority setting in science and technology and for preparing organisations for different futures. Today, foresight is widely used internationally in science, technology and innovation policy making all over the world. Foresight is also used in firms and industrial sectors in relation to strategic planning, innovation management, early warning, etc. In addition foresight is used in international organisations such as the European Union, the International Energy Agency and the Intergovernmental Panel on Climate Change. Consequently, foresight and similar prospective approaches to technology analysis and strategic intelligence are increasingly relevant in areas of technology and engineering such as: Science, technology and innovation policy; Strategic planning of science and technology; Design engineering; Product development; R&D Management; Urban and municipal planning; New and future energy technologies; Environmental and climate challenges; etc.

More recently foresight is about to emerge as an academic field with traditional academic attributes such as dedicated international journals and conferences, higher education, university chairs in the area, etc. During the recent decades there is published a wealth of academic foresight literature that are mostly reflecting the practice of foresight as it is descriptive or normative. But also more conceptual and theoretical contributions to this literature have been published. This course departs from this rich literature and thrives to present to the participants a selection of both conceptual and practice oriented texts.

General course objectives

The aim of the course is to introduce students to the foundation and methods of strategic foresight. The course is targeting doctoral students within engineering and design who intent to apply elements of strategic foresight or prospective analyses in their research.

The focus is set on strategic foresight within specific domains of science and technology as well as firms and industrial sectors. Regional foresight and wider national foresight exercises are not dealt with specifically.

The course is assessed to 2.5 ECTS points and a course certificate will be issued by the Technical University of Denmark to each participant after completion of the course.

Learning objectives

A student who has met the objectives of the course will be able to:

- Identify and describe quantitative and qualitative methods of strategic foresight and their foundation.
- Understand the societal context in which strategic foresight is practised.
- Understand foresight's role in public science, technology and innovation policy.
- Understand foresight's role in corporate strategy and innovation management.
- Interpret and analyse the relation between context, conditions and outcomes of foresight.
- Compare, select and apply concepts or methods of foresight, e.g. megatrend analyses, simple scenario processes, and simple Delphi surveys.
- Assess and discuss the implementation of strategic foresight in engineering.

Content

The course contains partly discussion of literature and of theoretical perspectives and partly practical and instrumental introduction to strategic foresight methods. The course comprises five days of lectures combined with plenum and group discussions. More specifically the course will cover the following themes:

- Introduction to foresight and foresight methods.
- Long waves in technology & the economy, expectations & visions, trends & megatrends.

- Foresight in practice – reflections on two cases.
- Foresight in science, technology and innovation policy.
- Foresight in firms.
- Design of foresight exercises.
- Facilitating experts and trans-disciplinarity in foresight exercises.
- System definition, mapping and scanning.
- Delphi, scenarios and strategic roadmapping.

For each theme the lecturers will give a short introduction, mostly based on the lecturers' own research and consulting activities in the area. Based on the introduction the students will be guided through a critical discussion of the theme and its relevance to their own research.

Organiser and lecturers

The lecturers draw on both academic and practice oriented experiences in foresight. The lecturers have been involved in foresight in areas such as: sensor technology, nano technology, robotics, agriculture, food, wind power, hydrogen energy, fuel cells, and energy technologies in general. Furthermore, the lecturers have experience from foresight with firms and organisations such as Deutsche Telekom AG, Nordic Innovation Centre, and the Danish Agency for Science, Technology and Innovation.

The course is organised by Per Dannemand Andersen, Professor in technology foresight and innovation, in cooperation with Senior researcher Birgitte Rasmussen, Senior researcher Kristian Borch and PostDoc Allan Dahl Andersen all from Technical University of Denmark, Department of Management Engineering, and Associate professor René Rohrbeck from Aarhus University, Department for Business Administration.

Application and deadline:

Applications should be emailed to the course's secretary Jette Gents (jege@dtu.dk). Please write: 'Application PhD Course in Strategic Foresight' in the email's subject field.

The application (max 1 page) shall include:

- Name and contact information
- Institutional affiliation
- Brief description of the PhD project. The project description must include project title and description of the project's subject including theoretical-analytical approach, empirical focus and who foresight elements are considered included in the project.

Deadline for applications is September 1st 2012. The applicants will be given notice shortly after their application.

The PhD students are expected to spend approximately one week of getting acquainted with the course's literature before the course. Literature lists and other material will be sent to the students in due time before the summer school through the course's intranet.

Course fee:

The lectures are free of charge, but we charge a small fee of DKK 2000 (approximately EUR 270) covering direct costs such as all meals and a dinner the first evening.

Accommodation must be arranged by the participants individually and is not included in the course fee.

Venue

Technical University of Denmark, Building 101, Meeting room 5, DK-2800 Kgs. Lyngby, Denmark

Additional information

For additional information please contact Per Dannemand Andersen, (+45) 4525 4535, pean@dtu.dk, or Jette Gents (+45) 4525 4427, jege@dtu.dk).