



LUNDS UNIVERSITET
Lunds Tekniska Högskola

Course syllabus

Constraint-programmering Constraint Programming

EDAN01, 7,5 credits, A (Second Cycle)

Valid for: 2023/24

Faculty: Faculty of Engineering, LTH

Decided by: PLED C/D

Date of Decision: 2023-04-18

General Information

Elective for: C4-pv, D4-pv, D4-se, E4, F4, F4-pv, IDA3, Pi4, MMSR2

Language of instruction: The course will be given in English on demand

Aim

The goal of this course is to have each student acquire the knowledge on a new programming paradigm based on constraints over finite domains, and provide experience of how to use these methods for solving combinatorial problems.

Learning outcomes

Knowledge and understanding

For a passing grade the student must

- be able to use basic concepts of constraint programming
- be able to explain principles of constraint programming and define constraints for simple problems.

Competences and skills

For a passing grade the student must

- be able to model and implement constraint programs for a combinatorial problem
- be able to use appropriate heuristics to implement efficient search methods,
- demonstrate ability to critically, autonomously and creatively identify, formulate and handle combinatorial problems.

Judgement and approach

For a passing grade the student must

- demonstrate ability to identify needs for additional knowledge and to continuously develop new skills.

Contents

- Introduction to constraint programming.
- Basic algorithms used in constraint programming systems (constraint satisfaction and consistency, optimisation).
- Finite domain constraints.
- Modelling with finite domain constraints.
- Searching methods and optimisation.
- Selected advanced issues.

Examination details

Grading scale: TH - (U,3,4,5) - (Fail, Three, Four, Five)

Assessment: To qualify for a passing mark, the students must have completed the laboratory work. To qualify for a higher mark a written examination is required.

The examiner, in consultation with Disability Support Services, may deviate from the regular form of examination in order to provide a permanently disabled student with a form of examination equivalent to that of a student without a disability.

Admission

Admission requirements:

- EDAA01 Programming - Second Course or EDAA30 Programming in Java - Second Course or FRTF25 Introduction to Machine Learning, Systems and Control

The number of participants is limited to: No

The course overlaps following course/s: EDA340

Reading list

- Kuchcinski, K: Modeling and Optimisation of Embedded Systems with Constraint Programming: Principles and Practice. Distributed by the department.

Contact and other information

Course coordinator: Per Andersson, per.andersson@cs.lth.se

Course homepage: <http://cs.lth.se/edan01>