

# Engineering Applications Using Matlab

Programme course

6 credits

Systemtekniska tillämpningar i Matlab

TNG016

Valid from: 2017 Spring semester

**Determined by**

Board of Studies for Electrical  
Engineering, Physics and Mathematics

**Date determined**

2017-01-25

## Main field of study

Electrical Engineering

## Course level

Second cycle

## Advancement level

A1X

## Course offered for

- Electronics Design Engineering, M Sc in Engineering
- Communication and Transportation Engineering, M Sc in Engineering

## Entry requirements

Note: Admission requirements for non-programme students usually also include admission requirements for the programme and threshold requirements for progression within the programme, or corresponding.

## Prerequisites

System engineering courses such as Automatic control and Modelling and simulation.

## Intended learning outcomes

After the course the student should be familiar with how Matlab is used in a project in system engineering. The student should be able to

- Describe how projects in system engineering can adopt to Matlab, Simulink and the toolboxes of Matlab according to
- communication with the surrounding world (sampling effects)
- user interface and the use of graphics.
- use the toolboxes in Matlab for analysis and design of system engineering questions.
- implement developing projects using Matlab.

## Course content

- In depth knowledge in a project (the contents of the project depends on which program the student is enrolled to.)
- Matlab, the toolboxes of Matlab and Simulink
- data types
- debugger
- functions
- local functions,
- c and Fortran code in Matlab
- mex-files.
- object orientation in Matlab.
- graphical user interfaces
- "stand-alone"-applications
- vectorization

## Teaching and working methods

There will be both tasks done in groups, projects and individual assignments.

## Examination

UPG3	Individual assignment	3 credits	U, 3, 4, 5
PRA2	Project assignment	3 credits	U, G

## Grades

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

## Department

Institutionen för teknik och naturvetenskap

## Director of Studies or equivalent

Adriana Serban

## Examiner

Omer Nur

## Course website and other links

<http://www2.itn.liu.se/utbildning/kurs/>

## Education components

Preliminary scheduled hours: 6 h

Recommended self-study hours: 154 h

## Course literature

Kurslitteratur föreslås individuellt enligt projektuppgiften. Emellertid kan den möjliga grundläggande litteraturen vara: *Mastering MATLAB 7: International Edition*, Duane C. Hanselman Bruce L. Littlefield, ISBN-10: 0131857142, ISBN-13: 9780131857148

## 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://stydokument.liu.se/Regelsamling/Innehall/Utbildning\\_pa\\_grund-\\_och\\_avancerad\\_niva](http://stydokument.liu.se/Regelsamling/Innehall/Utbildning_pa_grund-_och_avancerad_niva).