



Faculty of Health, Science and Technology
Electrical Engineering

Syllabus

Signals and Systems

Course Code:	ELGB23
Course Title:	Signals and Systems <i>Signaler och system</i>
Credits:	7.5
Degree Level:	Undergraduate level
Progressive Specialisation:	First cycle, has less than 60 credits in first-cycle course/s as entry requirements (G1F)

Major Field of Study:
ETA (Electrical Engineering)

Course Approval

The syllabus was approved by the Faculty of Health, Science and Technology 2016-03-08, and is valid from the Autumn semester 2016 at Karlstad University.

Prerequisites

ELGA01 Circuit Analysis 7.5 ECTS cr, ELGA02 Digital Electronics 7.5 ECTS cr, MAGA46 Mathematics for Engineers II 7.5 ECTS cr and MAGA47 Mathematics for Engineers III, or equivalent.

Learning Outcomes

Upon completion of the course, students should be able to:

- give an account of the basic theory of continuous-time signals and systems
- apply the Fourier transform and the Laplace transform
- give an account of the sampling of continuous-time signals
- give an account of the basic theory of discrete-time signals and systems
- apply the Z-transform
- describe how poles and zeros affect the properties of a system
- describe signals and systems in the frequency domain
- perform basic calculations for filtering of continuous-time and discrete-time signals
- give an account of certain practical applications of signal processing.

Content

Basic theory of continuous-time signals and systems. Fourier transform and Laplace transform. Sampling. Basic theory of discrete-time signals and systems. Z-transformation. Transfer functions, poles, zeros and stability. Spectral representation, frequency response and Bode plot. Filtration. Examples of applications within electrical engineering.

Reading List

See separate document.

Examination

Assessment is based on a written exam and mandatory laboratory sessions with written and oral presentations.

Grades

One of the grades Distinction (VG), Pass (G), or Fail (U) is awarded in the examination of the course. Engineering students are awarded one of the grades 5 (Pass with Distinction), 4 (Pass with Some Distinction), 3 (Pass) or U (Fail) in the examination of the course.

Quality Assurance

Follow-up relating to learning conditions and goal-fulfilment takes place both during and upon completion of the course in order to ensure continuous improvement. Course evaluation is partly based on student views and experiences obtained in accordance with current regulations and partly on other data and documentation. Students will be informed of the result of the evaluation and of any measures to be taken.

Course Certificate

A course certificate will be provided upon request.

Additional information

The local regulations for studies at the Bachelor and Master levels at Karlstad University stipulate the obligations and rights of students and staff.