



## **Computer and Info. Technology Department**

---

# **Major Computer Networking Technology**

---

**1430H – 2010G**

The Index

No.	Course Title	Page
1	<b>MAIN COVER</b>	1
2	The Index.	2
3	Course Description.	3
4	The Study Plans Distributed on trimesters.	4
5	<b>COMPUTER COMMON COURSES COVER</b>	5
6	Specialized English -1	6
7	Specialized English -2	11
8	Communication Skills-1	14
9	Communication Skills -2	18
10	Specialized mathematics	22
11	Computer components & Assembly.	25
12	Advanced Computer Applications	34
13	Operating System -1	41
14	Operating System -2	46
15	Computer Network Fundamentals	49
16	Computer Client O. S.	57
17	<b>NETWORKING TECHNOLOGY COURSES COVER</b>	62
18	Routing Technology	63
19	Switching Technology	68
20	Fundamentals Of Wireless LANs	72
21	WAN Technology	76
22	Introduction to Network Security	81
23	Preparation for Professional Certificates	85

Department	Computer and Info. Technology	Major	Computer Networking Technology
<b>Course Description:</b> <p>This course is designed to fulfill the training needs of local jobs based on the national occupational skill standards of the Networks Technician. Training includes general skills of English language, mathematics, interactions and communications. Basic skills on Router Technology, Network Cabling, Building &amp; Operation of Computers, Routing &amp; Switching, Building Local Area Networks, Network Design, Wan Technology, Network monitoring &amp; Maintenance, Network Operating System and Network Security are also included.</p> <p>Trainees are trained in 1560 in addition to 420 practical training hours.</p> <p>Graduates will receive a Diploma in Computer Networking Technology and will have the opportunity to work in fields related to computer Networking and will be able to perform or manage network tasks.</p>			
<b>Course's general objective:</b> <p>This program aims to provide trainees with skills and necessary knowledge to carry out the work in networking technology at the fourth level of the National Vocational Qualifications System.</p>			
<b>Course's specific objectives:</b> <p>At the end of this course trainees should be able to do the following jobs:</p> <ol style="list-style-type: none"><li>1- Collaborate in designing computer networks.</li><li>2-Prepare work plans.</li><li>3-Implement the network.</li><li>4-Monitor the network performance.</li><li>5-Offer network technical support.</li><li>6-Ensure continuity of the network operation.</li><li>7-Career communications.</li><li>8-Continue to improve his work abilities.</li><li>9-Know networks technical terminologies.</li></ol>			

## The Study Plans Distributed on trimesters

	No.	Course Code	Course Name	Prerequisites	No. of Units				
					CRH	L	P	T	CTH
First trimester	1	ISL 101	Islamic Culture -1		2	2	0	0	2
	2	ARB 101	Arabic Language		2	2	0	0	2
	3	ENG 106	General English Language		4	4	0	2	6
	4	MAT 113	General Mathematics		4	4	0	0	4
	5	CMT 101	Introduction to Computer Applications		2	0	4	0	4
	6	PHY 115	General Physics		3	3	0	1	4
	7	VOC 107	Vocational Guidance & Excellence		2	2	0	0	2
Total Number of Units					19	17	4	3	24
CRH: Credit Hours    L: Lecture    P: Practical    T: Tutorial    CTH: Contact Hours									

	No.	Course Code	Course Name	Prerequisites	No. of Units				
					CRH	L	P	T	CTH
Second trimester	1	ISL 102	Islamic Culture -2	ISL 101	2	2	0	0	2
	2	MAT 115	Specialized mathematics	MAT 113	3	3	0	1	4
	3	ENG 135	Specialized English -1	ENG 106	4	4	0	2	6
	4	CMT 127	Computer components & Assembly		4	2	4	0	6
	5	NET 107	Network Fundamentals		4	2	4	0	6
Total Number of Units					17	13	8	3	24

	No.	Course Code	Course Name	Prerequisites	No. of Units				
					CRH	L	P	T	CTH
Third trimester	1	ENG 234	Specialized English -2	ENG 135	4	4	0	2	6
	2	CMT 102	Advanced Computer Applications	CMT 101	2	0	4	0	4
	3	CMT 124	Computer Client O.S.	CMT 127	4	2	4	0	6
	4	NET 117	Routing Technology	NET 107	4	2	4	0	6
Total Number of Units					14	8	12	2	22

	No.	Course Code	Course Name	Prerequisites	No. of Units				
					CRH	L	P	T	CTH
Forth trimester	1	NET 207	Switching Technology	NET 107	4	2	4	0	6
	2	ENG 137	Communication Skills -1	ENG 106	4	4	0	2	6
	3	SUP 132	Operating System -1	CMT 124	4	2	4	0	6
	4	NET 246	Fundamentals Of Wireless LANs	NET 117	4	2	4	0	6
	5	ETH 101	Professional Ethics & Comm. Skills		2	2	0	0	2
Total Number of Units					18	12	12	2	26

	No.	Course Code	Course Name	Prerequisites	No. of Units				
					CRH	L	P	T	CTH
Fifth trimester	1	ENG 237	Communication Skills -2	ENG 137	4	4	0	2	6
	2	SUP 232	Operating System -2	SUP 132	4	2	4	0	6
	3	NET 218	WAN Technology	NET 117 NET 207	3	2	2	0	4
	4	NET 224	Introduction to Network Security	NET 207	4	2	4	0	6
	5	NET 290	Preparation for Professional Certificates	NET 117 NET 207	1	0	2	0	2
Total Number of Units					16	10	12	2	24

	No.	Course Code	Course Name	Prerequisites	No. of Units				
					CRH	L	P	T	CTH
Sixth trimester	1	NET 299	Co-operative Training		4	Site Conditions Over 420 hours			

Total Number of trimesters Credit Units					CRH	L	P	T	CTH
					88	60	48	12	120
Total of training Hours (13X120) + Cooperative training Hours (420)					1980				



---

# COMPUTER COMMON COURSES

---

1430H – 2010G

Department	English Language Center		Major	Computing Technology			
Course Name	Specialized English-1		Course Code	ENG 135			
Prerequisites	ENG 106						
Trimester		1	2	3	4	5	6
Credit Hours			4				Cooperative
Contact Hours (hours per week)	L		4				
	W		0				
	T		2				
L = Lecture Hours, W = Workshop/Laboratory Hours, T = Tutorial Hours							
Course description:							
This basic course aims at introducing students of computer & information technology to the technical English language of their field of specializations.							
General Objective:							
The general goal of this course is to enable the students to comprehend and speak basic simple written and spoken technical English in the field of computer science & information technology as well as preparing them for enrollment in more advanced courses of similar nature.							
Specific Objectives					Required Performance Specifications	NOSS Related tasks	
A. Procedural Objectives: Trainee should be able to:							
B. Behavioral and Cognitive Objectives: Trainee should be able to:							
1. Grasp and use a reasonable amount of basic technical terms in their field of study.						Basic knowledge	
2. Comprehend simple to intermediate technical texts of computing & IT.						Basic knowledge	
3. Employ related grammatical structures used in the language of their major.						Basic knowledge	
4. Understand acronyms as they relate to computing and IT.						Basic knowledge	
5. Prepare and orally present technical material covered in class.						Basic knowledge	
6. Write sequences, facts, descriptions, emails, comparisons, and give instructions.						Basic knowledge	
7. Understand spoken language presented in class.						Basic knowledge	
Textbook:		Santiago, R. E. (2007) Infotech: <i>English for computer users</i> . Cambridge: Cambridge University Press.					
Additional Readings and Teaching Aids.		Course Book Audio CD.					
References:		Oxford Word Power Dictionary.					
Theoretical and Practical Topics:				NOSS Related tasks			
				Task	Task Description		
o Unit 1 Computer Applications (Page 2).					Basic knowledge		
o Unit 2 Computer essentials (Page 7).					Basic knowledge		
o Unit 3 Inside the system (Page 11).					Basic knowledge		
o Unit 4 Buying a computer (Page 16).					Basic knowledge		

○ Unit 5 Type, click and talk! (Page 22).		Basic knowledge
○ Unit 6 Capture your favorite image (Page 27).		Basic knowledge
○ Unit 7 Display screens and ergonomics (Page 32).		Basic knowledge
○ Unit 8 Choosing a printer (Page 37).		Basic knowledge
○ Unit 9 Devices for the disabled (Page 42).		Basic knowledge
○ Unit 10 Magnetic storage (Page 48).		Basic knowledge
○ Unit 11 Optical storage (Page 52).		Basic knowledge
○ Unit 12 Flash memory (Page 57).		Basic knowledge
○ Unit 13 The operating system (OS) (Page 63).		Basic knowledge
○ Unit 14 Word processing (WP) (Page 68).		Basic knowledge
○ Unit 15 Spreadsheets and databases (Page 73).		Basic knowledge
○ Unit 15 Spreadsheets and databases (Page 73).		Basic knowledge

Detailed Contents		
Hours	Contents	Instructional Objectives Students will learn and practice the following Language forms and functions:
<b>Module 1 Computers today 1</b>		
4	<b>Unit 1 Computer Applications (Page 2):</b> <ul style="list-style-type: none"> <li>○ The digital age.</li> <li>○ The magic of computers.</li> <li>○ Collocations.</li> <li>○ Computers at work.</li> </ul>	<ul style="list-style-type: none"> <li>○ Match captions with pictures.</li> <li>○ In pairs, discuss how computers are used in various situations.</li> <li>○ Read the text and identify parts of speech.</li> <li>○ Guess the meaning from context.</li> <li>○ Match words with their correct meanings.</li> <li>○ Match the verbs with nouns to practice collocations.</li> <li>○ Complete sentences using collocations.</li> <li>○ Listen and complete a table.</li> <li>○ Read a text and fill the gaps with sentences.</li> <li>○ Write a short presentation.</li> </ul>
4	<b>Unit 2 Computer essentials (Page 7):</b> <ul style="list-style-type: none"> <li>○ Different types of computer .</li> <li>○ Advertising slogans.</li> <li>○ What is a computer?.</li> </ul>	<ul style="list-style-type: none"> <li>○ Discuss the elements of computer systems.</li> <li>○ Label computer elements in a graph.</li> <li>○ Match the slogans with hardware.</li> <li>○ Scan slogans for similar words.</li> <li>○ Read the text and explain a figure.</li> <li>○ Listen and label pictures &amp; check comprehension.</li> <li>○ Use classifying expressions to describe a diagram.</li> <li>○ Write an email to explain the benefits of computers.</li> </ul>
6	<b>Unit 3 Inside the system (Page 11):</b> <ul style="list-style-type: none"> <li>○ Technical specifications.</li> <li>○ What is inside a PC system?.</li> <li>○ How memory is measured?.</li> </ul>	<ul style="list-style-type: none"> <li>○ Translate technical specifications into Arabic.</li> <li>○ Distinguish between RAM and ROM.</li> <li>○ Learn about how memory is measured</li> <li>○ Use relative clauses.</li> <li>○ Listen for specific information to fill a diagram.</li> <li>○ Review computer terms in groups.</li> </ul>
4	<b>Unit 4 Buying a computer (Page 16):</b> <ul style="list-style-type: none"> <li>○ In a computer shop.</li> </ul>	<ul style="list-style-type: none"> <li>○ Discuss the elements of computer systems.</li> <li>○ Label computer elements in a graph.</li> </ul>



