ELECTRICAL ENGINEERING DEPARTMENT
ENGINEERING FACULTY
UNIVERSITY OF MATARAM

MODULE HANDBOOK DESCRIPTION

Module designation	Data Communication and Computer Networks
Code	FBC3210
Semester(s) in which the module is taught	6 / third year
Person responsible for the module	Lalu Ahmad Syamsul Irfan Akbar
Language	Indonesian/English
Relation to curriculum	Elective for Telecommunication Engineering
Teaching methods	Lectures, small group discussion, case base method.
Workload (incl. contact hours, self-study hours)	Contact minutes every week, each week of the 16 weeks/semester: • Lectures: 3 x 50 minutes • Exercises and Assignments: 3 x 60 minutes • Self-study: 3 x 60 minutes. Total study hours = 8 hours 30 minutes/week.
Credit points	3 SKS (~ 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Students are able to analyze and implement network technologies and protocols to design and operate efficient networks. By the end of the course, students will be able to analyze LAN and WAN components, routing tables and protocols, and network address allocation to optimize network efficiency. Students will also learn to implement NAT for IP address translation and troubleshoot NAT configuration to maintain network connectivity. Overall, the course aims to equip students with the skills to design and operate efficient networks in different industries and organizations.	PLO3

	2. Students are able to apply OSI and TCP/IP models, integrate LAN and WAN components and topologies, optimize network address allocation, and implement routing strategies effectively. They will also learn to configure NAT for IP address translation, troubleshoot NAT configuration, and evaluate the effectiveness of network systems using engineering design principles. Overall, the course aims to equip students with the skills to design and build efficient and reliable network systems in various industries and organizations.	PLO 4
	3. Students are able to assess LAN and WAN components and topology, routing protocols, VLANs, and NAT configuration. They will learn to troubleshoot and optimize network systems for better performance and reliability. Ultimately, this skill set will prepare them to evaluate and propose improvements for network systems in their professional careers.	PLO5
Content	1. OSI Layer 2. OSI and TCP/IP models 3. Network protocols and services 4. LAN components and topology 5. WAN technologies and protocols 6. VLANs 7. Subnetting and supernetting 8. Variable-Length Subnet Masking (VLSM) 9. Routing table and routing protocols 10. Static routing and default routing 11. NAT operation and benefits 12. NAT configuration and troubleshooting	
Examination forms	- Written case study - Midterm and final test	
Study and examination requirements	The final grade in the module is composed of: 1. Attendance: 10% 2. Case assessment: 4 x 15% = 60% 3. Midterm assessment: 15% 4. Final assessment: 15% Students must have a final grade of 65% or higher to pass	

Reading list	1. "Data Communications and Networking" by Behrouz A. Forouzan and Catherine Ann Coombs (2019).
	2. "Computer Networks: A Systems Approach" by Larry L. Peterson and Bruce S. Davie (2020).
	3. "Wireless Communications: Principles and Practice" by Theodore S. Rappaport (2019)
	4. "Computer Networking: A Top-Down Approach" by James F. Kurose and Keith W. Ross (2020)