

Course Specifications

Valid in the academic year 2022-2023

Signals and Systems (E620100)

Course size	ourse size (nominal values; actual values may depend on programme)					
Credits 6.0	Study time 180) h Conta	ct hrs	60.0h		
Course offerings and te	aching methods in academic ye	ear 2022-2023				
A (semester 1)	Dutch	Kortrijk		lecture		36.0h
				seminar: coached e	exercises	24.0h
Lecturers in academic y	1027-2023					
			TWOS	lecturer-in-ch	narna	
Franchois Ann			TW05	co-lecturer	large	
Huynen, Martijn			TW05	co-lecturer		
Offered in the followin	g programmes in 2022-2023			crdts	offering	
Bachelor of Science in Engineering Technology(main subject Machine and Production Automation)				6	A	
Teaching languages						
Dutch						
Keywords						
Vector calculus, line integrals, series, signals, systems, Laplace transform, Fourier transform, convolution						
Position of the course						
1) to provide insigh vector calculus, int answer the needs 2) to increase the electricity, mechar methods used to d This course is inter	nt in some basic concepts and ma egral transforms and series. The of a course in engineering. level of abstraction acquired in pr nics,). This will be done using sir escribe the interaction between h rdisciplinary.	athematical tools relate subjects are chosen pri revious courses (maths nple conceptual mathe LTI-systems and signals	ed to imarily to , physics, matic s.			
Contents						
 Vector calculus a Vector analysis: de divergence, laplaci definition, comput vector fields and p convergence. Serie and applications. Signal and syste Classification of sin Linear time-invaria eigenfunctions. Laplace transform coefficients. Fourier analysis of 	and series rivative and integration of vector an: properties, calculus and appli ation, applications, Green's theory otentials. Series: notions of conve s of functions: general concepts, em analysis gnals and systems ant systems in continuous time: re and solving lineair differential ec signals and systems, sampling	r functions; gradient, cu ications. Line integrals: em and corollaries, con ergence, criteria of Taylor series, Fourier se esponse, convolution, quations with constant	ırl, servative eries			
Initial competences						
Maths (complex nu functions, linear al (dynamics).	ımbers, limits, differentiation, int gebra, vector calculus), Physics, E	egration, differential e Electricity and Mechanic	quations, cs			

Final competences

- 1 Correlate different scientific and technical disciplines with each other.
- 2 Explain fundamental concepts of vector analysis.
- 3 Compute line integrals.
- 4 Predict the convergence of numerical and function series.
- 5 Construct Taylor-and Fourier series.
- 6 Classify signals and systems and apply basic operations on them.
- 7 Analyse the interaction between signals and systems through convolution.
- 8 Analyse the interaction between signals and systems in a complex frequency domain (Laplace-transform).
- 9 Analyse signals and systems in continuous time through Fourier theory.

Conditions for credit contract

Access to this course unit via a credit contract is determined after successful competences assessment

Conditions for exam contract

This course unit cannot be taken via an exam contract

Teaching methods

Lecture, Seminar: coached exercises

Extra information on the teaching methods

Lecture: 36 hrs Seminar (guided exercises): 24hrs If necessary, teaching methods may be adapted due to COVID19.

Learning materials and price

Syllabus in Dutch (ca. 10 euro) Handbook Signals and Systems, Schaum's Outline Series (ca. 20 euro)

References

Course content-related study coaching

The lecturer is available during or in between lectures; there is assistance during the exercise-sessions. Individual assistance is provided on demand (by appointment).

Assessment moments

end-of-term and continuous assessment

Examination methods in case of periodic assessment during the first examination period

Written examination

Examination methods in case of periodic assessment during the second examination period

Written examination

Examination methods in case of permanent assessment

Written examination

Possibilities of retake in case of permanent assessment

examination during the second examination period is possible

Extra information on the examination methods

NPE and second chance NPE: written examination (closed book) on vector calculus and series PE1 en PE2: written examination on signal and system analysis. The use of a formularium is allowed. Illegitimate absence (second chance) NPE: marks NPE = 0

Calculation of the examination mark

First examination Period: Total = NPE*1/3 + PE1*2/3 Second examination Period: Total = NPE*1/3 + PE2*2/3 When the student scores less than 8/20 for at least one of the two components (Part 1: vector calculus and series, Part 2: Signal and system analysis), he/she can no longer pass the course. If the total score is a mark of ten or more, then it is reduced to the highest failing mark (9/20).