	<ul style="list-style-type: none"> <li>Choosing the right computer.</li> <li>Computer adverts.</li> <li>Technical specifications.</li> <li>Greetings and offering help.</li> </ul>	<ul style="list-style-type: none"> <li>Match the slogans with hardware.</li> <li>Scan slogans for similar words.</li> <li>Read the text and explain a figure.</li> <li>Listen and label pictures &amp; check comprehension.</li> <li>Use classifying expressions to describe a diagram.</li> <li>Write an email to explain the benefits of computers.</li> </ul>
<b>Module 2 Input/output devices 21</b>		
4	<b>Unit 5 Type, click and talk! (Page 22):</b> <ul style="list-style-type: none"> <li>Describing input devices.</li> <li>Functions and features of devices.</li> <li>The keyboard.</li> <li>Mouse actions.</li> <li>Interacting with your computer.</li> <li>Speech recognition systems.</li> </ul>	<ul style="list-style-type: none"> <li>Label input devices.</li> <li>Listen for information.</li> <li>Use the infinitive and gerunds to describe input devices functions and features.</li> <li>Label pictures with functions.</li> <li>Fill in a reading text with missing verbs.</li> <li>Listen for comprehension.</li> </ul>
4	<b>Unit 6 Capture your favorite image (Page 27):</b> <ul style="list-style-type: none"> <li>They eyes of your computer .</li> <li>Scanners .</li> <li>A digital camera.</li> <li>Superlatives .</li> <li>Suffixes.</li> </ul>	<ul style="list-style-type: none"> <li>Discuss the ways of capturing an image on a computer.</li> <li>Read a text and answer questions.</li> <li>Listen to a conversation and complete notes.</li> <li>Distinguish between facts &amp; opinion.</li> <li>Complete sentences with the right superlative form.</li> <li>Use suitable suffixes to form adjectives or nouns.</li> <li>Describe a camera, webcam, or a video camera.</li> </ul>
4	<b>Unit 7 Display screens and ergonomics (Page 32):</b> <ul style="list-style-type: none"> <li>How screen displays work.</li> <li>Choosing the right display device.</li> <li>Ergonomics.</li> <li>Should &amp; Shouldn't.</li> </ul>	<ul style="list-style-type: none"> <li>Talk about your computer screen.</li> <li>Match definitions with technical words.</li> <li>Read and answer questions about the computer screen display.</li> <li>Listen and recommend display devices.</li> <li>Discuss the health problems associated with computer use.</li> <li>Practice giving instructions and advice ( by using should or shouldn't).</li> <li>Write an email using guidelines.</li> </ul>
4	<b>Unit 8 Choosing a printer (Page 37):</b> <ul style="list-style-type: none"> <li>Printers.</li> <li>Multifunction printers.</li> <li>Comparatives.</li> </ul>	<ul style="list-style-type: none"> <li>Label the types of printer.</li> <li>Read the text and discuss printer types.</li> <li>Scan a text for words with similar meanings</li> <li>Join ideas using suitable connectors.</li> <li>Label connectors according to their function.</li> <li>Complete sentences using the comparative forms of the adjectives.</li> <li>Read adverts and answer questions.</li> <li>Write an email to your friend comparing two printers.</li> </ul>
4	<b>Unit 9 Devices for the disabled (Page 42):</b> <ul style="list-style-type: none"> <li>Assistive technologies.</li> <li>Computers for disabled.</li> </ul>	<ul style="list-style-type: none"> <li>Describe photos.</li> <li>Search for information in a text.</li> <li>Complete a crossword from a text.</li> </ul>



	<ul style="list-style-type: none"> <li>○ Noun Phrases.</li> <li>○ Assistive technologies for blind.</li> </ul>	<ul style="list-style-type: none"> <li>○ Form noun phrases.</li> <li>○ Select the type of a modifier before a head noun.</li> <li>○ Listen to an interview and make notes.</li> <li>○ Write an email summarizing the different technologies available in the market for disabled.</li> </ul>
<b>Module 3 Storage devices 47</b>		
4	<b>Unit 10 Magnetic storage (Page 48):</b> <ul style="list-style-type: none"> <li>○ Types of magnetic drives.</li> <li>○ Buying a portable hard drive.</li> <li>○ Precautions.</li> <li>○ Word building.</li> </ul>	<ul style="list-style-type: none"> <li>○ Scan a text for information.</li> <li>○ Complete sentences with words.</li> <li>○ Listen and answer questions.</li> <li>○ Identify a sector and track in a figure.</li> <li>○ Match words with definitions.</li> <li>○ Match instructions with techno pictures.</li> <li>○ Use the imperatives to give precaution and warnings.</li> <li>○ Identify parts of a speech.</li> <li>○ Write a replay to an email.</li> </ul>
4	<b>Unit 11 Optical storage (Page 52):</b> <ul style="list-style-type: none"> <li>○ DVD &amp; CDs.</li> <li>○ Optical discs and drives.</li> <li>○ Choosing the right storage device.</li> <li>○ Connectors</li> </ul>	<ul style="list-style-type: none"> <li>○ Discuss the major DVD &amp; CDs functions and features.</li> <li>○ Listen to a conversation for information.</li> <li>○ Scan a text for information Make notes from reading.</li> <li>○ Match connectors with their functions.</li> <li>○ Translate computer instructions into Arabic.</li> <li>○ In pairs, choose and give reasons on selection of storage devices.</li> <li>○ Give an opinion about a topic from a forum.</li> </ul>
4	<b>Unit 12 Flash memory (Page 57):</b> <ul style="list-style-type: none"> <li>○ Flash-based gadgets.</li> <li>○ Memory in a flash.</li> <li>○ What are flash drives?.</li> </ul>	<ul style="list-style-type: none"> <li>○ Match flash memories descriptions with the pictures.</li> <li>○ Read the text about flash memories and answer the questions.</li> <li>○ Scan a text for words or phrases with similar meanings.</li> <li>○ Practice word buildings.</li> <li>○ Convert nouns into verbs and verb into nouns.</li> <li>○ Put two words or more together to form new meaning.</li> <li>○ Listen for comprehension.</li> <li>○ Describe a flash based device.</li> <li>○ Write a short reply to a text from a friend.</li> <li>○ Complete a vocabulary puzzle.</li> </ul>
<b>Module 4 Basic software 62</b>		
4	<b>Unit 13 The operating system (OS) (Page 63):</b> <ul style="list-style-type: none"> <li>○ The functions of operating systems.</li> <li>○ GUI operating systems.</li> <li>○ Mac &amp; PC operating systems.</li> <li>○ Windows Vista.</li> </ul>	<ul style="list-style-type: none"> <li>○ Discuss the functions of the operating systems.</li> <li>○ Complete a text with technical words.</li> <li>○ Read the text and decide which adjectives to use to describe the GUI.</li> <li>○ Translate operating system terms and expressions into Arabic.</li> <li>○ Label the interface features.</li> <li>○ Compare MAC and PC operating systems.</li> <li>○ Decide if these nouns are countable,</li> </ul>

		<p>uncountable or either.</p> <ul style="list-style-type: none"> <li>○ Write a summary following steps.</li> </ul>
4	<b>Unit 14 Word processing (WP) (Page 68):</b> <ul style="list-style-type: none"> <li>○ Word Processing features.</li> <li>○ Word Sudoku.</li> <li>○ The Cut &amp; Paste techniques .</li> </ul>	<ul style="list-style-type: none"> <li>○ Discuss the major functions and features of MS-Word Processor.</li> <li>○ Translate features and functions of WP to own language.</li> <li>○ Read instructions and complete the puzzle.</li> <li>○ Listen and identify steps in a task.</li> <li>○ Give instructions on how to cut and paste text.</li> <li>○ Correct mistakes in a dialogue.</li> <li>○ Practice giving instruction using the imperative.</li> <li>○ Write how to copy and paste an image into Word.</li> <li>○ Write instructions on how to use find and replace a text.</li> <li>○ Scan descriptions to match with dialogue boxes.</li> </ul>
4	<b>Unit 15 Spreadsheets and databases (Page 73):</b> <ul style="list-style-type: none"> <li>○ Spreadsheet programs.</li> <li>○ Business letters.</li> <li>○ Databases.</li> <li>○ Software at home and at work.</li> </ul>	<ul style="list-style-type: none"> <li>○ Discuss what spreadsheets are and what they are used for?</li> <li>○ Label words with diagram.</li> <li>○ Listen for comprehension.</li> <li>○ Discuss the advantages and disadvantages of showing data as a graph.</li> <li>○ Complete an invoice and a letter.</li> <li>○ Write fax to complain about having errors installing a printer.</li> <li>○ Make a list of applications.</li> <li>○ Read a text about databases.</li> <li>○ Form the plural of regular and irregular nouns.</li> <li>○ Practice the plural endings.</li> </ul>

Department	English Language Center			Major	Computing Technology		
Course Name	Specialized English -2			Course Code	ENG 234		
Prerequisites	ENG 135						
Trimester		1	2	3	4	5	6
Credit Hours				4			Cooperative
Contact Hours (hours per week)	L			4			
	W			0			
	T			2			
L = Lecture Hours, W = Workshop/Laboratory Hours, T = Tutorial Hours							
Course description:							
Building on the content of Technical English I, this course is intended to provide students of Computer Science and IT with more advanced and specialized technical English needed for studying their major and functioning in their future careers.							
General Objective:							
The general goal of this course is to develop students' proficiency in technical English and in the four language skills in general and in reading and writing in particular. In addition, students will lean specialist terminology related to computer science and IT.							
Specific Objectives					Required Performance Specifications	NOSS Related tasks	
A. Procedural Objectives: Trainee should be able to:							
B. Behavioral and Cognitive Objectives: Trainee should be able to:							
1. Understand and use advanced computing terminology.						Basic knowledge	
2. Comprehend technical texts that cover a wide range of topics in their field.						Basic knowledge	
3. Understand and use grammatical structures related to technical language.						Basic knowledge	
4. Understand abbreviations (acronyms) as they relate to computing and information technology.						Basic knowledge	
5. Prepare and orally present technical materials covered in the classroom.						Basic knowledge	
6. Write short essays using sequence, fact, description, comparison.						Basic knowledge	
7. Understand spoken language presented in the classroom and workplace.						Basic knowledge	
Textbook:		Oxford English for Information Technology – E. Glendinning & J. McEwan.					
Additional Readings and Teaching Aids.		Reading to be selected and distributed by the instructor.					
References:		Oxford Word Power Dictionary.					

