

## Systems Engineering

### Chapter 0:

### Introduction

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1

## Introduction

- What?
- For whom?
- How?
- Course overview
- References

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2

## What?

### Problems in modern Software Engineering

- Huge data collections, multiple heterogeneous sources, Internet of Things
- Complex systems, distributed architectures, SE project management, product maintenance
- Usability, intellectualization, ubiquitous computing environments, smart services

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3

## Systems Engineering

- Guiding the engineering of complex systems
- A system is a set of interrelated components working together toward some common objective

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4

## For whom?

- **Mandatory course for MSc study**
  - Applied Math & CS
  - Information Systems and Technology
- **Students with interest in**
  - Software Engineering
  - Networking & Distributed systems
  - Information Technology
  - Computer Science

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5

## How?

- **Lectures:** 1h per week
  - Selected topics of Systems Engineering in Software Engineering
- **Labs/Seminars:** 1h per week
  - Individual overview: papers, books, projects
  - Progress reports in class
- **Grades:** Exam or Pass/Fail
  - Presentation, focus on mapping theory to practice
  - Questions list

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6

## Lectures overview

1. Systems Development Environment
2. Software Systems Engineering
3. Managing Systems Development
4. Designing Forms and Reports
5. Systems Architecture

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7

## Seminars overview

- Each student
  - overviews 3 topics (chapter, paper, project)
- Topics extend lectures
- Presentation and discussion in class
- Summarized presentation on the exam

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8

## Literature and other Resources

1. Course web-page.  
<http://cs.karelia.ru/studies/umk/2012/Mathematics/5. PMI - MSc. Sistemnaya Inzheneriya. Korzun/>
2. A. Kossiakoff, W.N. Sweet, S.J. Seymour, S.M. Biemer. Systems Engineering: Principles and Practice. 2nd edition. Wiley. Willey series in systems engineering and management. 2011.
3. J.A. Hoffer, J.F. George, J.S. Valacich, Modern Systems Analysis and Design. 6th edition. Prentice Hall. 2011.
4. Ресурс поддержки программных проектов с открытым кодом. <http://sourceforge.net/>

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9