جامعة الإسراء
ISRA UNIVERSITY

Course Syllabus

According to JORDAN National Qualification Framework (JNQF)

Course Name: Advanced Internet Protocols

Course Number: 608326

General Course Information:

Course title	Advanced Internet Protocols
Course number	608326
Credit hours	3 credit hours (theory)
Education type	[Face-to-Face]
Prerequisites/corequisites	Computer Networks [0608224]
Academic Program	Computer Science
Program code	608
Faculty	Faculty of Information Technology
Department	Computer Science
Level of course	Third Year
Academic year /semester	2022/2023, 1st semester
Awarded qualification	B.Sc
Other department(s) involved in teaching the course	(CIS,CS, SE,CMS, ..)
Language of instruction	English
Date of production/revision	17/10/2022

Course Coordinator:

Coordinator's name	Coordinator's Name: Dr. Yousef Sharrab
Office No	Office No.: 4104
Office Phone extension number	Office Phone: 2495
Office Hours	Office Hours: [13:00_14:00] Sun Tue Thu

Email	Email: sharrab@iu.edu.jo

Other Instructors:

Instructor name	
Office No	
Office Phone extension number	
Office Hours	
Email	

Course Description *(English/Arabic)*:

English	The goal of this course is to familiarize students with the concepts of data communication, computer networks, and Internetworking. At the end of this course, students will be able to understand the principles of computer networking, including protocol features, protocol layering, and addressing, routing, and basic network security issues. Students will be able to enumerate the architectural structures of the ISO/OSI and TCP/IP and explain functions of each layer.
Arabic	الهدف من هذا المقرر الدراسي هو تعريف الطلاب بمفاهيم اتصالات البيانات وشبكات الكمبيوتر والعمل على الإنترنت. في نهاية هذا المساق ، سيكون الطلاب قادرين على فهم مبادئ شبكات الكمبيوتر ، بما في ذلك ميزات البروتوكول ، وطبقات البروتوكول ، والعناوين ، والتوجيه ، وقضايا أمان الشبكة الأساسية. سيتمكن الطلاب من تعداد الهياكل المعمارية لـ ISO / OSI و TCP / IP وشرح وظائف كل طبقة. بالإضافة إلى ذلك ، سيكون الطالب قادرًا على فهم تطبيقات الشبكات وبروتوكولات الشبكة

Textbook: ***Author(s), Title, Publisher, Edition, Year, Book website.***

Vermesan, Ovidiu, and Peter Friess, eds. *Internet of things-global technological and societal trends from smart environments and spaces to green ICT*. CRC Press, 2022.

References: ***Author(s), Title, Publisher, Edition, Year, Book website.***

1. Wireless and Mobile Network Architectures, Yi-Bing Lin, Imrich Chlamtac, John Wiley & Sons, 2000.
2. Data Communications and Networking: Behrouz A. Forouzan, McGrawHill, Third Edition.

Course Educational Objectives (CEOs):

1.	Outline the basics Issues, Concepts, and techniques in internet protocols.	
2.	Explain most popular internet protocols.	
3.	Identify and Explains the architecture and functions of emerging systems.	
4.	Demonstrate the major components in wireless Internet of Things (IoT) systems.	

Intended Learning Outcomes (ILO's):

1.	Subject Intended learning outcomes (ILOs) describe what students are expected to know and be able to do at the end of the course. These outcomes are related to the knowledge, skill and competence that students acquire:	**Relationship to CEOs**	**Contribution to PLOs**	**Bloom Taxonomy Levels***	**Descriptors****
2. A	Knowledge and Understanding:				
3. A1	Explain the fundamentals of Internet protocols.	1	1	1	K

4. A2	Explain the basic ideas about computer network and internet protocols of emerging technologies.	1	1	1	K
5. A3	Distinguish latest versions of protocols components and functions.	3	1	1	K
6. B	Intellectual skills:				
7. B1	Analysing different versions of the protocols	4	2	5	S
8. C	Subject specific skills:				
9. C1	Implement a solution in for an application.	4	6	5	S
10. D	Transferable skills:				
11. D1	Test a selected number of protocols	4	2	4	S

***Bloom Taxonomy Levels**

Level #	1	2	3	4	5	6
Level Name	Knowledge	Comprehension	Application	Analysis	Evaluation	Synthesis

**** Descriptor (National Qualification Framework Descriptors): K : Knowledge, S: Skill, C: Competency.**

Program Learning Outcome (PLOs):

Program Learning Outcomes describe what students are expected to know and be able to do by the time of graduation. These relate to the knowledge, skills, and behaviours that students acquire as they progress through the program. A graduate of the (_____) program will demonstrate:	Descriptors**		
	K	S	C

1.	Analyse a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.	X		
2.	Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline		X	
3.	Communicate effectively in a variety of professional contexts.			X
4.	Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.			X
5.	Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.			X
6.	Apply computer science theory and software development fundamentals to produce computing-based solutions. [CS]		X	