Theoretical and Practical Topics:	NOSS Related tasks	
	Task	Task Description
o Unit 1: Computer Users.		Basic knowledge
o Unit 2: Computer Architecture.		Basic knowledge
o Unit 3: Computer Applications.		Basic knowledge
o Unit 5: Former Student.		Basic knowledge
o Unit 6: Operating Systems.		Basic knowledge
o Unit 7: Graphical User Interfaces.		Basic knowledge
o Unit 10: Computer Support.		Basic knowledge
o Unit 11: Networks.		Basic knowledge
o Unit 18: Data Security.		Basic knowledge
o Unit 22: People in Computing.		Basic knowledge

Detailed Contents		
Hours	Contents	Instructional Objectives In each unit students will learn and practice the following language functions and skills:
4	<b>Unit 1: Computer Users</b> A: <ul style="list-style-type: none"> <li>o Starter</li> <li>o Speaking</li> <li>o Writing</li> <li>o Language Skills</li> </ul> B: <ul style="list-style-type: none"> <li>o Specialist reading</li> </ul>	<ul style="list-style-type: none"> <li>o Listen for specific Information.</li> <li>o Practice speaking and writing about their own use of computer.</li> <li>o Understand the difference between the Past simple and the Present perfect.</li> <li>o Practice reading for specific information.</li> </ul>
4	<b>Unit 2: Computer Architecture</b> A: <ul style="list-style-type: none"> <li>o Starter</li> <li>o Reading</li> <li>o Speaking</li> <li>o Writing</li> <li>o Language Skills</li> </ul> B: <ul style="list-style-type: none"> <li>o Specialist reading</li> </ul>	<ul style="list-style-type: none"> <li>o Exchange personal information.</li> <li>o Participate in discussions related to the uses of computer.</li> <li>o Practice reading for specific information.</li> <li>o Practice reading advertisement.</li> <li>o Understand and use common computing terminology.</li> <li>o Use sequence words.</li> <li>o Understand prepositions of place</li> <li>o Write a brief description.</li> </ul>
6	<b>Unit 3: Computer Applications</b> A: <ul style="list-style-type: none"> <li>o Starter</li> <li>o Reading</li> <li>o Language Skills</li> <li>o Speaking</li> <li>o Writing</li> </ul> B: <ul style="list-style-type: none"> <li>o Specialist reading</li> </ul>	<ul style="list-style-type: none"> <li>o Discuss major computer applications.</li> <li>o Practice reading diagrams and charts.</li> <li>o Practice skimming and scanning.</li> <li>o Describe a process verbally.</li> <li>o Use the Present passive for description of processes.</li> <li>o Describe a process in writing.</li> </ul>
4	<b>Unit 5: Former Student</b> A: <ul style="list-style-type: none"> <li>o Starter</li> <li>o Speaking</li> <li>o Language Skills</li> <li>o Writing</li> </ul>	<ul style="list-style-type: none"> <li>o Discuss IT courses.</li> <li>o Practice Listening for specific information.</li> <li>o Understand questions in the past simple.</li> <li>o Practice using phrasal verbs with up</li> <li>o Describe an IT course in writing.</li> </ul>

6	<b>Unit 6: Operating Systems</b> A: <ul style="list-style-type: none"> <li>○ Starter</li> <li>○ Reading</li> <li>○ Speaking</li> <li>○ Language Skills</li> <li>○ Writing</li> </ul> B: <ul style="list-style-type: none"> <li>○ Specialist reading</li> </ul>	<ul style="list-style-type: none"> <li>○ Participate in discussions related to operating systems.</li> <li>○ Practice skimming and scanning.</li> <li>○ Describe main operating systems verbally.</li> <li>○ Understand the use of the -ing form in subject position and after preposition.</li> <li>○ Practice describing technical concepts in writing.</li> </ul>
4	<b>Unit 7: Graphical User Interfaces</b> A: <ul style="list-style-type: none"> <li>○ Starter</li> <li>○ Reading</li> <li>○ Speaking</li> <li>○ Writing</li> </ul> B: <ul style="list-style-type: none"> <li>○ Specialist reading</li> </ul>	<ul style="list-style-type: none"> <li>○ Discuss diagrams related to computer interfaces.</li> <li>○ Practice timed reading for specific details.</li> <li>○ Learn and practice common verbs used in computer applications.</li> <li>○ Understand how to use verbs like: allow, enable, help, let and permit.</li> <li>○ Practice writing instructions.</li> </ul>
4	<b>Unit 10: Computer Support</b> A: <ul style="list-style-type: none"> <li>○ Starter</li> <li>○ Language Skills</li> <li>○ Speaking</li> </ul>	<ul style="list-style-type: none"> <li>○ Understand a spoken explanation.</li> <li>○ Understand If-sentences.</li> <li>○ Understand and follow sequential procedures verbally.</li> </ul>
6	<b>Unit 11: Networks</b> A: <ul style="list-style-type: none"> <li>○ Starter</li> <li>○ Reading</li> <li>○ Language Skills</li> <li>○ Speaking</li> <li>○ Writing</li> </ul> B: <ul style="list-style-type: none"> <li>○ Specialist reading</li> </ul>	<ul style="list-style-type: none"> <li>○ Understand and use an adequate amount of advanced computing terminology.</li> <li>○ Read a diagram and text together.</li> <li>○ Understand and use relative clauses with participle.</li> <li>○ Explain sequential procedures verbally.</li> <li>○ Practice writing advantages and disadvantages.</li> </ul>
6	<b>Unit 18: Data Security</b> A: <ul style="list-style-type: none"> <li>○ Starter</li> <li>○ Reading</li> <li>○ Language Skills</li> <li>○ Speaking</li> <li>○ Writing</li> </ul> B: <ul style="list-style-type: none"> <li>○ Specialist reading</li> </ul>	<ul style="list-style-type: none"> <li>○ Participate in discussions related to data security.</li> <li>○ Read and comprehending technical texts (scanning).</li> <li>○ Learn and practice cause and effect structure.</li> <li>○ Write a detailed description of a technical problem and its solution.</li> </ul>
4	<b>Unit 22: People in Computing</b> A: <ul style="list-style-type: none"> <li>○ Starter</li> <li>○ Reading</li> <li>○ Language Skills</li> <li>○ Speaking</li> <li>○ Writing</li> </ul> B: <ul style="list-style-type: none"> <li>○ Specialist reading</li> </ul>	<ul style="list-style-type: none"> <li>○ Discuss professional life of people working in IT.</li> <li>○ Practice note-taking.</li> <li>○ Understand and practicing how to use structures used for requirement: need to, have, must, be + essential and critical</li> <li>○ Transfer information from a text to a table.</li> <li>○ Practice how to write a c.v. for a job application.</li> </ul>
2	<b>Revision</b>	
2	<b>Quizzes and exams</b>	

Department	English Language Center			Major	Computing Technology	
Course Name	Communication Skills-1			Course Code	ENG 137	
Prerequisites	ENG 106					
Trimester	1	2	3	4	5	6
Credit Hours				4		Cooperative
Contact Hours	L			4		
	W			0		
(hours per week)	T			2		
L = Lecture Hours, W = Workshop/Laboratory Hours, T = Tutorial Hours						
Course description:						
Building on the content of previous English courses (Eng 106, ESP I & II), this course is intended to provide computing and IT students with opportunities to develop their communication skills both in daily life and at the workplace. The course focuses on workplace skills, communicative ability, and life skills.						
General Objective:						
The general goal of this course is to develop students' language and communication skills both at the workplace and in their daily interaction with speakers of English. Another important goal of the course is to determine students' future communicative needs (both oral and written) and tailor instruction towards such needs through authentic activities that simulate real life communication.						
Specific Objectives				Required Performance Specifications	NOSS Related tasks	
A. Procedural Objectives: Trainee should be able to:						
B. Behavioral and Cognitive Objectives: Trainee should be able to:						
1. Understand spoken and written general and employment-related language.					Basic knowledge	
2. Communicate in their own words with instructors and co-workers.					Basic knowledge	
3. Understand the cultural and civic expectations of their new environment and workplace.					Basic knowledge	
4. Cope with authentic documents they will encounter at work (most if not all skills in the syllabus address workplace).					Basic knowledge	
Textbook:	Workplace Plus: Living and Working in English. (Student Book) By Joan Saslow. Longman. <a href="http://www.longman.com/workplaceplus">http://www.longman.com/workplaceplus</a> Workplace Plus: Living and Working in English. (Work Book) By Joan Saslow					
Additional Readings and Teaching Aids.	Additional relevant communicative activities to be selected by the instructor.					
References:	<a href="#">English/English/Arabic Dictionary</a>					
Recommendations for Instructors:						
<ul style="list-style-type: none"><li>Teachers are advised to use additional supplementary materials (as needed) based on the communication needs of their students.</li><li>It is also recommended to make use of the students' knowledge of the subject matter in their major in order to boost their self confidence and use their technical knowledge to develop communication in class.</li><li>The use of PowerPoint and other teaching aides is highly recommended.</li></ul>						
Authentic Communicative activities in this book are very important tools to develop the students' communicative competence. Based on the student's field of training, using more relevant authentic communicative activities will prove useful.						



Theoretical and Practical Topics:	NOSS Related tasks	
	Task	Task Description
o Unit 1: Your Life and Work.		Basic knowledge
o Unit 2: Your Environment.		Basic knowledge
o Unit 3: Your Equipment and Machines.		Basic knowledge
o Unit 4: Your Customers.		Basic knowledge
o Unit 5: Your Time.		Basic knowledge
o Unit 6: Your Supplies and Resources.		Basic knowledge
o Unit 7: Your Relationships.		Basic knowledge
o Unit 8: Your Health and Safety.		Basic knowledge
o Unit 9: Your Money.		Basic knowledge
o Unit 10: Your Career.		Basic knowledge

Detailed Contents		
Hours	Contents	Instructional Objectives In each unit students will learn and practice the following language functions and skills:
4	<b>Unit 1: Your Life and Work:</b> <b>Skills:</b> <ul style="list-style-type: none"> <li>o Preparing for job interview.</li> <li>o Requesting a letter of recommendation.</li> <li>o Filling out an application.</li> <li>o Describing skills and abilities.</li> </ul> <b>Grammar:</b> <ul style="list-style-type: none"> <li>o Present perfect continuous.</li> <li>o Gerunds for describing likes, dislikes and skills.</li> </ul>	<ul style="list-style-type: none"> <li>o Engage in short conversations.</li> <li>o Get to know someone.</li> <li>o Ask for references.</li> </ul>
4	<b>Unit 2: Your Environment:</b> <b>Skills:</b> <ul style="list-style-type: none"> <li>o Requesting and giving directions in a building.</li> <li>o Offering and giving assistance.</li> <li>o Giving directions to a place.</li> </ul> <b>Grammar:</b> <ul style="list-style-type: none"> <li>o Imperatives for directions, warnings, requests and suggestions.</li> <li>o Indirect commands.</li> </ul>	<ul style="list-style-type: none"> <li>o Give directions for transportation.</li> <li>o Use maps and building directions.</li> </ul>
6	<b>Unit 3: Your Equipment and Machines:</b> <b>Skills:</b> <ul style="list-style-type: none"> <li>o Reporting equipment breakdown.</li> <li>o Troubleshooting a problem.</li> <li>o Discussing product warranty.</li> <li>o Using Product service telephone lines.</li> </ul> <b>Grammar:</b> <ul style="list-style-type: none"> <li>o The passive voice.</li> <li>o Review: Irregular past participles.</li> </ul>	<ul style="list-style-type: none"> <li>o Discuss a product warranty.</li> <li>o Complete a proof-of-purchase card.</li> <li>o Use telephone to call product service lines.</li> </ul>
4	<b>Unit 4: Your Customers:</b> <b>Skills:</b> <ul style="list-style-type: none"> <li>o Offering and asking for services.</li> <li>o Explaining conditions.</li> <li>o Writing consumer complaint letters.</li> </ul>	<ul style="list-style-type: none"> <li>o Request a certain brand.</li> <li>o Ask for service in a gas station.</li> <li>o Explain conditions.</li> <li>o Write consumer complaint letters.</li> </ul>



