



# IV2037 Business Process Design and Intelligence 7,5 hp

Business Process Design and Intelligence

När kurs inte längre ges har student möjlighet att examineras under ytterligare två läsår.

## Fastställande

Kursplan för IV2037 gäller från och med VT09

## Betygsskala

A, B, C, D, E, FX, F

## Utbildningsnivå

Avancerad nivå

## Huvudområden

## Särskild behörighet

## Undervisningsspråk

Undervisningsspråk anges i kurstillfällesinformationen i kurs- och programkatalogen.

## Lärandemål

This is an advanced course on workflow and business process management systems. After taking the course the students should be able to:

- explain and apply the central terminology within the area (e.g., case, process, task, activity, role, resource, work list, etc) as well as describe the architecture of a workflow management system (according to the reference model by the Workflow Management Coalition) and account for the basic functionality of contemporary workflow- and business process management systems.
- produce a formal process model from an informal textual domain description
- represent a process in different modelling notations, as well as translate a process model from one notation to another and reason about the similarities and differences of the solutions
- implement a process model in a workflow management system, deploy and run it
- analyse process models, i.e. apply different verification techniques to check the soundness of a model as well as carry out performance analyses
- suggest redesign of existing processes and motivate it with best practises principles.
- read, analyse and present material from the scientific literature in the area

## Kursinnehåll

Business process management systems (BPMS) are information systems aimed to support the business processes in an organisation. Business processes describe the organisation of work into work tasks, the distribution of work task into different resources and the provision of necessary information for the performance of the individual tasks. With other words these systems aim to support the administration of work in organisations. Characteristic is that BPMS are configured on the basis of process models which are usually graphical.

The course contains the following three elements: Modelling, Analysis and Redesign, as well as Implementation.

### Modelling

Modelling refers to the activity of analysing a domain (description) from a certain point of view and structuring the outcome in a model, in this case a process model. Given an informal textual description students should be able to produce process models in a formal notation, i.e. high level Petri nets. The focus will initially be on the control-flow perspective, but gradually even the data and resource perspectives will be introduced. To support the modelling, an extensive number of design patterns will be introduced.

### Analysis and Redesign

Two common types of analysis in business process management context are a-priori and a-posteriori analyses. A-priori analyses refer to the analyses made on a process model before the enactment of a process management system. They are based on simulation techniques. A-posteriori analyses are realised through process mining and business intelligence technique which are performed on the actual business processes (often facilitated through the enactment of a business process management system). Both types of analyses may lead to process redesign. This course will focus on a-priori analyses. Best practises for process redesign will be presented. Some techniques from a-posteriori analyses will also be introduced.

### Implementation

Implementation refers to the activity of defining the process models resulting from the modelling phase in a workflow management system. The course will introduce the main functionality and architecture of such systems. The students will be trained in implementing their process models in such systems.

## Kursupplägg

Lectures and group work/seminars.

## Kurslitteratur

W.van der Aalst and K. van Hee, **Workflow Management: Models, Methods, and Systems**, The MIT Press, 2002, ISBN 0-262-72046-9

Compendium

## Examination

- INL1 - Projektuppgift, 2,5 hp, betygsskala: P, F
- TEN1 - Tentamen, 5,0 hp, betygsskala: A, B, C, D, E, FX, F

Examinator beslutar, baserat på rekommendation från KTH:s handläggare av stöd till studenter med funktionsnedsättning, om eventuell anpassad examination för studenter med dokumenterad, varaktig funktionsnedsättning.

Examinator får medge annan examinationsform vid omexamination av enstaka studenter.

**The assignment** is intended to train students in process modelling and design, as well as model analyses and implementation of business processes in workflow management systems. The assignment is performed in **groups** and shall be handed in and reported latest at the date for the written exam. The assignment is marked with:

- Passed (P),
- Rest (Fx) or
- Failed (F).

If the mark Fx is given, the students are offered the possibility to resubmit, and report a corrected version of the assignment latest at the date for the written re-exam. **Assignments not submitted on time are automatically marked with F.**

**The written exam** is an individual, closed book exam, which means that no books, notes and other help material are allowed. It is marked with the scale: A, B, C, D, E, Fx, F. The length of the exam is **4 hours**. There will be two kinds of questions on the exam: questions that test the skills of the students (e.g. the ability to model workflows, the ability to analyse workflows, the ability to redesign workflows) as well as questions that tests the theoretical knowledge of the students (e.g. architecture of WFMS, functionality of WFMS, workflow patterns, redesign principles, etc.).

The exam will be marked according to the following

- A - obtained at least 90% of the points of the exam
- B - obtained at least 80% of the points of the exam
- C - obtained at least 70% of the points of the exam
- D - obtained at least 60% of the points of the exam
- E - obtained at least 50% of the points of the exam
- Fx - obtained at least 40% of the points of the exam

Students who fail or, of some reason, miss the exam will be given a second chance through a re-exam. The re-exam will be of the same standard as the original exam. Students who fail or miss the re-exam are referred to the examination of the course next-following year.

## Övriga krav för slutbetyg

**To pass the course**, a student needs to pass both the written exam and the assignment. Final grade is based on the grade of the written exam.

## Etiskt förhållningssätt

- Vid grupparbete har alla i gruppen ansvar för gruppens arbete.
- Vid examination ska varje student ärligt redovisa hjälp som erhållits och källor som använts.
- Vid muntlig examination ska varje student kunna redogöra för hela uppgiften och hela lösningen.