Module title			Abbreviation
Telecommunication Systems			10-I=TSD-232-m01
Module coordinator		**Module offered by**	
Dean of Studies Informatik (Computer Science)		Institute of Computer Science	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
10	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	graduate	--	

Contents

- Introduction
- Signals and Linear Systems
- Digital Representation of Analog Signals
- Binary Baseband Modulation
- Detection of Binary Baseband Signals in Noise
- Digital Modulation
- Multicarrier Modulation
- Channel Coding
- Networks and Protocols
- Further Topics

Intended learning outcomes

Students will

- grasp the concepts and techniques of sampling, quantisation and pulse shaping for signal transmission and reception,
- learn how to detect and decode signals in the presence of noise,
- gain knowledge of higher order modulation schemes and their applications, including Quadrature Amplitude Modulation (QAM) and Frequency Shift Keying (FSK),
- understand the basics of error control coding, such as forward error correction (FEC) codes and convolutional codes, and their role in enhancing data reliability and
- become acquainted with network protocols, including the OSI model, TCP/IP protocols, and those used in wireless networks, understanding their functions and operation.

Courses (type, number of weekly contact hours, language — if other than German)

V (4) + Ü (2)
Module taught in: German and/or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

written examination (approx. 60 to 120 minutes)
If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).
Language of assessment: German and/or English
creditable for bonus

Allocation of places

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Additional information

Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): LR

Workload

300 h

Teaching cycle
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Referred to in LPO I (examination regulations for teaching-degree programmes)
§ 22 II Nr. 3 b)
Module appears in
Master's degree (1 major) Computer Science (2023) Master's degree (1 major) Aerospace Computer Science (2023) Master's degree (1 major) Computer Science (2025) Master's degree (1 major) Aerospace Computer Science (2025) First state examination for the teaching degree Gymnasium Computer Science (2025) Teaching degree Gymnasium Erweiterung Computer Science (2025) Exchange Program Computer Science (2025)