	<b>Grammar:</b> <ul style="list-style-type: none"> <li>○ Used to.</li> <li>○ Comparisons with as and not as.</li> <li>○ Review: Comparative forms.</li> </ul>	
6	<b>Unit 5: Your Time:</b> <b>Skills:</b> <ul style="list-style-type: none"> <li>○ Understanding consequences.</li> <li>○ Discussing payment.</li> <li>○ Understanding importance of punctuality.</li> <li>○ Rescheduling events.</li> </ul> <b>Grammar:</b> <ul style="list-style-type: none"> <li>○ Verbs followed by infinitives.</li> <li>○ Verbs followed by objects and infinitives.</li> </ul>	<ul style="list-style-type: none"> <li>○ Discuss payment.</li> <li>○ Calculate pay.</li> <li>○ Understand importance of punctuality.</li> <li>○ Reschedule events.</li> </ul>
4	<b>Unit 6: Your Supplies and Resources:</b> <b>Skills:</b> <ul style="list-style-type: none"> <li>○ Comparing and contrasting values.</li> <li>○ Drawing conclusions.</li> <li>○ Classifying products.</li> </ul> <b>Grammar:</b> <ul style="list-style-type: none"> <li>○ Conclusions with must.</li> <li>○ Exclamations with what.</li> </ul>	<ul style="list-style-type: none"> <li>○ Compare prices.</li> <li>○ Use unit pricing.</li> <li>○ Use food coupons.</li> <li>○ Determine the best buy.</li> </ul>
4	<b>Unit 7: Your Relationships:</b> <b>Skills:</b> <ul style="list-style-type: none"> <li>○ Asking about and understanding rules and laws.</li> <li>○ Congratulating someone on good news.</li> <li>○ Offering help.</li> <li>○ Comparing and contrasting customs and laws.</li> </ul> <b>Grammar:</b> <ul style="list-style-type: none"> <li>○ Impersonal it with adjectives and infinitives.</li> </ul>	<ul style="list-style-type: none"> <li>○ Offer help.</li> <li>○ Understand rules, laws and violations.</li> </ul>
6	<b>Unit 8: Your Health and Safety:</b> <b>Skills:</b> <ul style="list-style-type: none"> <li>○ Reading directions and warnings.</li> <li>○ Following employer policies.</li> <li>○ Applying warnings on medications.</li> </ul> <b>Grammar:</b> <ul style="list-style-type: none"> <li>○ Review: Possessive adjectives.</li> <li>○ Possessive pronouns.</li> </ul>	<ul style="list-style-type: none"> <li>○ Return an item to the supermarket.</li> <li>○ Get a prescription.</li> <li>○ Choose and use over-the-counter medications.</li> </ul>
4	<b>Unit 9: Your Money:</b> <b>Skills:</b> <ul style="list-style-type: none"> <li>○ Reading bills.</li> <li>○ Writing checks.</li> <li>○ Evaluating financial services of banks.</li> <li>○ Offering information to customers.</li> </ul> <b>Grammar:</b> <ul style="list-style-type: none"> <li>○ Conditional sentences.</li> <li>○ Keep + gerund.</li> </ul>	<ul style="list-style-type: none"> <li>○ Find appropriate person for information.</li> <li>○ Use the yellow pages.</li> <li>○ Read the fine print.</li> <li>○ Understand credit and debit cards.</li> </ul>
4	<b>Unit 10: Your Career:</b> <b>Skills:</b> <ul style="list-style-type: none"> <li>○ Calling for an interview.</li> <li>○ Offering job history and references.</li> <li>○ Discussing career goals.</li> <li>○ Accepting feedback in performance reviews.</li> </ul>	<ul style="list-style-type: none"> <li>○ Phone for an interview.</li> <li>○ Praise others.</li> <li>○ Accept complaints.</li> </ul>

	<b>Grammar:</b> <ul style="list-style-type: none"> <li>○ Review: The simple present tense and the present continuous.</li> <li>○ Review: The present perfect and the present perfect continuous.</li> </ul>	
4	<b>Recommendations for Instructors:</b> <ul style="list-style-type: none"> <li>○ Teachers are advised to use additional supplementary materials (as needed) based on the communication needs of their students.</li> <li>○ It is also recommended to make use of the students' knowledge of the subject matter in their major in order to boost their self confidence and use their technical.</li> <li>○ Knowledge to develop communication in class.</li> <li>○ The use of PowerPoint and other teaching. Aides is highly recommended.</li> </ul>	
<p>Authentic Communicative activities in this book are very important tools to develop the students' communicative competence. Based on the student's field of training, using more relevant authentic communicative activities will prove useful.</p>		

Department	English Language Center			Major	Computing Technology	
Course Name	Communication Skills -2			Course Code	ENG 237	
Prerequisites	ENG 137					
Trimester	1	2	3	4	5	6
Credit Hours					4	Cooperative
Contact Hours	L				4	
(hours per week)	W				0	
	T				2	
L = Lecture Hours, W = Workshop/Laboratory Hours, T = Tutorial Hours						
Course description:						
Building on the language skills developed in previous English courses (Eng 101, ESP I & II), this course is intended to provide Computing and IT students with opportunities to develop their communication skills both in daily life and at the workplace. The course focuses on workplace skills, communicative ability, and life skills.						
General Objective:						
The general goal of this course is to develop students' language and communication skills both at the workplace and in their daily interaction with speakers of English. Another important goal of the course is to determine students' future communicative needs (both oral and written) and tailor instruction towards such needs through authentic activities that simulate real life communication.						
Specific Objectives				Required Performance Specifications	NOSS Related tasks	
A. Procedural Objectives: Trainee should be able to:						
B. Behavioral and Cognitive Objectives: Trainee should be able to:						
1. Understand spoken and written general and employment-related language.					Basic knowledge	
2. Communicate in their own words with instructors and co-workers.					Basic knowledge	
3. Understand the cultural and civic expectations of their new environment and workplace.					Basic knowledge	
4. Cope with authentic documents they will encounter at work.					Basic knowledge	
Textbook:	Workplace Plus: Living and Working in English 3. (Student Book) By Joan Saslow. Longman. <a href="http://www.longman.com/workplaceplus">http://www.longman.com/workplaceplus</a> Workplace Plus: Living and Working in English 3. (Work Book) By Joan Saslow.					
Additional Readings and Teaching Aids.	Additional relevant communicative activities to be selected by the instructor.					
References:	English/English/Arabic Dictionary					
Recommendations for Instructors:						
<ul style="list-style-type: none"><li>Teachers are advised to use additional supplementary materials (as needed) based on the communication needs of their students.</li><li>It is also recommended to make use of the students' knowledge of the subject matter in their major in order to boost their self confidence and use their technical knowledge to develop communication in class.</li><li>The use of PowerPoint and other teaching aides is highly recommended.</li></ul>						
Authentic Communicative activities in this book are very important tools to develop the students' communicative competence. Based on the student's field of training, using more relevant authentic communicative activities will prove useful.						

Theoretical and Practical Topics:	NOSS Related tasks	
	Task	Task Description
o Unit 1: Your Life and Work.		Basic knowledge
o Unit 2: Your Environment.		Basic knowledge
o Unit 3: Your Equipment and Machines.		Basic knowledge
o Unit 4: Your Customers.		Basic knowledge
o Unit 5: Your Time.		Basic knowledge
o Unit 6: Your Supplies and Resources.		Basic knowledge
o Unit 7: Your Relationships.		Basic knowledge
o Unit 8: Your Health and Safety.		Basic knowledge
o Unit 9: Your Money.		Basic knowledge
o Unit 10: Your Career.		Basic knowledge

Detailed Contents		
Hours	Contents	Instructional Objectives In each unit students will learn and practice the following language functions and skills:
4	<b>Unit 1: Your Life and Work:</b> <b>Skills:</b> <ul style="list-style-type: none"> <li>o Prepare for job interview.</li> <li>o Request a letter of recommendation.</li> <li>o Fill out an application.</li> <li>o Describe skills and abilities.</li> </ul> <b>Vocabulary:</b> <ul style="list-style-type: none"> <li>o Weather adjectives.</li> <li>o Expressions of surprise.</li> <li>o Occupations and allied skills.</li> </ul>	<ul style="list-style-type: none"> <li>o Engage in short conversations.</li> <li>o Get to know someone.</li> <li>o Ask for references.</li> </ul>
4	<b>Unit 2: Your Environment:</b> <b>Skills:</b> <ul style="list-style-type: none"> <li>o Requesting and giving directions in a building.</li> <li>o Offering and giving assistance.</li> <li>o Giving directions to a place.</li> </ul> <b>Vocabulary:</b> <ul style="list-style-type: none"> <li>o Directions in building interiors.</li> <li>o Responses to social invitation.</li> </ul>	<ul style="list-style-type: none"> <li>o Give directions for transportation.</li> <li>o Use maps and building directions.</li> </ul>
6	<b>Unit 3: Your Equipment and Machines:</b> <b>Skills:</b> <ul style="list-style-type: none"> <li>o Report equipment breakdown.</li> <li>o Troubleshoot a problem.</li> <li>o Discuss product warranty.</li> <li>o Use Telephone Product service lines.</li> </ul> <b>Vocabulary:</b> <ul style="list-style-type: none"> <li>o Equipment, machine, and appliances.</li> <li>o Machine maintenance.</li> <li>o Computer malfunction.</li> </ul>	<ul style="list-style-type: none"> <li>o Discuss a product warranty.</li> <li>o Complete a proof-of-purchase card.</li> <li>o Use telephone to call product service lines.</li> </ul>
4	<b>Unit 4: Your Customers:</b> <b>Skills:</b> <ul style="list-style-type: none"> <li>o Explain a discounted item.</li> <li>o Discuss a safety recall.</li> </ul>	<ul style="list-style-type: none"> <li>o Request a certain brand.</li> <li>o Ask for service in a gas station.</li> <li>o Explain conditions.</li> <li>o Write consumer complaint letters.</li> </ul>

