SCHMALKALDEN UNIVERSITY OF APPLIED SCIENCES

Course Description – Summer 2025

Title	Communication Networks
Faculty	Electrical Engineering
Professor	Prof. Dr. Carsten Roppel
ECTS	5
Level	Bachelor
Requirements	
Add. Information	Lecture and laboratory exercises
Content	1 Design Principles The OSI Reference Model, Network Topologies, Circuit Switching and Packet Switching, Error Detection and Correction, Automatic Repeat Request (ARQ), Dimensioning: Queueing Models for Packet Switched Networks and Circuit Switched Networks 2 Transport, Access and Local Area Networks Synchronous Digital Hierarchy (SDH), Digital Subscriber Line (DSL), Cable Modems, LANs 3 Quality of Service and Traffic Management Performance Parameters at the Application/Packet/Bit Level, Traffic Parameters, Leaky Bucket, Token Bucket, Traffic Control Functions 4 Internet Protocols Basic Concepts, Addressing and Routing, IP Version 6, Quality of Service and Traffic Management (IntServ, DiffServ, MPLS), Transport Protocols (TCP, UDP) 5 Real-Time Services over Packet-Switched Networks Voice over IP (VoIP), Real-Time Transport Protocol (RTP), Session Initiation Protocol (SIP), Real-Time Streaming Protocol (RTSP), Line Emulation

6 Asynchronous Transfer Mode (ATM)

Basic Concepts, Protocol Reference Model, Packet Switches, Traffic Management

7 Integrated Services Digital Network (ISDN)

ISDN Access (Basic Rate Access, Primary Rate Access), Switch Architectures, Signalling