Network Programming

Module name	Network Programming	
Module level	Undergraduate	
Code	IF221210	
Courses (if applicable)	Network Programming	
Semester	5/6	
Lecturer	Yisti Vita Via, S.ST, M.Kom (PIC) Andreas Nugroho S, S.Kom, M.Kom	
Language	Bahasa Indonesia and English	
Relation to curriculum	Elective; 5th or 6th semester	
Type of teaching, contact hours	Lectures, < 60 students,	
Teaching Methods	Simulation, Case study, project-based learning, problem-based learning	
Workload	1. Lectures: 3 sks x 50 = 150 minutes (2 hours 30 minutes) per week. 2. Exercises and Assignments: 3 x 60 = 180 minutes (3 hours) per week. 3. Private study: 3 x 60 = 180 minutes (3 hours) per week	
Credit points	3 credit points (sks)	
Requirements according to the examination regulations	A student must have attended at least 80% of the lectures to sit in the exams.	
Mandatory prerequisites	Software Engineering	
Courses description	In this course, students will learn about the fundamentals of internet networking, preparation for network programming, an introduction to sockets, Java multithreading, connection-oriented and connectionless system protocols, programming using HTTP, FTP, SMTP, and POP3 protocols, network programming with IPv6, programming based on TLS/SSL, and programming based on proxy protocols.	
Learning outcomes and their corresponding PLOs	After completing this module, a student is expected to:	
	CO1 Students are able to understand the fundamental of internet networking	PLO9,PLO10
	CO2 Students are able to understand network-based Java APIs, become familiar with sockets, and understand Java multithreading.	PLO9,PLO10
	CO3 Students are able to understand system protocols, both connection-oriented and connectionless.	PLO9,PLO10
	CO4 Students are able to explain network programming based on the HTTP and FTP protocols.	PLO9,PLO10
	CO5 Students are able to understand network programming based on the SMTP mail protocol.	PLO9,PLO10

	CO6 Students are able to understand network programming based on the POP3 protocol	PLO9,PLO10
	CO7 Students are able to understand network programming based on IPv6.	PLO9,PLO10
	CO8 Students are able to understand network programming based on TLS/SSL.	PLO9,PLO10
	CO9 Students are able to understand network programming based on proxy protocols.	PLO9,PLO10
Content	The subjects studied in this course include: the definition and concept of network analysis, including system approaches; the concept and process of determining requirements for building a network; how to analyze traffic flow that can be used for performance requirements for various network traffic flows; network architecture processes (an introduction to network architecture, internal and external development relationships within and between core functions such as addressing and routing, security, network management, and performance) within the network; detailing each of these core functions, developing components and reference architectures that depict their internal and external relationships; the design process, (applying it to make the design decisions, including how to evaluate and select vendors and service providers, and diagrams design)	
Media employed	LCD, whiteboard, websites, books (as references), online meeting, etc.	
Assessments and Evaluation	One written Midterm assessment (60 minutes) and one final oral exam (30 minutes), two short computer-based quizzes, take home written assignments	
Study and examination requirements and forms of examination	The final grade in the module is composed of: • Two short computer-based quizzes: 15% x 2 = 30% • Take-home written assignments : 15% • Written Midterm assessment: 25% • Final oral exam: 30% Students must have a final grade of 56 or higher to pass.	
Reading List	● A. S. Tanenbaum and D. J. Wetherall, *Computer Networks*, 6th ed. Hoboken, NJ: Pearson, 2021. ● W. R. Stevens and B. Fenner, *TCP/IP Illustrated, Vol. 1: The Protocols*, 2nd ed. Boston, MA: Addison-Wesley Professional, 2020. ● J. Goerzen, *Foundations of Python Network Programming*, 4th ed. New York, NY: Apress, 2021. ● J. Bens, *Network Programming with Go: A Comprehensive Guide to Building Network Applications with Go*. Birmingham, UK: Packt Publishing, 2022. ● D. D'Souza, *Network Programming and Architecture: A Hands-On Approach*. Boston, MA: Cengage Learning, 2023.	