	<ul style="list-style-type: none"> <li>○ Improve quality-control problem.</li> <li>○ Offer services.</li> <li>○ Explain conditions.</li> <li>○ Write consumer complaint letters.</li> </ul> <b>Vocabulary:</b> <ul style="list-style-type: none"> <li>○ Phrases to describe good and bad quality.</li> <li>○ Locations in a store.</li> <li>○ Product for babies and children.</li> </ul>	
6	<b>Unit 5: Your Time:</b> <b>Skills:</b> <ul style="list-style-type: none"> <li>○ Understand consequences of lateness.</li> <li>○ Clarify job expectations.</li> <li>○ Discuss payment, hours, and overtime pay.</li> <li>○ Understand importance of punctuality.</li> <li>○ Reschedule events.</li> </ul> <b>Vocabulary:</b> <ul style="list-style-type: none"> <li>○ Payment options .</li> <li>○ Wages and hours.</li> <li>○ Time expressions.</li> </ul>	<ul style="list-style-type: none"> <li>○ Discuss payment.</li> <li>○ Calculate pay.</li> <li>○ Understand importance of punctuality.</li> <li>○ Reschedule events.</li> </ul>
4	<b>Unit 6: Your Supplies and Resources:</b> <b>Skills:</b> <ul style="list-style-type: none"> <li>○ Order supplies by email or online.</li> <li>○ Make economical purchasing decisions.</li> <li>○ Determine the "best buy".</li> <li>○ Draw conclusions.</li> <li>○ Classify products.</li> </ul> <b>Vocabulary:</b> <ul style="list-style-type: none"> <li>○ Containers.</li> <li>○ Units of measure.</li> <li>○ Abbreviations of quantity.</li> </ul>	<ul style="list-style-type: none"> <li>○ Compare prices.</li> <li>○ Use unit pricing.</li> <li>○ Use food coupons.</li> <li>○ Determine the best buy.</li> </ul>
4	<b>Unit 7: Your Relationships:</b> <b>Skills:</b> <ul style="list-style-type: none"> <li>○ Ask about and understand rules and laws.</li> <li>○ Congratulate someone on good news.</li> <li>○ Offer help.</li> <li>○ Compare and contrast customs and laws.</li> </ul> <b>Vocabulary:</b> <ul style="list-style-type: none"> <li>○ Expressions of uncertainty.</li> <li>○ Conversation starters.</li> <li>○ Adjectives of emotion.</li> </ul>	<ul style="list-style-type: none"> <li>○ Offer help.</li> <li>○ Understand rules, laws and violations.</li> </ul>
6	<b>Unit 8: Your Health and Safety:</b> <b>Skills:</b> <ul style="list-style-type: none"> <li>○ Read directions and warnings.</li> <li>○ Follow employer policies.</li> <li>○ Apply warnings on medications.</li> <li>○ Return an item to the supermarket.</li> </ul> <b>Vocabulary:</b> <ul style="list-style-type: none"> <li>○ Complaints about food.</li> <li>○ Medicine label terms.</li> </ul>	<ul style="list-style-type: none"> <li>○ Return an item to the supermarket.</li> <li>○ Get a prescription.</li> <li>○ Choose and use over-the-counter medications.</li> </ul>
4	<b>Unit 9: Your Money:</b>	<ul style="list-style-type: none"> <li>○ Find appropriate person for</li> </ul>

	<b>Skills:</b> <ul style="list-style-type: none"> <li>○ Read bills.</li> <li>○ Write checks.</li> <li>○ Evaluate financial services of banks.</li> <li>○ Offer information to customers.</li> </ul> <b>Vocabulary:</b> <ul style="list-style-type: none"> <li>○ Bank services and accounts.</li> <li>○ Good and bad financial news.</li> <li>○ Expressions of satisfaction and dissatisfaction.</li> </ul>	<p>information.</p> <ul style="list-style-type: none"> <li>○ Use the yellow pages.</li> <li>○ Read the fine print.</li> <li>○ Understand credit and debit cards.</li> </ul>
4	<b>Unit 10: Your Career:</b> <b>Skills:</b> <ul style="list-style-type: none"> <li>○ Call for an interview.</li> <li>○ Offer job history and references.</li> <li>○ Discuss career goals.</li> <li>○ Accept feedback in performance reviews.</li> <li>○ Praise others.</li> <li>○ Accept compliments.</li> </ul> <b>Vocabulary:</b> <ul style="list-style-type: none"> <li>○ Responses to compliments.</li> <li>○ On the job educational opportunities.</li> </ul>	<ul style="list-style-type: none"> <li>○ Phone for an interview.</li> <li>○ Praise others.</li> <li>○ Accept complaints.</li> </ul>
4	<b>Recommendations for Instructors:</b> <ul style="list-style-type: none"> <li>○ Teachers are advised to use additional supplementary materials (as needed) based on the communication needs of their students.</li> <li>○ It is also recommended to make use of the students' knowledge of the subject matter in their major in order to boost their self confidence and use their technical.</li> <li>○ Knowledge to develop communication in class.</li> <li>○ The use of PowerPoint and other teaching. Aides is highly recommended.</li> </ul>	
<p>Authentic Communicative activities in this book are very important tools to develop the students' communicative competence. Based on the student's field of training, using more relevant authentic communicative activities will prove useful.</p>		

Department	Computer and Info. Technology			Major	Computing technology		
Course Name	Specialized Mathematics			Course Code	MAT 115		
Prerequisites							
Trimester		1	2	3	4	5	6
Credit Hours			3				Cooperative
Contact Hours (hours per week)	L		3				
	W		0				
	T		1				
L = Lecture Hours, W = Workshop/Laboratory Hours, T = Tutorial Hours							
Course description:							
<p>This course introduces the required topics needed by the trainee in this major. Trainees are going to practice Algebraic expressions, multi-borders, Linear equations, Matrixes &amp; limit, Logarithmic &amp; basic circuits, Concept of function &amp; its curves , Algebra of compound Number. Also, this course is required for all majors in the Computer Department.</p>							
General Objective:							
<p>This course aims to acquire the trainee the basic skills in Mathematical calculations related to computer technology.</p>							
Specific Objectives			Required Performance Specifications			NOSS Related tasks	
A. Procedural Objectives: Trainee should be able to:							
1. To solve Algebraic expressions and Quadratic Equation.			To solve the question as defined correctly.			Computer's user technician supporter, Knowledge 6, Internet technology assistant programmer and developer, Knowledge8, Computer systems administrator, Knowledge5, Multi media expert, Knowledge8.	
2. To solve Linear equations.			To solve the question as defined correctly.				
3. To solve exponential functions.			To solve the question as defined correctly.				
4. To solve Logarithms.			To solve the question as defined correctly.				
5. To solve Trigonometric functions.			To solve the question as defined correctly.				
6. To draw curves of Trigonometric functions .			To solve the question as defined correctly.				
7. Rounding off compound No.			To solve the question as defined correctly.				
B. Behavioral and Cognitive Objectives: Trainee should be able to:							
1. Define Algebraic expressions.			Mention the types of Algebraic expressions			Computer's user technician supporter, Knowledge 8, Knowledge8, Computer systems administrator, Knowledge5, Multi media expert, Knowledge8.	
2. Define the type the linear equation.			Mentioning the types of the linear equations				
3. Mention the methods of using Matrixes & limit to solve linear equations.			To define the correct method of the answer.				
4. Mention the types of exponential functions.			To mention two types of functions.				
5. To mention the methods of rounding off compound No.			To define the correct Algebraic method to answer a question.				
Safety instructions:							



Theoretical and Practical Topics:	NOSS Related tasks		
	Professional Standard	Task	Task Description
○ <b>Algebraic expressions and Quadratic Equation.</b>	Networks Technician	Knowledge8	Mathematical & Calculation Knowledge
	Computer's user technician supporter	Knowledge6	Ability to make technical analysis.
	Internet technology developer and programmer assistant.	Knowledge8	Mathematical & Calculation Knowledge
	systems administrator	Knowledge5	To get know logical analysis.
	Multimedia expert	Knowledge8	To get know measurement units.
○ <b>Linear equations (3 Xs).</b>	Networks Technician	Knowledge8	Mathematical & Calculation Knowledge
	Computer's user technician supporter	Knowledge6	Ability to make technical analysis.
	Internet technology developer and programmer assistant.	Knowledge8	Mathematical & Calculation Knowledge
	systems administrator	Knowledge5	To get know logical analysis.
	Multimedia expert	Knowledge8	To get know measurement units.
○ <b>Matrix and limits.</b>	Networks Technician	Knowledge8	Mathematical & Calculation Knowledge
	Computer's user technician supporter	Knowledge6	Ability to make technical analysis.
	Internet technology developer and programmer assistant.	Knowledge8	Mathematical & Calculation Knowledge
	systems administrator	Knowledge5	To get know logical analysis.
	Multimedia expert	Knowledge8	To get know measurement units.
○ <b>Logarithms and functions.</b>	Networks Technician	Knowledge8	Mathematical & Calculation Knowledge
	Computer's user technician supporter	Knowledge6	Ability to make technical analysis.
	Internet technology developer and programmer assistant.	Knowledge8	Mathematical & Calculation Knowledge
	systems administrator	Knowledge5	To get know logical analysis.
	Multimedia expert	Knowledge8	To get know measurement units.
○ <b>Principles of functions and curves (Trigonometric functions).</b>	Networks Technician	Knowledge8	Mathematical & Calculation Knowledge
	Computer's user technician supporter	Knowledge6	Ability to make technical analysis.
	Internet technology developer and programmer assistant.	Knowledge8	Mathematical & Calculation Knowledge
	systems administrator	Knowledge5	To get know logical analysis.
	Multimedia expert	Knowledge8	To get know measurement units.
○ <b>Rounding off compound numbers.</b>	Networks Technician	Knowledge8	Mathematical & Calculation Knowledge
	Computer's user technician supporter	Knowledge6	Ability to make technical analysis.
	Internet technology developer and programmer assistant.	Knowledge8	Mathematical & Calculation Knowledge
	systems administrator	Knowledge5	To get know logical analysis.
	Multimedia expert	Knowledge8	To get know measurement units.

