

# TISYE1 – Lecture 0

## Course Introduction

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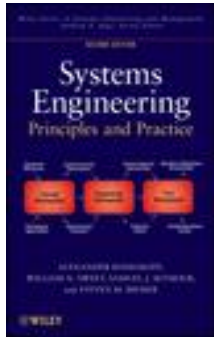
STEFAN HALLERSTEDE (SHA@ENG.AU.DK)  
ASSOCIATE PROFESSOR



# Learning Objectives

- › **Analyze** the overall concepts of a SE approach.
- › **Analyze** the overall process elements, and their relationships.
- › **Explain** the different roles/stages in the product life-cycle and discuss the roles of the customer, acquirers and suppliers.
- › **Analyze and discuss** customers and users' needs and requirements.
- › **Perform** the basics of important techniques of system requirements analysis, evaluation of solution alternatives and system design iteration including their subsequent validation and verification.
- › **Sketch** plans for development of systems.
- › Implement principles and techniques of engineering management.
- › **Explain** and present proposed engineering solutions.

# Course Materials



| Purpose           | Item   | Availability                              |
|-------------------|--|---|
| Textbook          | Kossiakoff, Sweet, Seymour and Biemer, <b>Systems Engineering Principles and Practices</b> , Wiley, 2011 | Available from Teknisk Boglade            |
| Workbook          | ASE publication.   | Available from Campusnet                  |
| Selected articles | Forsberg and Mooz, 1998; Balmelli 2007 ... etc.  | Available from Campusnet (login required) |

# Info and Policies

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- › Class sessions
  - › Tuesday 10.15 – 12.00 (lectures)
  - › Wednesday 14.15 – 16.00 (activities)
- › **Mandatory** homework assignments
- › Case work assignments
  - › Document deliveries according to the Statement of Work (SoW)
  - › Scheduled reviews on Tuesday (8.15 – 10.00) in week 7 or 8, 9 and 10
  - › **Approval of documents is required prior the exam**
- › Exam
  - › 20 min. oral exam (your case + question)

# Time and Expectations

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|-------------------------|-----------------|
| >                       | Estimates:      |
| > Class                 | 28 hours        |
| > Reading               | 50 hours        |
| > Exercises preparation | 9 hours         |
| > Case work             | <u>50 hours</u> |
| >                       | 137 hours       |

> Recommendation: Start case work early!

# Lecture Plan

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| Week | Lecture (key topics)  |
|------|---|
| 5    | Systems thinking and systems engineering practice                 |
| 6    | Concept development: Needs and requirements                       |
| 7    | Systems engineering management and decision support               |
| 8    | Concept definition, architecting and functional analysis          |
| 9    | Model-based systems engineering with SysML                        |
| 10   | Systems integration and evaluation. Speciality engineering design |
| 11   | Post development stage and final presentations                    |

› In addition we will do activities (exercises and case work)