Graphic Arts

Programme course

6 credits

Grafisk teknik

TNM059

Valid from: 2017 Spring semester

Determined by
Board of Studies for Computer Science
and Media Technology

Date determined
2017-01-25

Main field of study
Media Technology and Engineering

Course level
First cycle

Advancement level
G1X

Course offered for
- Media Technology and Engineering, M Sc in Engineering

Prerequisites
Linear Algebra

Intended learning outcomes
Using Information technology in reproduction of images and printed matters.
After the course the student shall be able to:

- Understand different types of print technologies and their differences,
- Understand digital images,
- Describe the concepts such as, screen frequency, screen angle, print resolution, halftone cell,
- Describe the relationship between scanning resolution and screen frequency,
- Describe the relationship between screen frequency, print resolution and the number of gray levels that the halftoning can represent,
- Describe different types of halftoning and their differences,
- Understand dot gain,
- Understand and use Neugebauer and Demichel's equations,
- Understand the basic facts in color vision and color perception,
- Use color imaging models and write programs in Matlab to implement these models,
- Understand simple color based methods such as, Color matching CIEXYZ, CIELAB and color distance,
- Understand metamerism,
- Describe the differences between different color systems, RGB, CMYK, CIEXYZ, CIELab and color atlas,
- Understand the basic principals for different color measuring methods,
- Basic facts regarding color management and gamut mapping

Course content
History and application areas. Basic knowledge about paper and print. Digital printing methods. Reproduction of monochromatic images in print – halftoning. Digital halftoning. Optical and physical (mechanical) dot gain. Color: representing color, color standards, color reproduction. Color halftoning. Digitalizing color images. Color gamut. Color management.

Teaching and working methods
The course consists of lectures, classes and laboratory work.

Examination

LAB1	Laboratory course	1.5 credits	U, G
TEN1	Written examination	4.5 credits	U, 3, 4, 5

Grades
Four-grade scale, LiU, U, 3, 4, 5

Other information
Supplementary courses:
Graphic production and print quality , Image databases, Advanced Color Science

Department
Institutionen för teknik och naturvetenskap

Director of Studies or equivalent
Camilla Forsell

Examiner
Sasan Gooran

Education components
Preliminary scheduled hours: 46 h
Recommended self-study hours: 114 h

Course literature
Vetenskapliga artiklar, avsnitt ur böcker och föreläsningsanteckningar.

Common rules

Regulations (apply to LiU in its entirety)

The university is a government agency whose operations are regulated by legislation and ordinances, which include the Higher Education Act and the Higher Education Ordinance. In addition to legislation and ordinances, operations are subject to several policy documents. The Linköping University rule book collects currently valid decisions of a regulatory nature taken by the university board, the vice-chancellor and faculty/department boards.

LiU's rule book for education at first-cycle and second-cycle levels is available at http://styrdokument.liu.se/Regelsamling/Innehall/Utbildning_pa_grund-_och_avancerad_niva.