TISHK INTERNATIONAL UNIVERSITY
FACULTY OF APPLIED SCIENCE
Department of INFORMATION TECHNOLOGY,
2025-2026 Fall
Course Information for IT 301 DATA COMMUNICATIONS AND COMPUTER NETWORKS I

Course Name:	DATA COMMUNICATIONS AND COMPUTER NETWORKS I

Code	Regular Semester	Theoretical	Practical	Credits	ECTS
IT 301	5	3	-	3	5

Name of Lecturer(s):	Yasameen Sami
Teaching Assistant:	Aya Sarkawt
Course Language:	-
Course Type:	Main
Office Hours	Wednesday 15:00 -17:00 PM
Contact Email:	yasameen.sami@tiu.edu.iq Tel:
Teacher's academic profile:	MSc Software Engineering
Course Objectives:	This course provides students with a solid foundation in computer networking principles. They will understand key concepts such as the OSI model, data transmission, and network topologies, and analyze essential protocols like TCP/IP, HTTP, and DNS. Students will develop practical skills in designing and configuring network architectures, managing devices like routers and switches, and optimizing data transmission. They will also learn to troubleshoot common network issues to ensure reliability. Additionally, students will explore wireless networking technologies, including Wi-Fi and mobile networks, and gain experience with network management tools for monitoring and maintaining performance. Through collaborative projects and hands-on labs, they will enhance their problem-solving and teamwork abilities. The course also addresses ethical and legal aspects of networking, such as privacy and cybersecurity best practices, and fosters strong written and verbal communication skills. By the end of the course, students will be prepared for further study or careers in network administration and related fields.
Course Description (Course overview):	This course will cover the fundamental aspects of wireless networks, with emphasis on current and next-generation wireless networks. Various aspects of wireless networking This course will cover the fundamental aspects of wireless networks, with emphasis on current and next-generation wireless networks. Various aspects of wireless networking will be covered including: fundamentals of cellular communication, mobile radio propagation, multiple access techniques, and mobility support, channel allocation, Wireless PAN/LAN/MAN standards, mobile ad-hoc networks, wireless sensor networks, and routing in wireless and mobile networks.

COURSE CONTENT

Week	Hour	Date	Topic
1	3	05-09/10/2025	Course Description
2	3	12-16/10/2025	Introduction to Data Communication and Networking
3	3	19-23/10/2025	Network Models
4	3	26-30/10/2025	Physical Layer and Media
5	3	02-06/11/2025	Transmission Media
6	3	09-13/11/2025	Data Link Layer_Framing
7	3	16-20/11/2025	Midterm Exam
8	3	23-27/11/2025	Data Link Layer , Flow Control
9	3	30/11-04/12/2025	Error Detection and Error Corrections
10	3	07-11/12/2025	Data Flow Methods_Go-Back-N,Stop-and-Wait

11	3	14-18/12/2025	Data Flow Methods_Error Detection
12	3	21-25/12/2025	Project Presentation
13	3	28/12-01/01/2026	Multiple access protocols
14	3	04-08/01/2026	Review
15	3	11-15/01/2026	Final Exam

COURSE/STUDENT LEARNING OUTCOMES

1	Describe Network Models: Identify and describe different network models, including the OSI model and the TCP/IP protocol suite, and explain their significance in network architecture.
2	Analyze Internet Growth and Protocol Usage: Summarize the evolution of the Internet, evaluate the importance of protocols, and recognize key organizations governing the Internet.
3	Apply Addressing and Encapsulation: Employ addressing schemes, including physical and logical addressing, and illustrate how encapsulation aids data transmission.
4	Apply Multiple Access Techniques: Implement multiple access methods, such as random access (e.g., ALOHA), controlled access (e.g., reservation and polling), and channelization (e.g., FDMA, TDMA, CDMA).
5	Implement Wired LAN Technologies: Configure Ethernet standards, including MAC sublayer and physical layer specifications. Track the progression of Ethernet technology.

COURSE'S CONTRIBUTION TO PROGRAM OUTCOMES

(Blank : no contribution, I: Introduction, P: Profecient, A: Advanced)

	Program Learning Outcomes	**Cont.**
1	Analyze a problem, and identify the computing requirements appropriate to its solution	
2	Design, implement, and evaluate computer-based systems, process, component, or program to meet desired needs	I
3	Function effectively in teams to accomplish a common goal	P
4	Identify professional, ethical, legal, security, social, and economic issues and responsibilities	P
5	Analyze the local and global impact of computing on individuals, organizations, and society	
6	Use current techniques, skills, and tools necessary for computing practice	P
7	Apply current technical concepts and practices in the core information technologies of human computer interaction, information management, programming, networking, web systems and technologies	I
8	Identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer-based systems	P
9	Effectively integrate it-based solutions into the user environment	
10	Apply problem solving skills, core it concepts, best practices and standards to information technologies	P
11	Identify and evaluate organizational requirements and current and emerging technologies	I
12	Design and integrate it-based solutions into the organizational environment	I

Prerequisites (Course Reading List and References):	None
Student's obligation (Special Requirements):	Lab Work: Students are expected to actively participate in hands-on lab exercises to gain practical experience in networking configurations and troubleshooting. Attendance: Regular attendance is crucial for understanding course material. Students are expected to attend all lectures and labs unless they have a valid excuse. Homework and Assignments: Students must complete all homework assignments and submit them by the specified deadlines. Late submissions may be subject to a penalty. Reading Assignments: Regular reading of assigned textbook chapters and supplementary materials is essential for keeping up with the course content. Software and Tools: Students should have access to necessary software and tools for simulations and network configuration (e.g., Cisco Packet Trace). Exams and Assessments: There will be periodic quizzes, midterm exam
Course Book/Textbook:	1. Behrouz A. Forouzan. (2007). Title: Data Communications and Networking, 4th Edition. 2. Odom, W. (2020). CCNA 200-301 official cert guide, volume 2. Cisco Press. 3. Priscilla Oppenheimer. (2010). Title: Top-Down Network Design, 3rd Edition.
Other Course Materials/References:	Online Resources: Cisco Networking Academy Website: Cisco Networking Academy Description: This platform offers a collection of freely accessible online courses and resources that comprehensively cover fundamental networking principles. Internet Society Website: Internet Society Description: The Internet Society provides an extensive repository of information and insights related to internet technologies and protocols.

Teaching Methods (Forms of Teaching):	Lectures, Practical sessions, Presentation, Project, Assignments, , ,

COURSE EVALUATION CRITERIA

Method	Quantity	Percentage (%)
Quiz	2	5
Project	1	8
Midterm Exam	1	20
Presentation	1	7
Practical Exam	2	7.5
Final Exam	1	40
Total		**100**

Examinations: True-False, Fill in the Blanks, Multiple Choices, Short Answers, Matching, Evaluate problem-solving and application of networking principles in real-world situations, Mathematical Questions,

Extra Notes:

ECTS (ALLOCATED BASED ON STUDENT) WORKLOAD

Activities	Quantity	Workload Hours for 1 quantity*	Total Workload
Theoretical Hours	15	3	45
Practical Hours	15	0	0
Final Exam	1	25	25
Quiz	2	5	10
Project	1	16	16
Midterm Exam	1	10	10
Presentation	1	2	2
Practical Exam	2	10	20
Total Workload			**128**
ECTS Credit (Total workload/25)			**5**

Peer review

Signature:	Signature:	Signature:
Name:	Name:	Name:
Lecturer	Head of Department	Dean