The University of Jordan
School of Engineering
Computer Engineering Department

Academic Year:	2025 / 2026
Semester:	Fall
Course:	0907529 Advanced Networks Lab 3 Credits / Dept. Obligatory
Catalog Description:	A set of experiments to give the student the practical experience on the following components: wireless networks and networks security, installing wireless adapters, building adhoc wireless networks, configuring access points, configuring wireless bridges, basic wireless networks security, advanced router security, basic PIX firewall security, basic VPN configuration.
Prerequisite(s):	0907528 Computer Networks lab
Co-requisite(s):	None
Background:	Basic background in computer networking fundamentals and the ability to work effectively with Cisco Packet Tracer.
Textbooks:	• The lab manual with a set of experiments and lab sheets is posted on Microsoft teams.
References:	• Computer Networking, A top-Down Approach, 4th Ed. James Kurose and Keith Ross, Addison Wesley 2008. • Cisco website (www.cisco.com) for technical data sheets of devices and networking courses.
Course Website:	Lab files will be posted on Microsoft teams
Schedule & Duration:	14 weeks, 13 sessions, 180 minutes each, including exams.
Student Material:	Textbook, lab handouts, some instructor keynotes, calculator and access to a personal computer and internet.
Facilities:	Lab with whiteboard, personal computers, Networking switches, routers, connecting cables, simulation software.
Course Objectives:	• To design, configure, and analyze local and wireless networks using VLANs, inter-VLAN routing, and scalable switching technologies such as VTP, DTP, and STP. • To implement and test essential network services and security mechanisms, including port security, access control lists (ACLs), DHCP, and network address translation (NAT). • To configure and evaluate remote access solutions and secure communication technologies, including remote access protocols and virtual private networks (VPNs), in practical networking scenarios.

Course Outcomes and Relation to ABET Program Outcomes:

Upon successful completion of this course, a student should be able to:

- Use appropriate networking tools and simulation environments to design, configure, test, analyze, and validate advanced computer network scenarios including VLANs, routing, wireless networks, and network services [**SO6**].
- Design and implement scalable and secure network solutions that meet specified technical requirements using technologies such as inter-VLAN routing, VTP, STP, ACLs, NAT, DHCP, and VPNs, while considering performance, reliability, and security constraints [**SO2**].
- Conduct networking experiments to evaluate network behavior, performance, and security, analyze and interpret results, and apply engineering judgment to troubleshoot and optimize advanced network configurations [**SO6**].

Lab Schedule:

Week	Date	Activity/Experiment
1	12/10/25	Virtual LANs (VLANs)
2	19/10/25	Inter VLAN routing
3	26/10/25	Scaling VLANs (VTP, DTP and STP)
4	02/11/25	Wireless Networks
5	09/11/25	Port Security on switches
6	16/11/25	Access Control List (ACL)
7	23/11/25	Quiz
8	30/11/25	No Lab
9	07/12/25	Network Address Translation (NAT)
10	14/12/25	Dynamic Host Configuration Protocol (DHCP)
11	21/12/25	Remote Access Protocols and Virtual Private Networks (VPN)
12	28/12/25	Open Lab
13	01/06/26	Midterm Exam
14	21/01/26	Final Exam

Computer Usage:

Extensive use of desktop computers for network device configuration and simulation.

Policies:

- Attendance is mandatory and will be recorded each class; university absence rules apply.
- All submitted work must be your own; cheating, plagiarism, unauthorized AI-generated work, or improper use of AI tools will result in academic penalties.
- Professional conduct, timely communication, and adherence to assessment schedules are expected throughout the course.

Assessment Tools & Grading:

☐ Midterm Exam (Theory)	0%	☒ Midterm Exam (Practical)	30%
☒ Final Exam	40%	☒ Quizzes	20%
☐ Assignments	0%	☒ In-Lab sheets	10%
☐ Projects	0%		
☐ Other:			

Instructor(s):

- Eng. Alaa Arabiyat (a.arabiyat@ju.edu.jo)

Section(s):

- **Section 1**: Tuesday 13:30 – 16:30
- **Section 2**: Wednesday 10:00 – 13:00
- **Section 3**: Wednesday 13:00 – 16:00

Student Outcomes (SO)

SO1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.

SO2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.

SO3. An ability to communicate effectively with a range of audiences.

SO4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts

SO5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.

SO6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.

SO7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Last modified: September 30, 2025