

SYLLABUS

DSP-systems in practice

7.5 credits S0002E

DSP-system i praktiken

Course syllabus admitted: Spring 2013 Sp 3 - Autumn 2015 Sp 2

DECISION DATE
2012-03-13

DSP-systems in practice 7.5 credits S0002E

DSP-system i praktiken

First cycle, S0002E

Education level	Grade scale	Subject	Subject group (SCB)
First cycle	U G#	Signalbehandling	Computer Technology

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 Courses of at least 60 credits at first cycle including the following knowledge/courses: Mathematics (corresponding to M0031M), linear analysis (M0018M) and basic signal analysis (S0001E).

Alternative:

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

Selection

The selection is based on 1-165 credits.

Examiner

Johan Carlson

Course Aim

After completion of the course, the students shall have knowledge and understanding of

- The architecture of digital signal processors (DSPs)
- The effect on linear and time invariant systems as a consequence of finite bit depth in the DSP architecture (e.g. quantization of filter coefficients), and methods for mitigating these effects
- Fundamentals of filter design.

At the end of the course, the student should be able to:

- Implement digital processing algorithms on a DSP processor
- Debug and analyze the system's behavior
- Verify algorithm functionality.
- Present and demonstrate the results orally and in written reports.

The students should also be able to judge

- If a specific task is possible to implement on a specific system given real-time and memory constraints.

Contents

Basics of sampling, real-time hardware architecture, digital filter structures, quantization, real-time applications and use of development tools.

Realization

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

Lectures, laboratory exercises and problem solving sessions.

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. Graded laboratory exercises and graded final project report with oral presentation.

Overlap

The course S0002E is equal to SMS045

Literature. Valid from Autumn 2008 Sp 1

Course material will be handed out at course start.

Course offered by

Department of Computer Science, Electrical and Space Engineering

Items/credits

Number	Type	Credits	Grade
0001	Laboratory work	4.5	U G#
0002	Project	3	U G#

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 2012-03-13

Syllabus established

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