Software engineering 7.5 credits D7025E

Programvaruteknik

Course syllabus admitted: Autumn 2013 Sp 1 - Autumn 2013 Sp 2

DECISION DATE
2013-06-12

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Software engineering 7.5 credits D7025E

Programvaruteknik

Second cycle, D7025E

Education level	Grade scale	Subject	Subject group (SCB)
Second cycle	G U 3 4 5	Datalogi	Computer Technology

Entry requirements

Courses of at least 90 credits at first cycle including the following knowledge/courses. D0009E Introduction to programming, D0010E Object-oriented programming and design, D0012E Algorithms and data structures.

Selection

The selection is based on 30-285 credits

Examiner

Josef Hallberg

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Course Aim

The general course goal is to give basic skills and understanding of software engineering.

- Knowledge and understanding
    - Demonstrate basic knowledge and understanding of software engineering both individually and in a group.
    - Demonstrate basic knowledge of proven software engineering methods and theories.
    - Demonstrate insight in how software is engineered in industry.
    - Demonstrate in-depth knowledge within the following areas of software engineering:
        - System analysis based on use-cases.
        - System analysis through requirement engineering.
        - Modeling in UML (Unified Modelling Language)
        - Modeling using patterns.
        - Iterative and light-weight system design (Evolutionary Design)

- Competence and skills
    - Demonstrate abilities to critically and creatively identify, formulate, analyze and evaluate design and implementation of software-based systems, using an entrepreneurial methodology.
    - Demonstrate abilities to critically and systematically design software-based systems though modeling and evolutionary integration of knowledge, from limited information.
    - Demonstrate abilities to plan, lead and execute basic software engineering assignments.
    - Demonstrate abilities to design software-based systems in regards of human needs and abilities as well as the society's goals for economical, social and ecological factors for sustainable development.
    - Demonstrate abilities for oral and written presentation in English of a software-based system.

- Judgement and approach
    - Demonstrate abilities tu judge scientific, societal and ethical aspects of software engineering.
    - Demonstrate insights into the potentials and limitations of software engineering, foremost regarding economical and social aspects.
    - Demonstrate insights and capacities of working in a non-homogenous group of 4-5 students (not freely composed groups).
    - Demonstrate abilities to search for new knowledge and to continuously develop skills using entrepreneurial methodologies (individually and through collaboration with other students).

Contents

The course will have an emphasis on selected topics from: Project planning and management, problem analyse, requirement specification, modelling, diagram, use cases, design, patterns, reuse, components, architectures, pilot cases, inspections, reviews, metrics, implementation, testing, estimation, risk management, configuration management, quality, quality management, maintenance and documentation. The course includes a project in groups where the assignment is openly defined and is later presented both orally and written. The course also includes two laborations, one code review and assignment on design patterns, as well as guest lectures and seminars with mandatory presence.

Realization

Each course occasion´s language and form is stated and appear on the course page on Luleå University of Technology's website.
Lectures and project work.

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Examination

If there is a decision on special educational support, in accordance with the Guideline Student's rights and obligations at Luleå University of Technology, an adapted or alternative form of examination can be provided. Oral and written presentation of project, home-exam and mid-term exams. Presence on mandatory lectures.

Remarks

The course have earlier had the coursecodes SMD136 and D7008E. The course can therefore not be combined with the credits for these courses.

Overlap

The course D7025E is equal to D7008E

Literature. Valid from Autumn 2011 Sp 1

1. Ian Sommerville, \"Software Engineering\", 9th edition,
Addison-Wesley, 30 Jun 2006, ISBN-10: 0137035152, ISBN-13: 9780137035151.
2. Erich Gamma, Richard Helm, Ralph Johnson, John Vlissides, \"Design Patterns: Elements of Reusable Object-Oriented Software\", Addison-Wesley, 1994, ISBN 0-201-63361-2.

Course offered by

Department of Computer Science, Electrical and Space Engineering

Items/credits

Number	Type	Credits	Grade
0001	Project	4.5	G U 3 4 5
0002	Take-home exam and mid-term exams	3	G U 3 4 5

Study guidance

http://www.ltu.se/csee/utbildning/kurser/GU?l=en

Last revised

by Jonny Johansson, HUL SRT 2013-06-12

Syllabus established

by huvudansvarig utb.ledare vid SRT, Jonny Johansson 2011-02-04

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