AARHUS
UNIVERSITET

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TISYE1 – Lecture 0

Course Introduction

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, **Systems Engineering Principles and Practices**, 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

› Class sessions
› Tuesday10.15 – 12.00 (lectures)
› Wednesday14.15 – 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

	Estimates:
Class	28 hours
Reading	50 hours
Exercises preparation	9 hours
Case work	50 hours
	137 hours

- Recommendation: Start case work early!

Lecture Plan

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)