Course: Digital Signal Processing — credits: 5

Course code	ELVH19GDSB
Name	Digital Signal Processing
Study year	2022-2023
ECTS credits	5
Language	Dutch, with parts in English
Coordinator	J. Zijlstra
Modes of delivery	Lecture Practical / Training Tutorial
Assessments	Digital Signal Processing - Written, organised by STAD examinations

Learning outcomes

The student can :

- find the real or complex Fourier series representation of a periodic function.
- describe the frequency and amplitude characteristics of the different harmonic components of a function.
- calculate and apply Discrete Fourier transform.
- perform calculations with discrete impulse responses, discrete convolution products and frequency responses.
- apply sampling theorem of Shannon, Nyquist frequency and the concept of aliasing.
- identify if a system is stable, linear, causal and/or time invariant.
- calculate and apply the z-transform and know the relation with the Fourier transform.
- conduct stability analysis in the z-plane and in the frequency domain using poles & zeroes and the unit circle.
- calculate the transient behaviour of a discrete system.
- design and classify different forms of digital filters (FIR, IIR notch and low/high pass filters) with given properties and demonstrate this filter.
- calculate the difference equation for filters with given properties.

Content

This study unit consists of tutorials, practicals and theory lectures.

Included in programme(s)

Electrical Engineering Major Electronics
Electrical Engineering Major Mechatronics

School(s)

Institute of Engineering

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