جامعة الإسـراء
ISRA UNIVERSITY

Course Syllabus
According to JORDAN National Qualification Framework (JNQF)

Course Name: Network Monitoring and Documentation

Course Number: 06042261

Ref: Deans Council (05) Decision No. (06) Date: 18/10/2021.
Ref: Quality Assurance Council Session (03) Decision No. (03) Date:05/10/2021.

General Course Information:

Course title	**Network Monitoring and Documentation**
Course number	**06042261**
Credit hours	**3 credit hours (theory)**
Education type	**[Face-to-Face]**
Prerequisites/corequisites	**Network Management (608410)**
Academic Program	**Information and Cyber Security**
Program code	**604**
Faculty	**Faculty of Information Technology**
Department	**Information and Cyber Security**
Level of course	**2**
Academic year /semester	**2020/2021, 2nd 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	**3/10/2021**

Course Coordinator:

Coordinator's name	**Coordinator's Name: Monther Tarawneh**
Office No	**Office No.: 4108**
Office Phone extension number	**Office Phone: 2498**
Office Hours	**Sun, Tue, Thu: 2-3/ Mon:8-9/ wed: 11-12**
Email	**Email: mtarawneh@iu.edu.jo**

Other Instructors:

Instructor name	
Office No	
Office Phone extension number	
Office Hours	
Email	

Course Description *(English/Arabic)*:

English	This course introduces emerging and contemporary technology in computer networking. Constantly evolving and modernizing classes include new advances in protocols, standards, network application, Network monitoring tools and technology that become basic required knowledge even in other computer science and engineering fields.
Arabic	يقدم هذا المساق التكنولوجيا الناشئة والمعاصرة في شبكات الكمبيوتر. المساق يتظمن التطورات الجديدة في البروتوكولات والمعايير وتطبيقات الشبكات وأدوات مراقبة الشبكات والتكنولوجيا التي اصبحت من المعرفة الأساسية المطلوبة حتى في مجالات علوم وهندسة الكمبيوتر الأخرى .

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

1- COMPUTER NETWORKING A Top-Down Approach, 8th edition, 2021, James F. Kurose and Keith W. Ross, Pearson

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

1-cisco network academy: www.netacad.org
2-Chris Chapman, Network Performance and Security: Testing and Analyzing Using Open Source and Low-Cost Tools,2016, Elsevier.
3- Research paper and internet resources
4- Charit Mishra, Mastering Wireshark,1st edition, 2016, Packt Publishing
5- Subramanian, Network Management: Principles and Practice, second edition,2010, Pearson.

Course Educational Objectives (CEOs):

1.	Explain the main concepts of network monitoring
2.	Specify the requirements of network management protocols
3.	Apply network monitoring tools for monitoring a network
4.	Analyse network traffic and correct network problems
5.	Determine network documentation requirements

Intended Learning Outcomes (ILO's):

	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**
A	**Knowledge and Understanding:**				
A1	Explain the main concepts of network monitoring	1	1	1	K
A2	Describe the current state of cybersecurity and common network threats.	2	1	2	K
B	**Intellectual skills:**				
B1	Explain passive and active network monitoring tools	3	1	2	K
C	**Subject specific skills:**				
C1	Implement protocols to manage the network such as SNMP	3	2	3	S
C2	Apply Wireshark to capture and analyze network traffic	4	2	3	S
D	**Transferable skills:**				
D1	Apply network monitoring tools for monitoring a designed network	3	2	4	S
D2	Determine network documentation requirements	5	2	2	S

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*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 security principles and practices to maintain operations in the presence of risks and threats.		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**)*

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Week	First Lecture (......................)	Second Lecture (.......................)	Third Lecture (............................)	Ach. ILOs	Ach. PLOs	Descriptors**
1	**Course Overview**	**Course Overview**	**Course Overview**			
2	OSPF Features and Characteristics	OSPF Packets	OSPF Operation	A1	1	K
3	OSPF Router ID	Point-to-Point OSPF Networks	Multiaccess OSPF Networks	C1	2	S
4	Modify Single-Area OSPFv2	Default Route Propagation	Verify Single-Area OSPFv2	C1	2	S
5	Current State of Cybersecurity	Threat Actors Threat Actor Tools Malware Common Network Attacks	IP Vulnerabilities and Threats TCP and UDP Vulnerabilities IP Services Cryptography	A2	6	C
6	Introduction to network monitoring	The goals of network monitoring	Network indicators measurement	A1	1	K
7	Passive and active monitoring Monitoring tools Simple monitoring tools Combinational monitoring	Device Discovery with CDP Device Discovery with LLDP NTP SNMP	Router and Switch File Maintenance IOS Image Management Lab	B1 C1	1 2	K S
8	Midterm exam					
9	Introduction to Wireshark	Introduction to packet analysis with Wireshark	Capturing methodologies	C2	2	S
10	Introduction to filter	Capture filters Display filters	Mastering the advance features of Wireshark; The statistics menu	C2	2	S
11	Conversation Endpoints	Inspecting application layer protocols	Domain name system File transfer protocol	C2	2	S
12	Hypertext transfer protocol Simple mail transfer protocol	Analyzing Transport Layer Protocols		C2	2	S
13	The transmission control protocol	The User Datagram Protocol	Troubleshooting Recovery features 1	C2	2	S
14	Remote network monitoring, RMON	RMON1 RMON2	iNetMon portable Network analyzer Network trace	D1	2	S
15	Determine network documentation requirements	Produce network documentation	Complete network documentation	D2	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**

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- ▪ **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:

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Course Coordinator	Dr. Monther Tarawneh	Completed Date	10/ 3 / 2022
		Signature	

Received by (Department Head)		Received Date	/ /
		Signature	