Course Definition File

1. Basic Information:

Course Name	Network Services
Course ID	INT202
Contact Hours (Registered Sessions)	36
Contact Hours (Synchronized Sessions)	18
Mid Term Exam	2
Exam	2
Registered Sessions Work Load	54
Synchronized Session Work Load	18
Credit Hours	

2. Pre-Requisites:

Course	**ID**
Introduction to Networks	INT101

3. Course General Objectives:

The objective of the course is to introduce the most known network applications that have been created during the last 40 years and became very popular and commonly used in our day to day life. From these applications, we can recall Mail transfer protocols, Web and HTTP protocol, P2P protocols, File transfer protocol, Domain Name Systems, and Network management protocol.

4. Intended Learning Outcomes (ILO):

Learning Outcomes codes	Learning Outcomes
LO1	Define and understand Network applications and how process communicate
LO2	Define and discuss DNS operations and show the format of DNS message
LO3	Understand HTTP and some relevant terms such as URL, Cookies, Web caching, and message formats
LO4	Understand SMTP and POP3 protocols and architectures and how they relate to each other
LO5	Discuss FTP and TFTP protocols, understand connection establishment, and understand the most important commands
LO6	Understand, Analyze and discuss P2P protocols such as Bittorrent and Skype
LO7	Understand and discuss Network management protocol SNMP

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

LO	Course Syllabus	Recorded Sessions	Synchronized Sessions	Type	Additional Notes
LO1	Define and understand Network applications and how process communicate	1	1	☒ Exercises ☐ Assignments ☐ Seminars ☐ Projects ☒ Practices ☐ Others	Student shall use cmd like ipconfig, ping, netstat, arp in addition to wireshark.
LO2	Domain Name Systems(DNS)	1	2	☒ Exercises ☐ Assignments ☐ Seminars ☐ Projects ☒ Practices ☐ Others	Students will use nslookup tool in addition to the packet analyzer Wireshark to accomplish this objective.
LO3	Hyper-Text Transfer Protocol (HTTP)	1	2	☒ Exercises ☐ Assignments ☐ Seminars ☐ Projects ☒ Practices ☐ Others	Students will use wireshark, and a browser to analyse HTTP messages.
LO4	Simple Mail Transfer Protocol and Mail retrieval protocols	1	2	☒ Exercises ☐ Assignments ☐ Seminars ☐ Projects ☒ Practices ☐ Others	Students will use wireshark, Telnet, and a User Agent (UA) and some mail server to accomplish this objective.

LO5	File Transfer Protocols (FTP and TFTP)	1	2	☐ Exercises ☐ Assignments ☐ Seminars ☐ Projects ☒ Practices ☐ Others	Students will use wireshark and FTP commands, and set up a TFTP server.
LO6	P2P: Bittorent and Skype	1	2	☐ Exercises ☐ Assignments ☐ Seminars ☐ Projects ☒ Practices ☐ Others	Students will use Wireshark and µTorrent tool to analyze traffic
LO7	Network Management with SNMP	1	1	☐ Exercises ☐ Assignments ☐ Seminars ☐ Projects ☒ Practices ☐ Others	Students will use FrameFlow and wireshark in order to intercept SNMP messages and analyze it.

6. Assessment Criteria (Related to ILOs)

LO Code	LO	Intended Results	Assessment Type				
			Interactive Synchronized Collaboration	Practice	Exams	Presentations And Face-to-Face Assessments	Reports
LO1	Define and understand Network applications and how process communicate	• Run local commands from cmd console	X	X	X		
		• Run wireshark and get familiar with it	X	X	X		
LO2	Define and discuss DNS operations and show the format of DNS message	• Analyze DNS messages	X	X	X		
LO3	Understand HTTP and some relevant terms such as URL, Cookies, Web caching, and	• Analyze HTTP messages • Manage security and cookies in	X X	X X	X		

	message formats	web browser					
LO4	Understand SMTP, POP3 and IMAP protocols and architectures and how they relate to each other	• Analyze SMTP and POP3 messages • Telnet to Mail server and try out some commands	X X	X X			
LO5	Discuss FTP and TFTP protocols, understand connection establishment, and understand the most important commands	• Analyze FTP messages and operating ports • Set up TFTP server and try out related commands	X X	X X			
LO6	Understand, Analyze and discuss P2P protocols such as Bittorrent and	• Analyze Bittorent packets • Understand Skype protocol	X	X			

	Skype	and analyze its messages					
LO7	Understand and discuss Network management protocol SNMP	• Analyze SNMP messages	X	X			

7. Practice Tools:

Tool Name	Description
Cisco Packet Tracer	Network simulation tool
Wireshark	Packet analyzer
nslookup	DNS resolver
Text-based commands	FTP commands, Telnet commands, ping and arp
Outlook	SMTP User Agent
Mozilla Firefox browser	HTTP client
FrameFlow	SNMP Manager

8. Main References

Behrouz Forouzan – TCP/IP protocol suite, 4th edition, Mac-Graw Hill, 2010

9. Additional References

William Stallings – Data and Computer Communications, 8th edition, Mc-Graw-Hill, 2007
Andrew S. Tanenbaum – Computer Networks, fifth edition, 2011