Detailed Contents		
Hours	Contents	Evaluation Tools
6	<b>Algebraic expressions &amp; multi borders</b> <ul style="list-style-type: none"> <li>○ Calculation Operations (multiplications- division – subtraction –add) .</li> <li>○ Arrange calculation Operations on algebraic expressions.</li> <li>○ Algebraic fractions.</li> <li>○ Numerical values of algebraic expressions.</li> <li>○ Analysis of Quadratic Equation.</li> </ul>	Oral questions Written questions Self- test
6	<b>Linear equations</b> <ul style="list-style-type: none"> <li>○ Types &amp; concept of linear equations .</li> <li>○ Methods to solve linear equations.</li> <li>○ Solving linear equations with one passive.</li> </ul>	Oral questions Written questions Self- test
7	<b>Matrixes &amp; limit</b> <ul style="list-style-type: none"> <li>○ Matrix concepts &amp; types.</li> <li>○ Calculation process on matrix.</li> <li>○ Calculation of extremists (2x2) &amp; 3x3) .</li> <li>○ Solve linear equations using matrixes .</li> </ul>	Oral questions Written questions Self- test
7	<b>Logarithmic &amp; exponential circuits</b> <ul style="list-style-type: none"> <li>○ Negative exponential &amp; fractions .</li> <li>○ Calculation Operations on exponential .</li> <li>○ Define logarithms .</li> <li>○ Rules of logarithms .</li> <li>○ Number e &amp; natural logarithm .</li> <li>○ Exponential logarithm equations .</li> </ul>	Oral questions Written questions Self- test
7	<b>Concept of function &amp; its curve</b> <ul style="list-style-type: none"> <li>○ Define function .</li> <li>○ Field .</li> <li>○ Range .</li> <li>○ Function curve .</li> <li>○ Some common functions (tri-functions )</li> </ul>	Oral questions Written questions Self- test
6	<b>Algebra of compound NO.</b> <ul style="list-style-type: none"> <li>○ Define compound numbers as couple .</li> <li>○ Figure (a+ib) on compound axis .</li> <li>○ Algebraic Operations on compound numbers</li> <li>○ Polar figure .</li> <li>○ Complex roots (DeMorgan's Laws ) .</li> </ul>	Oral questions Written questions Self- test

References	1-mathematics for technicians , a .greer & g . taylor , stanely thornes 1989 . 2- basic mathematics, h. kruglack & moore, schaum outlines , mc graw-hill . 3- college of algebra & trigonometry , p. Schmidt, schaum outline series , mc graw- hill inc. 1987 . 4- college of algebra, ray barent , mc graw- hill inc ., 1987 .
------------	--

Department	Computer and Info. Technology				Major	Computing Technology	
Course Name	Computer components & Assembly				Course Code	CMT 127	
Prerequisites							
Trimester		1	2	3	4	5	6
Credit Hours			4				Cooperative
Contact Hours (hours per week)	L		2				
	W		4				
	T		0				
L = Lecture Hours, W = Workshop/Laboratory Hours, T = Tutorial Hours							
Course description:							
<p>This course introduces the basic principle for assembling and building the computers components thru thrills on how to deal with the different parts of the computer and how to assemble them together for building a computer up. After that, there are thrills on how to install a suitable operating system. Moreover, there is training on how to do the basic maintenance for the set and how to fix damages.</p> <p>This course represents Hardware part of ( A+) and IT Essential 1 Certificate.</p>							
General Objective:							
This course aims to acquire the trainee the basic skills in building up and assembling computer parts.							
Specific Objectives	Required Performance Specifications			NOSS Related tasks			
				From The Criterion		Task No.	
A. Procedural Objectives: Trainee should be able to:							
1. Install the Motherboard.	Installing the motherboard and choosing the suitable case			Computer's user technician assistant		G2 , G3	
				Networks technician		G2 , G4	
				Systems administrator		F1 , F5	
				Programmer assistant & Internet applications developer		G2 , G4	
2. Install Hard disks.	Connecting the hard disk with the motherboard and choosing the right cable.			Computer's user technician assistant		G2 , G3	
				Networks technician		G2 , G4	
				Systems administrator		F1 , F5	
				Programmer assistant & Internet applications developer		G2 , G4	
3. Install Compact Disks	Making a compact disk.			Computer's user technician assistant		G2 , G3	
				Networks technician		G2 , G4	
				Systems administrator		F1 , F5	
				Programmer assistant & Internet applications developer		G2 , G4	
4. Install the Processor.	Installing the processor on the main board.			Computer's user technician assistant		G2 , G3	
				Networks technician		G2 , G4	
				Systems administrator		F1 , F5	
				Programmer assistant & Internet applications developer		G2 , G4	
5. Install the sound card.	Installing the sound card on the main board.			Computer's user technician assistant		G2 , G3	
				Networks technician		G2 , G4	
				Systems administrator		F1 , F5	

		Programmer assistant & Internet applications developer	G2 , G4
6. Install the Memory.	Installing the memory in the right place.	Computer's user technician assistant	G2 , G3
		Networks technician	G2 , G4
		Systems administrator	F1 , F5
		Programmer assistant & Internet applications developer	G2 , G4
7. Install or change and format the network card.	Installing the network card.	Computer's user technician assistant	C4, D4, D5, F2
		Networks technician	B4, C2, G5
		Systems administrator	A1, A2, A3, E2
		Programmer assistant & Internet applications developer	F4
8. Try out the set and maintain it.	Starting the computer after being built and assembled	Computer's user technician assistant	F3, Knowledge1, F3, C7
		Networks technician	Knowledge1, F2
		Systems administrator	Knowledge2
		Programmer assistant & Internet applications developer	Knowledge3

**B. Behavioral and Cognitive Objectives: Trainee should be able to:**

1. Recognize the different parts of the computer.	Mentioning the main parts of computer.	Computer's user technician assistant	G2, G3, D4
		Networks technician	G2, G4, A6
		Systems administrator	A1, F1, F5
		Programmer assistant & Internet applications developer	G2, G4, F4
2. Recognize the different features of the mother board.	Mentioning the main difference between mother boards and the features of each.	Computer's user technician assistant	G2, G3, D4
		Networks technician	G2, G4, A6
		Systems administrator	A1, F1, F5
		Programmer assistant & Internet applications developer	G2, G4, F4

**Safety conditions:**

- Keep devices safe.
- Follow the safety instructions when using tools.
- Follow the safety instructions of location.

Theoretical and Practical Topics:	NOSS Related tasks		
	Because this course is shared between all courses of Computer Technology so the following tasks from the professional standard for a career were adapted.		
	Professional Standard	Task	Task Description
• <b>Safety Procedures and Tools:</b>	Computer's users Technician supporter	C4	Makes backup for the data on the set
		D4	Ensures the conformity with the standard
		F2	Prints the maintenance instruction from the manufacturer
	Network computer's technician	G6	Makes training projects using the training net
		F5	Ensures the application of a security place
	Systems administrator	Behaviors 7	Keeps the sets and tools safe
		E3	Marks policies of backing up
	Programmer assistant and internet applications developer	Behaviors 13	Keeps the sets and tools safe
		D6	Prepares backup for programs
• <b>Introduction to</b>	Computer's users Technician	D4	Ensures the conformity with the

personnel computer:	supporter		standard
		G2	Takes part in the training course
	Network computer's technician	G3	Follow up reading in specialized books, journals and newsletters
		A6	Participates in defining computer characteristics
		G2	Takes part in the training course
		G4	Follows up specialized books and magazines.
	Systems administrator	A1	Defines device specifications
		F1	Takes part in the training course
		F5	Follow up reading in specialized books, journals and newsletters
	Programmer assistant and internet applications developer	F4	Participates in defining computer devices characteristics
		G2	Takes part in the training course
		G4	Follows up specialized books and magazines
• <b>Assembling computer step by step:</b>	Computer's users Technician supporter	B3	Makes check on a device
		D3	Asks for device parts
		D4	Ensures the conformity with the standard
		F2	Prints the maintenance instruction from the manufacturer
		F3	Update protection programs
	Network computer's technician	A6	Participates in defining computer devices characteristics.
		B4	Studies the available characteristics in the market
		C1	Asks for a network devices and tools
		E3	Changes the VGA
		E4	Repairs network devices
	Systems administrator	A1	Defines device specifications
		E2	Identifies features of backup tapes and sets.
	Programmer assistant and internet applications developer	E2	Identifies types of problems at the beneficiary site
		F4	Participates in defining computer devices characteristics
• <b>Principles of prevention maintenance and faults repairing:</b>	Computer's users Technician supporter	C4	Update protection programs
		D4	Ensures the conformity with the standard
		D5	Changes the faulty parts
		F2	Prints the maintenance instruction from the manufacturer
	Network computer's technician	B4	Studies the available characteristics in the market
		C2	Installs network devices
		G5	Benefits from manufacturer help
	Systems administrator	A1	Identifying features of sets
		A2	Installs operating system
		A3	Fixes computer configuration
		E2	Identifies types of problems at the beneficiary site
	Programmer assistant and internet applications developer	E4	Reinstalls soft wares
• <b>Principles of operating system:</b>	Computer's users Technician supporter	F3	Updates soft ware protection
		C7	Upgrades OS and soft wares
		Knowledge 1	Understands technical terms in English
		D3	Asks for device parts
	Network computer's technician	Knowledge 2	Knows the technical terms in English

	Systems administrator	Knowledge 3	Knows computer conception.
	Programmer assistant and internet applications developer	Knowledge 1	Understands technical terms in English language
		F2	Gives advices on how to use the available soft ware and programs
<ul style="list-style-type: none"> <li><b>Laptops and small mobile devices:</b></li> </ul>	Computer's users Technician supporter	C4	Makes backup copy of computer data
		D4	Ensures the conformity with the standard
		D5	Changes the faulty parts
		F2	Prints the maintenance instruction from the manufacturer
	Network computer's technician	B4	Studies the available characteristics in the market
		C2	Installs network devices
		G5	Benefits from manufacturer help
	Systems administrator	A1	Defines the device's characteristics
		E2	Repairs system faults and soft ware support
		A2	Installs OS
		A3	Fixes device configuration
	Programmer assistant and internet applications developer	E4	Reinstalls soft wares
<ul style="list-style-type: none"> <li><b>Introduction to printers and scanners:</b></li> </ul>	Computer's users Technician supporter	D4	Ensures the conformity with the standard
		D5	Changes the faulty parts
		F2	Prints the maintenance instruction from the manufacturer
	Network computer's technician	B4	Studies the available characteristics in the market
		C2	Installs network devices
		G5	Benefits from manufacturer help
	Systems administrator	A1	Defines the device's characteristics
		A3	Fixes device configuration
		E2	Repairs system faults and soft ware support
<ul style="list-style-type: none"> <li><b>Network Principles:</b></li> </ul>	Computer's users Technician supporter	E	Configure the device to join the network
	Network computer's technician	A1	Participates in defining network type
		A2	Identifies the network location type
		A3	Participates in defining the connection type
		A6	Participates in defining computer devices characteristics
		A7	Participates in developing the network design
		C1	Asks for a network devices and tools
		C2	Installs network devices
		C5	Supervises the cables run
		C6	Run network cables
		C7	Checks cables run
		C8	Connects between devices
		C9	Checks devices function
		E1	Receives problem description
		E2	Repairs cables faults
		E3	Changes network card
		F1	Monitor network performance continuously
		F2	Tests solution before Applying them
		F3	Participates in finding solution for a continuous network function
		E4	Repairs network devices



	Systems administrator	E5	Configure network card in the device
		F6	Provides backup for programs and network device configuration
		A	Prepares systems and soft wares
		B	Manages users accounts
		D5	Manage system function (OS, server, services support)
• <b>Introduction to computer security:</b>	Computer's users Technician supporter	C2	Uses soft ware testing
		C4	Makes backup copy of computer data
		F3	Update protection programs
	Network computer's technician	C	Configure the network
		C4	Prepares network devices
		D1	Uses network software monitoring
		F1	Monitor network performance continuously
		F3	Participates in finding solution for a continuous network function
	Systems administrator	B	Manages users accounts
		C	Manages system files
		D	Provides technical support for the systems
	Programmer assistant and internet applications developer	D	Updates systems
		E	Maintains applications
• <b>Communication skills:</b>	Computer's users Technician support	F	Provides routine maintenance
		G	Keeps developing himself
	Network computer's technician	E	Provides technical support to the network
		G	Keeps developing himself
	Systems administrator	D	Provides technical support for the systems
		F	Keeps developing his skills
	Programmer assistant and internet applications developer	E	Maintains applications
		F	
		G	Keeps developing himself



