

Module Handbook (<https://modhb.uni-kl.de/>)

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## Module EIT-NAT-301-M-4

Introduction to Communication Networks (M, 4.0 LP)

### Module Identification

Module Number	Module Name	CP (Effort)
EIT-NAT-301-M-4	<i>Introduction to Communication Networks</i>	4.0 CP (120 h)

### Basedata

CP, Effort	4.0 CP = 120 h
Position of the semester	1 Sem. in SuSe
Level	[4] Bachelor (Specialization)
Language	[DE] German
Module Manager	Urbansky, Ralph, Prof. Dr.-Ing. (PROF   DEPT: EIT) (/staff/348/)
Lecturers	Urbansky, Ralph, Prof. Dr.-Ing. (PROF   DEPT: EIT) (/staff/348/)
Area of study	[EIT-NAT] Communications Engineering
Lifecycle-State	[NORM] Active

### Courses

Type/SWS	Course Number	Choice in Module-Part	SL	PL	CP	Sem.
2V+1U	EIT-NAT-301-K-4 (/mhb/courses/EIT-NAT-301-K-4/)	P	-	PL1	4.0	SuSe

- About [EIT-NAT-301-K-4]: Title: "Introduction to Communication Networks"; Presence-Time: 42 h; Self-Study: 78 h

### Examination achievement PL1

- Form of examination: **written exam (Klausur) (90 Min.)**
- Examination Frequency: each semester

### Evaluation of grades

The grade of the module examination is also the module grade.

## Contents

From [EIT-NAT-301-K-4] **Introduction to Communication Networks** (/mhb/courses/EIT-NAT-301-K-4/):

- Einführung: Übergang von Punkt-zu-Punkt zum Netz, Netzstrukturen, Betriebsarten, Übertragungstechnik, Multiplexverfahren, Übertragungsmedium
- Netzfunktionen: Schichtenmodell, Dienste, Datenstrukturen
- Übertragungsverfahren: Synchrone und asynchrone Multiplexverfahren, Verbindungsarten
- Vielfachzugriff: reines und Slotted ALOHA, CSMA, CSMA/CD, Ethernet, Durchsatz, Stabilisierungsverfahren
- Fehlererkennung und -korrektur: Vorwärtsfehlerkorrektur (Kanalcodierung, Blockcodes, zyklische Codes), ARQ (Stop-and-Wait, Go-Back-N, Selective-Repeat)
- Queueing: Begrenzte und unbegrenzte Warteräume, Wartezeit, Bedienrate, Verlustwahrscheinlichkeit
- Routing: Flooding, kürzester Pfad, Bellmann-Ford-Algorithmus, Dijkstra-Algorithmus

## Competencies / intended learning achievements

- Kenntnis der Mechanismen der Kommunikation mehrerer verteilter Teilnehmer in einem Kommunikationsnetzwerk und deren Modellierung
- Kenntnis verschiedener Abstraktionsschichten des Informationsaustauschs zwischen Kommunikationspartnern von der physikalischen Übertragung bis hin zur Applikation
- Fähigkeit zum Erstellen von Lösungsstrategien zu Problemen in Kommunikationsnetzen wie Vielfachzugriff, Warteschlangen und Routing

## Requirements for attendance (informal)

### Modules:

- [EIT-EMS-454-M-2] Principles and Applications of Probability Theory (M, 4.0 LP) (/mhb/modules/EIT-EMS-454-M-2/)

## Requirements for attendance (formal)

None

References to Module / Module Number [EIT-NAT-301-M-4]

Course of Study	Section	Choice/Obligation
[EIT-82.781-SG#2019] B.Sc. Electrical and Computer Engineering [2019] (/mhb/FB-EIT/cos-523/)	Major-Specific Advanced Subjects	[P] Compulsory
[EIT-82.781-SG#2019] B.Sc. Electrical and Computer Engineering [2019] (/mhb/FB-EIT/cos-523/)	Major-Specific Advanced Subjects	[P] Compulsory
[EIT-88.781-SG#2010] M.Sc. Electrical and Computer Engineering [2010] (/mhb/FB-EIT/cos-556/)	Theoretical Part	[P] Compulsory
[EIT-88.781-SG#2010] M.Sc. Electrical and Computer Engineering [2010] (/mhb/FB-EIT/cos-556/)	Elective Subjects	[W] Elective Module
[EIT-82.A44-SG#2018] B.Sc. Media and Communication Technology [2018] (/mhb/FB-EIT/cos-527/)	Fundamentals of Electrical and Computer Engineering (GEIT)	[P] Compulsory
[EIT-82.?-SG#2021] B.Sc. Electrical and Computer Engineering [2021] (/mhb/FB-EIT/cos-685/)	Major-Specific Advanced Subjects	[P] Compulsory
[EIT-82.?-SG#2021] B.Sc. Electrical and Computer Engineering [2021] (/mhb/FB-EIT/cos-685/)	Major-Specific Advanced Subjects	[P] Compulsory
[EIT-88.?-SG#2021] M.Sc. Electrical and Computer Engineering [2021] (/mhb/FB-EIT/cos-686/)	Technical Elective Modules	[W] Elective Module
[EIT-88.A20-SG#2021] M.Sc. European Master in Embedded Computing Systems (EMECS) [2021] (/mhb/FB-EIT/cos-566/)	Elective Subjects	[W] Elective Module
[EIT-88.?-SG#2021] M.Sc. Automation and Control (A&C) [2021] (/mhb/FB-EIT/cos-676/)	Elective Modules	[W] Elective Module
[EIT-88.?-SG#2021] M.Sc. Embedded Computing Systems (ESY) [2021] (/mhb/FB-EIT/cos-677/)	Elective Subjects	[W] Elective Module