**** Descriptors according to the national qualifications framework (K: knowledge, S: skill, C: Competency)**

Weekly Schedule *(please choose the type of teaching)*

√ **Face to Face**

□ **Hybrid** ***(2 Lectures*** *Face – To - Face* ***+1 Lecture*** *Asynchronous)*

□ **Hybrid (*1 Lectures*** *Face – To - Face* ***+1 Lecture*** *Asynchronous)*

□ **Online** ***(2 Lectures*** *Synchronous* ***+1 lecture Asynchronous****)*

Week	First Lecture	Second Lecture	Third Lecture	ILOs	PLOs	Descriptors**
1	WLAN Introduction, Antennas and Propagation, Signal Encoding Techniques 1	TCP/IP PROTOCOL SUITE,	Layered Architecture, Layers in the TCP/IP Protocol Suite,Description of Each Layer	A1	1	K
2	Encapsulation and Decapsulation	Addressing , Multiplexing and Demultiplexing	THE OSI MODEL	A1	1	K
3	Media Access Control (MAC)	random access, Aloha CSMA	CSMA/CD	A2	1	K
4	Controlled Access, Reservation, Polling Tolten Passing	Channelization. FDMA,	TDMA,	A2	1	K
5	CDMA	Network-Layer Performance	Delay, Throughput	A2,	1	K
6	Packet Loss and Congestion Control	IPV4 Addresses, Classfull Addressing	Wireless LAN Network Address Resolution (NAT)	A2	1	K
7	Subnetting	Address Mask Dynamic	Host Configuration Protocol (DHCP), DHCP Message Format	B1, C1 D1	2,6	S
8	Address Translation, Using One IP Address	Using a Pool of IP Addresses Destination Address	Network-Layer Protocols	A1,A2	1	K
9	Routing 1	Routing 2	Routing 3	A1,A2	1	K
10	UNICAST 1 ROUTING PROTOCOLS Lecture1	UNICAST 2 ROUTING PROTOCOLS	Open Shortest Path First (OSPF), Border	A2,	1	K
11	Gateway Protocol Version (BGP4)	Next Generation &, IPv6 Addressing	IPv6 PROTOCOL, PacketFormat Extension Header	A2	1	K

12	IEEE 802.11a and IEEE 802.11b - Lecture1	IEEE 802.11a and IEEE 802.11b 2 –Lecture2	IEEE 802.11a and IEEE 802.11b –Lecture3	A2	1	K
13	LAB Task 2- Lab2-a	LAB Task 2 - Lab2-b	LAB Task 2 -Lab2-c	B1, C1 D1	2,6	S
14	Bluetooth and IEEE 802.15 -Lecture1	Bluetooth and IEEE 802.15 –Lecture2	Bluetooth and IEEE 802.15 –Lecture3	A2	1	K
15	Bluetooth and IEEE 802.15 -Lecture1	Bluetooth and IEEE 802.15 –Lecture2	Bluetooth and IEEE 802.15 –Lecture3	A2	1	K

* **K: Knowledge, S: Skills, C: Competency**

Teaching Methods and Assignments:

Development of ILOs is promoted through the following teaching and learning methods:

- Interactive videos
- Practice Labs
- Discussion Forums
- Quizzes
- Other Interactive online activities
- Reports

Course Policies:

A- Attendance policies:

The maximum allowed absences is 15% of the lectures.

B- Absences from exams and handing in assignments on time:

Midterm exam can be retaken based on approval of excuse by the instructor's discretion.

Not handing assignment on time will incur penalties.

C- Academic Health and safety procedures

D- Honesty policy regarding cheating, plagiarism, and misbehaviour:

Cheating, plagiarism, misbehaviour will result in zero grade and further disciplinary actions may be taken.

E- Grading policy:

- All homework is to be posted online through the e-learning system.
- Exams will be marked within 72 hours and the marked exam papers will be handed to the students.
- Online Activities (Course Videos, Practice labs, Discussion Forums, Quizzes) **20%**
- Midterm **30%**
- Final Exam **50%**

F- Available university services that support achievement in the course: **E-Learning Platform, Labs, Library.**

Required equipment:

- **PC / Laptop with webcam and mic**
- **Internet Connection**
- **Access to the IU E-Learning Platform at: https://elearn.iu.edu.jo/**
- **E-learning plan**
- Satisfaction questionnaires for online and face-to-face learning
- Software for e-learning
- Training

Assessment Tools implemented in the course:

- Final Exam
- Midterm Exam
- Quizzes
- Homework
- Practice Labs
- Discussion Forums
- Periodic reports for learning assessment
- Improvement plans for online or face-to-face teaching
- Others:…….

Responsible Persons and their Signatures:

Course Coordinator	**Dr. Yousef Shrrab**	**Completed Date**	**17/ 10 / 2022**
		Signature	Sharrab

Received by (Department Head)		**Received Date**	/ /
		Signature	