TECHNISCHE HOCHSCHULE LÜBECK

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 - Kommunikationssysteme, 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 • 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**	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

1. Reference Models (workload 5h)
- OSI Reference Model 7 Layers, Functions and Services

2. LANs (workload 50h)
- Ethernet – IEEE 802.3
- Transparent Switches
- Spanning Tree
- Virtual LANs

3. Network Layer (workload 55h)
- Tasks of Network Layer
- Addressing, Subnetting, Fragmentation, Multiplexing
- Router, Routing Protocols RIP, OSPF, BGP
- Internet Protocol IPv4 and IPv6
- Multiprotocol Label Switching

4. Transport Layer (workload 35h)
- Tasks of Transport Layers
- User Datagram Protocol UDP / Transmission Control Protocol TCP
- Application Programming Interface APIs

5. Application Layer (workload 35h)
- Domain Name Service
- File Transfer Protocol

	• E-mail Protocols • Hypertext Transfer Protocol HTTP • Quality of Service
Literature	Andrew S. Tanenbaum: Computer Networks, Prentice-Hall James F.Kurose, Keith W. Ross: Computer Networking : a Top-down Approach featuring the Internet, Prentic-Hall Jochen Schiller: Mobile Communications, Addison-Wesley G. Coulouris, J. Dollimore, T. Kindberg: Distributed Systems: Concepts and Design Silberschatz, Galvin, Gagne: Operating System Concepts, Wiley
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	