The Theoretical Detailed Content		
Hours	Contents	Evaluation means
3	<b>Safety Procedures and Tools:</b> <ul style="list-style-type: none"> <li>• Conditions and Safety procedures.</li> <li>• Tools and programs used in personnel computer.</li> <li>• The best practice in using tools.</li> </ul>	Oral questions Written questions Homework Self- test
3	<b>Introduction to Personnel Computer:</b> <ul style="list-style-type: none"> <li>• International professional certificate.</li> <li>• Computer system.</li> <li>• Computer parts.</li> <li>• Internal components.</li> <li>• Ports and connections.</li> <li>• Input devices.</li> <li>• Output devices.</li> <li>• System resources.</li> </ul>	Oral questions Written questions Homework Self- test
3	<b>Computer building-step by step:</b> <ul style="list-style-type: none"> <li>• Opening the computer case.</li> <li>• Installing power supply.</li> <li>• Installing internal fans.</li> <li>• Installing fans in external slots.</li> <li>• Installing network and video cards.</li> <li>• Installing internal cables.</li> <li>• Closing the computer case completely and connecting external cables.</li> <li>• Running the computer for the first time.</li> </ul>	Oral questions Written questions Homework Self- test
2	<b>Principles of prevention maintenance and faults repairing:</b> <ul style="list-style-type: none"> <li>• Maintenance prevention.</li> <li>• Steps of repairing faults.</li> </ul>	Oral questions Written questions Homework, Self- test
3	<b>Principles of operating system:</b> <ul style="list-style-type: none"> <li>• Operating system(OS) functions.</li> <li>• Comparison between operating systems.</li> <li>• Defining OS based on customer need.</li> <li>• Installing OS.</li> <li>• Windows exploration.</li> <li>• Techniques of repairing prevention of OS.</li> <li>• Repairing OS faults.</li> </ul>	Oral questions Written questions Homework Self- test
3	<b>Laptops and small mobile devices:</b> <ul style="list-style-type: none"> <li>• Portable laptop.</li> <li>• Laptop's components.</li> <li>• Comparison between PC and laptop.</li> <li>• Laptop's configuration.</li> <li>• Comparison between mobile phones.</li> <li>• Techniques of maintenance of laptops and small mobile devices.</li> <li>• Maintenance of laptops and small mobile devices.</li> </ul>	Oral questions Written questions Homework Self- test

2	<b>Introduction to scanners and printers:</b> <ul style="list-style-type: none"> <li>• Different kind of printers.</li> <li>• Configuring printer.</li> <li>• Different kind of scanners.</li> <li>• Configuring scanner.</li> <li>• Maintenance prevention of printers and scanners.</li> <li>• Repairing scanners and printers faults.</li> </ul>	Oral questions Written questions Homework Self- test
3	<b>Network Principles:</b> <ul style="list-style-type: none"> <li>• Network concepts.</li> <li>• Network types.</li> <li>• Network techniques.</li> <li>• Physical network components.</li> <li>• Infrastructure and building network.</li> <li>• Network standards.</li> <li>• Ethernet standards.</li> <li>• TCP/IP and OSI model.</li> <li>• Configuring network card and modem.</li> <li>• Communication techniques.</li> <li>• Prevention maintenance of the network.</li> <li>• Repairing network faults.</li> </ul>	Oral questions Written questions Homework Self- test
2	<b>Introduction to computer security:</b> <ul style="list-style-type: none"> <li>• The importance of information security.</li> <li>• Security threats.</li> <li>• Security procedures.</li> <li>• Techniques of maintenance procedure of computer security.</li> <li>• Repairing faults related to security.</li> </ul>	Oral questions Written questions Homework Self- test
2	<b>Communications skills:</b> <ul style="list-style-type: none"> <li>• Relation between communication and repairing .faults.</li> <li>• Communication skills and professional behavior.</li> <li>• Profession ethics.</li> <li>• Connection center environment and technical responsibilities.</li> </ul>	Oral questions Written questions Homework Self- test

The Practical Detailed Content		
Hours	Contents	Evaluation means
4	<b>Introduction to Personnel Computer:</b> <ul style="list-style-type: none"> <li>International professional certificate.</li> <li>Computer system.</li> <li>Computer parts.</li> <li>Internal components.</li> <li>Ports and connections.</li> <li>Input devices.</li> <li>Output devices.</li> <li>System resources.</li> </ul>	Notice (Practical performance) Written questions Self- test
4	<b>Safety Procedures and Tools:</b> <ul style="list-style-type: none"> <li>Conditions and Safety procedures.</li> <li>Tools and programs used in personnel computer.</li> <li>The best practice in using tools.</li> </ul>	Notice (Practical performance) Written questions Self- test
12	<b>Computer building-step by step:</b> <ul style="list-style-type: none"> <li>Opening the computer case</li> <li>Installing power supply.</li> <li>Installing internal fans.</li> <li>Installing fans in external slots.</li> <li>Installing network and video cards.</li> <li>Installing internal cables.</li> <li>Closing the computer case completely and connecting external cables.</li> <li>Running the computer for the first time.</li> </ul>	Notice (Practical performance) Written questions Self- test
4	<b>Principles of prevention maintenance and faults repairing:</b> <ul style="list-style-type: none"> <li>Maintenance prevention.</li> <li>Steps of repairing faults.</li> </ul>	Notice (Practical performance), Written questions, Self- test
6	<b>Principles of operating system:</b> <ul style="list-style-type: none"> <li>Operating system(OS) functions.</li> <li>Comparison between operating systems.</li> <li>Defining OS based on customer need.</li> <li>Installing OS.</li> <li>Windows exploration.</li> <li>Techniques of repairing prevention of OS.</li> <li>Repairing OS faults.</li> </ul>	Notice (Practical performance) Written questions Self- test
4	<b>Laptops and small mobile devices:</b> <ul style="list-style-type: none"> <li>Portable laptop.</li> <li>Laptop's components.</li> <li>Comparison between PC and laptop.</li> <li>Laptop's configuration.</li> <li>Comparison between mobile phones.</li> <li>Techniques of maintenance of laptops and small mobile devices.</li> <li>Maintenance of laptops and small mobile devices.</li> </ul>	Notice (Practical performance) Written questions Self- test

4	<b>Introduction to scanners and printers:</b> <ul style="list-style-type: none"> <li>• Different kind of printers.</li> <li>• Configuring printer.</li> <li>• Different kind of scanners.</li> <li>• Configuring scanner.</li> <li>• Maintenance prevention of printers and scanners.</li> <li>• Repairing scanners and printers faults.</li> </ul>	Notice (Practical performance) Written questions Self- test
6	<b>Network Principles:</b> <ul style="list-style-type: none"> <li>• Network concepts.</li> <li>• Network types.</li> <li>• Network techniques.</li> <li>• Physical network components.</li> <li>• Infrastructure and building network.</li> <li>• Network standards.</li> <li>• Ethernet standards.</li> <li>• TCP/IP and OSI model.</li> <li>• Configuring network card and modem.</li> <li>• Communication techniques.</li> <li>• Prevention maintenance of the network.</li> <li>• Repairing network faults.</li> </ul>	Notice (Practical performance) Written questions Self- test
4	<b>Introduction to computer security:</b> <ul style="list-style-type: none"> <li>• The importance of information security.</li> <li>• Security threats.</li> <li>• Security procedures.</li> <li>• Techniques of maintenance procedure of computer security.</li> <li>• Repairing faults related to security.</li> </ul>	Notice (Practical performance) Written questions Self- test
4	<b>Communications skills:</b> <ul style="list-style-type: none"> <li>• Relation between communication and repairing faults.</li> <li>• Communication skills and professional behavior.</li> <li>• Profession ethics.</li> <li>• Connection center environment and technical responsibilities.</li> </ul>	Notice (Practical performance) Written questions Self- test
<b>References</b>	IT Essentials I v4.0 , PC Hardware and Software(Chapters 1-10) Cisco Networking Academy Program, Student Companion Guide, Cisco Press	

Department	General Studies			Major	All Majors	
Course Name	Advanced Computer Applications			Course Code	CMT 102	
Prerequisites	101 CMT					
Trimester	1	2	3	4	5	6
Credit Hours		2				Cooperative
Contact Hours (hours per week)	L	0				
	W	4				
	T	0				
L = Lecture Hours, W = Workshop/Laboratory Hours, T = Tutorial Hours						
<b>Course Description:</b>						
<p>This course consists of several topics manage the trainee to knows advanced possibilities to the most common office applications (Excel &amp; Access) which help the computer's user to achieves their works in profession way .</p> <p>This course covers advanced three levels of ICDL.</p>						
General Objective:						
<p>This course aims training on the most important office applications in professional way.</p>						
Specific Objectives	Required Performance Specifications	NOSS Related tasks				
		From The Criterion		Task No.		
<b>A. Procedural Objectives: Trainee should be able to:</b>						
1. Using electronic tables programs professionally.	Execute limited operations in electronic tables program.	Support technician of commuter users		General Knowledge in F1, F4		
		Programmer assistant & internet technology developer		F1		
2. Using data base.	Execute limited operations in data base.	Programmer assistant & internet technology developer		F1, C3, C15		
<b>B. Behavioral and Cognitive Objectives: Trainee should be able to:</b>						
1. Suitable seat before computer.	Seat in correct way.	Programmer assistant & internet technology developer		C2.C3.C15		
		Networks technician		Knowledge in A4, E6		
2. To know English specialized terms.	Mentions the term with order.	Support technician		Knowledge 1		
		Programmer assistant & internet technology developer		C2.C3.C15		
		Networks technician		Knowledge A4, E6		
<b>Safety conditions:</b>						
<ul style="list-style-type: none"><li>To follow safety instructions in the specifications books enclosed with computer.</li><li>To follow the instructions of correct sit.</li></ul>						

Theoretical and Practical Topics:	NOSS Related tasks		
	Because this course is shared between all courses of Computer Technology so the following tasks from the professional standard for a career were adapted.		
	Professional Standard	Task	Task Description
o Electronic tables (Excel):	Computer's user technician supporter	Knowledge 3	Good typeset.
		Knowledge 4	The ability of writing reports.
		F1	Follow the frequently schedule maintenance.
	Programmer assistant & network developer	Knowledge F1	To know writing & preparing reports.
		Knowledge D5	Knowing documentation methods.
o Data base programs (Access):	Computer networks technician	Knowledge E6	Knowing methods of preparing reports.
	Computer's user technician supporter	Knowledge 3	Good typeset.
		Knowledge 4	The ability of writing reports.
		C3	Joins the screens with the database (append, edit, delete, and retrieve).
		C15	Participates in data transfer.
	Programmer assistant & network developer	F1	Helps in evaluation of the programs offered by the others.
		Knowledge F2	Knowing data base.

