

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	Elektrotechnik - Energiesysteme und Automation, Bachelor		
Compulsory/elective	Compulsory	ECTS Credit Points	5
Semester of Studies	6	Semester Hours per Week	4
Length (semesters)	1	Workload (hours)	150
Frequency	SuSe	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)		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	<ul style="list-style-type: none"> ✓ 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	3
Participation Limit		Semester Hours per Week	3
Group Size		Workload (hours)	90
Teaching Language	German	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	

Module Course: Communication Networks (Laboratory)

(of Module: Communication Networks)

Course Type	Practical Training	Form of Learning	Presence
Mandatory Attendance	no	ECTS Credit Points	2
Participation Limit		Semester Hours per Week	1
Group Size	12	Workload (hours)	60
Teaching Language		Presence Hours	15
Study Achievements ("Studienleistung", SL)	Practical Training	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	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
Literature	See. Lecture
Remarks	