

SYLLABUS

Industrial Image Analysis

7.5 credits E0005E

Industriell bildanalys

Course syllabus admitted: Autumn 2012 Sp 1 - Autumn 2015 Sp 2

DECISION DATE
2012-03-14

Industrial Image Analysis 7.5 credits E0005E

Industriell bildanalys

First cycle, E0005E

Education level	Grade scale	Subject	Subject group (SCB)
First cycle	G U 3 4 5	Elektroteknik	Electrical Engineering

Entry requirements

In order to meet the general entry requirements for first cycle studies you must have successfully completed upper secondary education and documented skills in English language and Good knowledge in analysis and linear algebra: M0031M. Basic knowledge about the MATLAB laboratory environment.

Alternative:

Alternative to completed courses can be corresponding knowledge acquired through work within the processindustry or IT sector.

Selection

The selection is based on 1-165 credits.

Examiner

Matthew Thurley

Course Aim

The course provides a broad practical introduction to a range of areas in image processing to equip students with the necessary skills to be able to understand and solve industrial imaging problems. The student will learn practical skills through a series of MATLAB exercises which they will then integrate into a solution for an example industrial problem. Machine vision and image processing offer many opportunities for process optimisation and improvements to efficiency and sustainability in industrial processes. The course includes some real examples of these opportunities and covers some classical topics in image processing as well as examples of active research at Luleå University of Technology within the field.

Contents

Properties for digital images, Contrast enhancement, Point- and neighbourhoodoperations, Geometric transformations, Filter operations, Edge detection, Line detection (Hough transform), Image transforms, Colour image processing and image analysis systems.

Realization

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

Consists of classes and mandatory laboratory work. The laboratory exercises and exam directly relate to the material covered in the lectures and implemented in the lab. Both are graded U 3 4 5, and the total mark is the combination with the lab work comprising 60% of the course assessment, and the exam 40%.

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. Written exam with differentiated grades and approved laboratory work.

Overlap

The course E0005E is equal to SME115

Hållbar utveckling har implementerats i denna kurs fr o m höstterminen 2010.

Literature. Valid from Autumn 2008 Sp 1

Digital Image Processing, 3rd edition, Rafael Gonzalez and Richard Woods. Pearson Education

ISBN-13: 978-0-13-505267-9

ISBN-10: 0-13-505267-X

Lecture notes.

Course offered by

Department of Computer Science, Electrical and Space Engineering

Items/credits

Number	Type	Credits	Grade
0002	Written exam	3	G U 3 4 5
0004	Laboratory work	4.5	G U 3 4 5

Study guidance

Study guidance for the course is to be found in our learning platform Canvas before the course starts. Students applying for single subject courses get more information in the Welcome letter. You will find the learning platform via My LTU.

Last revised

by Jonny Johansson, HUL SRT 2012-03-14

Syllabus established

by the Department of Computer Science and Electrical Engineering 2007-02-28