Syrian Arab Republic		الجمهورية العربية السورية
Ministry of Higher Education		وزارة التعليم العالـــــي
Syrian Virtual University		الجامعة الافتراضية السورية

Course Definition:

1- Basic Information:

Course Name	Network and Infrastructure Security
Course ID	INT305
Contact Hours (Registered Sessions)	-
Contact Hours (Synchronized Sessions)	12
Mid Term Exam	-
Exam	
Registered Sessions Work Load	-
Synchronized Session Work Load	3 hours
Credit Hours	3 hours

2- Pre-Requisites:

Course	ID
Operating system courses	IOS202, IOS203, IOS204, ENG3

3- Course General Objectives:

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

- Recognize the basic working principles of computer networks Security.
- Understand network components and protocols from the security point of view.
- Utilize network security technologies.
- Basic concepts of Cryptography, symmetric and asymmetric
- Distinguish between various protocols employed to secure networks.
- Security at application layer, malicious logic and web security.
- Vulnerability Assessment and Mitigating Attacks

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4- Intended Learning Outcomes (ILO):

Code	Intended Learning Outcomes
ILO1	Recognize the basic working principles of computer networks Security.
ILO2	Understand network components and protocols from the security view point
ILO3	Utilize network security technologies.
ILO4	Basic concepts of Cryptography, symmetric and asymmetric
ILO5	Distinguish between various protocols employed to secure networks.
ILO6	Security at application layer, malicious logic and web security
ILO7	Vulnerability Assessment and Mitigating

5- Course Syllabus (18 hours of total synchronized sessions)

- **RS:** Recorded Sessions**; SS:** Synchronized Sessions**;**

ILO	Course Syllabus	RS	SS	Type	Additional Notes
ILO1	Introduction to Security		1.5	assignments	Exercises
ILO2	Network Attacks		3	assignments	Exercises
ILO3	Network Security technologies		3	assignments	Exercises
ILO4	Symmetric cryptosystem Asymmetric cryptosystem		4.5	assignments	Exercises
ILO5	Network security protocols		1.5	assignments	Exercises
ILO6	Malicious logic Web Security		3	assignments	Exercises
ILO7	a. Vulnerability Assessment and Mitigating Attacks		1.5	assignments	Exercises

6- Assessment Criteria (Related to ILOs)

ISC	Interactive Synchronized Collaboration		Ex	Exams		Rpt	Reports
PF2F	Presentations and Face-to-Face Assessments		PW	Practice Work			

ILO	ILO	Intended Results	Assessment Type

			ISC	PW	Ex	PF2F	Rpt
Code							
ILO1	Introduction to Security	1. Why network security? 2. Security policies for networks 3. Security threats for networks **4.** Security services and mechanisms	✓	✓	✓		✓
ILO2	Network Attacks	1. Threats at physical layer (cabling & Hubs) 2. Threats at data link layer (switch, ARP poising) 3. Threats at network layer (router, IP spoofing) 4. Threats at transport layer (ICMP, Sync fload, DoS and DDOS)	✓	✓	✓		✓
ILO3	Network Security technologies	1. Firewalls 2. Intrusion detection systems	✓	✓	✓		✓
ILO4	Symmetric cryptosystem Asymmetric cryptosystem	a. Introduction to cryptography b. Stream cipher c. Block cipher d. DES, 3DES, and AES e. Public key cryptography f. RSA g. Digital signature	✓	✓	✓		✓

ILO5	Network security protocols	a. Security at network layer (IPsec) b. Security at transport layer (SSL/TLS) c. Applications of security protocols	✓	✓	✓		✓
ILO6	Malicious logic Web Security	a. Definition of Malicious Logic b. Trojan Horses c. Viruses d. Worms e. Other Malicious Logic f. Defending Against Malicious Logic g. Web System h. Web System Security i. Web Server Security j. Web Browser Security	✓	✓	✓		✓
ILO7	Vulnerability Assessment and Mitigating Attacks	1. Vulnerability Assessment 2. Vulnerability scanning and Penetration Testing 3. Mitigating Attacks	✓	✓	✓		✓

7- Practice Tools:

Tool Name	Description
Wireshark	Packet sniffer
Big calculator	Calculator for big integer
OpenSSL, Open SSH	Security protocols

8- Main References

L. Brown and W. Stallings, "Computer Security: Principles and Practice," 3rd Edition, Pearson, 2014.

D. Gollmann, **Computer Security, 3rd** Edition, John Wiley and Sons, 2010.

9- Additional References

W. Stallings, "Cryptography and network security," 5th Edition, Prentice Hall, 2011

W. Stallings, "NETWORK SECURITY ESSENTIALS: APPLICATIONS AND STANDARDS" 4th

EDITION, Prentice Hall, 2011