

# Strategic Foresight in Engineering - PhD Course

24 - 28 August 2015 at the Technical University of Denmark

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## Introduction

During the latest decades the use of foresight and other prospective approaches have gained immense interest. Foresight is widely used in science, technology and innovation policy development and is conducted in international organisations such as the European Union, the International Energy Agency and the Intergovernmental Panel on Climate Change. Foresight is also used in firms and industrial sectors in relation to strategic planning, innovation management, early warning, etc.

Consequently, foresight and similar prospective approaches to technology analysis and strategic intelligence are increasingly relevant in many areas of technology and engineering: Science, technology and innovation policy; Strategic management of technology and innovation; Product development; R&D Management; Supply chain management; Design engineering; Urban and municipal planning; Energy planning; and Sustainability.

More recently foresight is also emerging strongly as an academic field with traditional academic attributes such as dedicated international journals, international conferences, university level teaching, university chairs, etc. This course builds upon these flourishing academic activities and strives to draw on both conceptual and practice-oriented work.

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## General course objectives

The aim of the course is to introduce students to the foundation and methods of strategic foresight. The focus is set 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 targets doctoral students within engineering who intend to apply elements of strategic foresight or prospective analyses in their research. However other types of doctoral students might benefit from the course and are welcome.

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.

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 theoretical foundations
- Understand the societal context in which strategic foresight is practised
- Understand foresight's role in science, technology and innovation policy
- Understand foresight's role in firm's technology strategy and innovation management
- Interpret and analyse the relation between context, conditions and outcomes of foresight
- Compare, select and apply concepts and methods of foresight, e.g. simple scenario processes, backcasting, Delphi surveys, and data mining in foresight
- Identify challenges in relation to facilitating foresight processes involving experts, trans-disciplinarity and domains of conflicting interests
- Assess and discuss the implementation of strategic foresight in engineering

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## Content

The course involves discussions of literature, drawing on theoretical perspectives as well as practical and instrumental approaches to strategic foresight.

The course includes five days of lectures mixed with plenary discussions, group work and individual reflection. More specifically the course will cover the following themes:

- Introduction to foresight, foresight methods, and core foresight concepts such as expectations, visions, trends and megatrends
- Foresight in science, technology and innovation policy and in long term energy and environment planning
- Foresight in firms in relation to technology strategy and innovation management
- Introduction to foresight methods such as: Scenarios, Visioning, Backcasting, Delphi, and Data Mining
- Design of foresight exercises
- Publishing in the area of foresight

## Faculty

The lecturers have experience from foresight with firms and organisations such as Deutsche Telekom AG, Siemens AG, Nordic Innovation Centre, and the Danish Agency for Science, Technology and Innovation.

- Per Dannemand Andersen, Professor at DTU's Department of Management Engineering
- Cynthia Selin, Marie Curie Fellow at DTU's Department of Management Engineering, Associate Fellow at University of Oxford's Saïd Business School, and Assistant Professor at School of Sustainability at Arizona State University.
- Senior researcher Marie Münster, Senior researcher Kristian Borch, Researcher Kalle Piirainen - all 3 from Technical University of Denmark, Department of Management Engineering
- Professor René Rohrbeck from Aarhus University, Department for Business Administration
- Associate professor Scott Cunningham from Delft University of Technology's Faculty of Technology Policy and Management

## Application and deadline:

Applications should be emailed to the course's secretary Monica Krenkel ([mkre@dtu.dk](mailto:mkre@dtu.dk)).

Please write: "*Application PhD Course in Strategic Foresight*" in the email's subject field.

The application (approx. 1 page) should include:

- Name and contact information
- Institutional affiliation
- Brief description of the PhD project:
- Rational for participation: Please explain, in 2-3 sentences why you want to take this course and how you think your academic and professional work will benefit.

The project description must include project title and description of the project's subject including theoretical-analytical approach, empirical focus and which foresight elements might be included in the project.

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*Deadline for applications is  
July 1st 2015.*

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The applicants will be given notice shortly after their application.

The participants are expected to spend approximately one week reading 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

For doctoral students the lectures are free of charge, but we charge a small fee of DKK 3000 (approximately EUR 400) covering direct costs such as lunches, coffee/tea, and a dinner the first evening.

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

## Venue

Technical University of Denmark - DTU, Building 424, DK-2800 Kongens Lyngby, Denmark.

## Additional information

For additional information please contact Professor Per Dannemand Andersen, (+45) 4525 4535, [pean@dtu.dk](mailto:pean@dtu.dk), or Monica Krenkel (+45) 4525 4850, [mkre@dtu.dk](mailto:mkre@dtu.dk).