

Module: Communication Networks

Level	Bachelor	Short Name	COM II
Responsible Lecturers	Hellbrück, Horst, Prof. Dr.-Ing.		
Department, Facility	Electrical Engineering and Computer Science		
Course of Studies	Electrical Engineering - Communication Systems, Bachelor		
Compulsory/elective	Compulsory	ECTS Credit Points	5
Semester of Studies	5	Semester Hours per Week	4
Length (semesters)	1	Workload (hours)	150
Frequency	WiSe	Presence Hours	60
Teaching Language	English	Self-Study Hours	90

The following section is filled only if there is **exactly one** module-concluding exam.

Exam Type	Portfolio Exam	Exam Language	English
Exam Length (minutes)	0	Exam Grading System	One-third Grades
Learning Outcomes	After completing the course students are able to <ul style="list-style-type: none"> • explain the structure and functions of reference models • explain important terms in networking and understand and explain difference between service and protocol • based on a given application, students are able to derive quality of service requirements for the underlying network and design protocols to meet these requirements • students are able to design, set up and maintain a network 		
Participation Prerequisites			

The previous section is filled only if there is **exactly one** module-concluding exam.

Consideration of Gender and Diversity Issues	✘ Use of gender-neutral language (THL standard) ✘ Target group specific adjustment of didactic methods ✘ Making subject diversity visible (female researchers, cultures etc.)		
Applicability			
Remarks			

Module Course: Communication Networks (Lecture)

(of Module: Communication Networks)

Course Type	Lecture	Form of Learning	Presence
Mandatory Attendance	no	ECTS Credit Points	4
Participation Limit		Semester Hours per Week	3
Group Size		Workload (hours)	90
Teaching Language	English	Presence Hours	45
Study Achievements ("Studienleistung", SL)		Self-Study Hours	45
SL Length (minutes)		SL Grading System	

The following section is filled only if there is a course-specific exam.

Exam Type		Exam Language	
Exam Length (minutes)		Exam Grading System	
Learning Outcomes			
Participation Prerequisites			

The previous section is filled only if there is a course-specific exam.

Contents	<p>1. Reference Models (workload 5h)</p> <ul style="list-style-type: none"> OSI Reference Model 7 Layers, Functions and Services <p>2. LANs (workload 50h)</p> <ul style="list-style-type: none"> Ethernet – IEEE 802.3 Transparent Switches Spanning Tree Virtual LANs <p>3. Network Layer (workload 55h)</p> <ul style="list-style-type: none"> Tasks of Network Layer Addressing, Subnetting, Fragmentation, Multiplexing Router, Routing Protocols RIP, OSPF, BGP Internet Protocol IPv4 and IPv6 Multiprotocol Label Switching <p>4. Transport Layer (workload 35h)</p> <ul style="list-style-type: none"> Tasks of Transport Layers User Datagram Protocol UDP / Transmission Control Protocol TCP Application Programming Interface APIs <p>5. Application Layer (workload 35h)</p> <ul style="list-style-type: none"> Domain Name Service File Transfer Protocol
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	<ul style="list-style-type: none"> • E-mail Protocols • Hypertext Transfer Protocol HTTP • Quality of Service
Literature	<p>Andrew S. Tanenbaum: Computer Networks, Prentice-Hall</p> <p>James F.Kurose, Keith W. Ross: Computer Networking : a Top-down Approach featuring the Internet, Prentic-Hall</p> <p>Jochen Schiller: Mobile Communications, Addison-Wesley</p> <p>G. Coulouris, J. Dollimore, T. Kindberg: Distributed Systems: Concepts and Design</p> <p>Silberschatz, Galvin, Gagne: Operating System Concepts, Wiley</p>
Remarks	

Lehrveranstaltung: Communication Networks (Laboratory)

(zu Modul: Communication Networks)

Lehrveranstaltungsart		Lernform	
LV-Name englisch			
Anwesenheitspflicht	nein	ECTS-Leistungspunkte	1
Teilnahmebeschränkung		Semesterwochenstunden	1
Gruppengröße	12	Arbeitsaufwand in Stunden	60
Lehrsprache		Präsenzstunden	15
Studienleistung	Practical Training	Selbststudiumsstunden	45
Dauer SL in Minuten		Bewertungssystem SL	

Der folgende Abschnitt ist nur ausgefüllt, wenn es eine lehrveranstaltungsspezifische Prüfung gibt.

Prüfungsleistung		Prüfsprache	
Dauer PL in Minuten		Bewertungssystem PL	
Lernergebnisse			
Teilnahmevoraussetzungen			

Der vorige Abschnitt ist nur ausgefüllt, wenn es eine lehrveranstaltungsspezifische Prüfung gibt.

Lehrinhalte	L1 : OSI Layers Service and Protocol L2 : Switch and LANs, VLANs L3 : Router & Routing Protocols, Fragmentation, Forwarding L4 : Transmission Control Protocol, Segments and Reliable Transfer
Literatur	
Bemerkungen	