Practical detailed Content		
Hours	Contents	Evaluation Tools
18	<b>First part : Electronic tables (Excel ) &amp; includes :</b>	
8	<b>Calculation operations advanced skills using functions:</b> <ul style="list-style-type: none"> <li>• Time &amp; date functions.</li> <li>• Knowledge functions.</li> <li>• Logical functions.</li> <li>• Search &amp; references functions.</li> <li>• Mathematics &amp; triangles functions.</li> <li>• Calculate all open hand compositions.</li> <li>• Scouting formulation errors &amp; values errors.</li> <li>• Errors meaning /null #, num , ref# , n/a# , name # , div/0 # , value , # # # #.</li> <li>• Replace whole formulation or part with calculated value.</li> <li>• Reference model r1 c1.</li> <li>• Use tri-dimensional references .</li> <li>• The effects of copy , include , or delete work papers on tri-dimensional references.</li> <li>• Limiting formulation reference site or cells followed another cell values.</li> <li>• Creating data calculation formulation on other work page or another compilation.</li> <li>• Open compilation directed by formulation.</li> <li>• Refresh references to renamed compilations or converted.</li> <li>• Create images , cells or organism.</li> </ul>	Direct notice (practical performance) Self – test Home woks
5	<b>Electronic tables planning:</b> <ul style="list-style-type: none"> <li>• Purpose behind using planning.</li> <li>• Included planning.</li> <li>• Planning paper.</li> <li>• Create planning.</li> <li>• Create Default planning by one step.</li> <li>• Delete data heads or titles or planning show media, editing planning titles.</li> <li>• Delete data chains.</li> <li>• Add text square to planning.</li> <li>• Add title to planning or axis.</li> <li>• Change planning size and the setting for printing.</li> <li>• Maximize , minimize &amp; change planning paper's size.</li> <li>• Fixing different planning type.</li> <li>• fixing different planning choices.</li> <li>• fixing different site for planning.</li> </ul>	Direct notice (practical performance) Self – test Home woks



5	<b>Conditional setting , ordering , filtering lists in electronic tables:</b> <ul style="list-style-type: none"> <li>• Differentiate data that do called conditions.</li> <li>• Applying conditional ordinations.</li> <li>• Change conditional ordinations , add or delete.</li> <li>• Ordering: <ul style="list-style-type: none"> <li>○ Default Ordering arranges.</li> <li>○ Lists Ordering.</li> <li>○ Rows Ordering depend on contents of one column.</li> <li>○ Rows Ordering depend on contents of two columns.</li> <li>○ Columns Ordering depend on rows contents.</li> </ul> </li> <li>• Filtering: <ul style="list-style-type: none"> <li>○ Delete Filtering factors from the list.</li> <li>○ Automatic Filtering choices.</li> <li>○ Three or more conditions in single column.</li> <li>○ Criteria in two columns or more.</li> <li>○ Criteria scope.</li> </ul> </li> </ul>	Direct notice (practical performance) Self – test Home woks
34	<b>The second part : Data base ( Access )</b>	
2	<b>Introduction to data base:</b> <ul style="list-style-type: none"> <li>• Database tasks , concept of database setup.</li> <li>• Different between electronic tables program &amp; data base program.</li> <li>• Data base files contents.</li> <li>• Purpose behind using data base design.</li> <li>• Basic steps of data base design.</li> </ul>	Direct notice (practical performance) Self – test Home woks
4	<b>Data base operating program:</b> <ul style="list-style-type: none"> <li>• Operate program.</li> <li>• Finish program.</li> <li>• Create a data base , data bases programs using: <ul style="list-style-type: none"> <li>○ Wizard.</li> <li>○ Without Wizard.</li> </ul> </li> <li>• Open table.</li> <li>• Copy field &amp; its characters.</li> <li>• Add field to a table.</li> <li>• Delete a field form the table.</li> <li>• Methods of change field data type.</li> </ul>	Direct notice (practical performance) Self – test Home woks
4	<b>Tables in Database :</b> <ul style="list-style-type: none"> <li>• Different in work sheet between Electronic tables and database.</li> <li>• Data types.</li> <li>• Methods of create tables in database by using: <ul style="list-style-type: none"> <li>○ Table's wizard.</li> <li>○ Insert data in data sheet.</li> </ul> </li> </ul>	Direct notice (practical performance) Self – test Home woks

	<ul style="list-style-type: none"> <li>• Open table.</li> <li>• Copy field &amp; its characters.</li> <li>• Add field to a table.</li> <li>• Delete a field form the table.</li> <li>• Methods of change field data type.</li> </ul>	
4	<b>Records in data base:</b> <ul style="list-style-type: none"> <li>• Add and edit data.</li> <li>• Save a record.</li> <li>• Delete a record.</li> <li>• Undo of changes.</li> <li>• Repeat a value from previous record.</li> <li>• Move between records &amp; fields.</li> <li>• Purpose behind using Primary keys.</li> <li>• Primary keys types in data base program.</li> </ul>	Direct notice (practical performance) Self – test Home woks
4	<b>Inquires in data base:</b> <ul style="list-style-type: none"> <li>• Types of inquires.</li> <li>• Inquires design.</li> <li>• Show higher or low values in inquires.</li> <li>• Inquires calculations operations.</li> <li>• Create limit inquiry.</li> <li>• Create table inquiry.</li> <li>• Create table form another table using inquiry.</li> <li>• Create central inquiry.</li> <li>• Create deletion inquiry.</li> <li>• Show tables names or hide it in net inquiry design.</li> <li>• Add table or inquiry in net inquiry design or delete it.</li> <li>• Expression creator.</li> <li>• Create an expression.</li> </ul>	Direct notice (practical performance) Self – test Home woks
2	<b>Database Forms:</b> <ul style="list-style-type: none"> <li>• Purpose behind using of forms.</li> <li>• Create forms.</li> <li>• Show the title and other information in form or report.</li> <li>• Show current date and time.</li> <li>• Show of pages numbers.</li> <li>• Show or hide network.</li> <li>• Open and close tool boxes.</li> <li>• Rename form.</li> <li>• Create sub-form.</li> </ul>	Direct notice (practical performance) Self – test Home woks
3	<b>Data base Relations:</b> <ul style="list-style-type: none"> <li>• Relations task in a data base of data bases programs.</li> <li>• Define relations.</li> <li>• Integrated referential.</li> </ul>	Direct notice (practical performance) Self – test

	<ul style="list-style-type: none"> <li>• Succession of update &amp; delete.</li> <li>• Define relations among tables.</li> <li>• Edit a found previous relation.</li> <li>• Delete a relation.</li> <li>• Remove a table form frame.</li> <li>• Show found relations.</li> </ul>	Home woks
3	<b>Binding data &amp; check authenticity:</b> <ul style="list-style-type: none"> <li>• Purpose behind binding data.</li> <li>• Using data types &amp; fields to bind data in tables.</li> <li>• Rules of authenticity.</li> <li>• Using macro or new procedure to check authenticity.</li> <li>• Using authenticity of data access or binding it in tables.</li> <li>• Create insert masks.</li> </ul>	Direct notice (practical performance) Self – test Home woks
4	<b>Data base reports:</b> <ul style="list-style-type: none"> <li>• Reports purpose.</li> <li>• Reports display methods.</li> <li>• Report creation methods.</li> <li>• Confine volume , pattern place or report.</li> <li>• Customize form frame or report.</li> <li>• Show the title &amp; other information text in pattern or report.</li> <li>• Show date &amp; current time.</li> <li>• Add pages separation.</li> <li>• Show pages numbers.</li> <li>• Change pages numbers.</li> <li>• Confine Options of page set up to print form or report.</li> <li>• Confine default template for form or report.</li> <li>• Change source of form or report.</li> <li>• Report sections.</li> <li>• Show or hide Report sections.</li> <li>• Change size of report and form sections.</li> <li>• Keep one syllable contents.</li> <li>• Repeat group head in another page.</li> <li>• Ignore printing page head or appending it in the first &amp; last pages of reports.</li> <li>• Assume pages separation if one of the conditions achieved.</li> <li>• Cancel print order if the report not include any registers.</li> </ul>	Direct notice (practical performance) Self – test Home woks
2	<b>Search &amp; Ordering data base:</b> <ul style="list-style-type: none"> <li>• Search methods about data &amp; replace it.</li> <li>• Search on a value in a field &amp; replace it.</li> </ul>	Direct notice (practical performance) Self – test

	<ul style="list-style-type: none"> <li>• Replace limited value in the field.</li> <li>• Search on a register in data papers.</li> <li>• Registers simple or complex milling operations.</li> <li>• Record ordering in data paper display method or display pattern.</li> <li>• Record ordering using network design.</li> <li>• Record ordering in reports.</li> </ul>	Home woks
2	<b>Data base Filtering:</b> <ul style="list-style-type: none"> <li>• Chose filtering method in a table , inquiry or pattern.</li> <li>• Similarity between limiting inquires &amp; filtering factors.</li> <li>• Save filtering factors to reuse.</li> <li>• filtering factor effects , table ordering arrange or inquiry about pattern or new report.</li> <li>• Create filtering factor: <ul style="list-style-type: none"> <li>○ Filtering depend on selected.</li> <li>○ Filtering depend on form.</li> <li>○ Input Filtering.</li> <li>○ Advanced Filtering / ordering.</li> </ul> </li> <li>• Possibility to mill registers or break it in a pattern.</li> </ul>	Direct notice (practical performance) Self – test Home woks
References	1- sams teach yourself Microsoft windows xp in 24 hours by gerg m.perry. 2- Microsoft office xp gohabrakin jarir bookstore 2002. 3- Simplified office xp . jarir bookstore 2002.	

Department	Computer and Info. Technology			Major	Computing Technology		
Course Name	Operating System -1			Course Code	SUP 132		
Prerequisites	CMT 124						
Trimester		1	2	3	4	5	6
Credit Hours					4		Cooperative
Contact Hours (hours per week)	L				2		
	W				4		
	T				0		
L = Lecture Hours, W = Workshop/Laboratory Hours, T = Tutorial Hours							
Course description:							
<p>This course introduce basic skills required for Network programs and operating systems in general, and Windows Operating System specifically plus Internet Protocols and services and Operating systems troubleshooting.</p> <p>This course is part of Server Cert. (Windows)</p>							
General Objective:							
This course aims to provide trainees with basic skills required for network programs and operating systems and internet protocols.							
Specific Objectives		Required Performance Specifications		NOSS Related tasks			
				From The Criterion		Task No.	
A. Procedural Objectives: Trainee should be able to:							
1. Installs Windows		Windows Performance		Computer's user technician assistant		C7	
2. Manages user accounts		Create user account. Manage specific accounts.		Computer's user technician assistant		C4,C6,F4	
3. Manages Hard disks		Use Hard disk tools		Computer's user technician assistant		C4,C6	
4. Manages Windows network security		Use Windows Security tools		Computer's user technician assistant		B3,C2,C7,C4,E2,E3,F4,F5	
5. Configures Internet Protocols		Internet Protocols configuration		Computer's user technician assistant		C7,E2,E3,E4,E5	
6. Configures DHCP Service		DHCP Configuration		Computer's user technician assistant		C7,E2,E3,E4,E5	
7. Configures DNS		DNS Configuration		Computer's user technician assistant		C7,E2,E3,E4,E5	
8. Configures Web Server		Web Server configuration		Computer's user technician assistant		C7,E2,E3,E4,E5	
9. Dix any windows errors		Fix Operating system errors		Computer's user technician assistant		B3,B6,B7,C2,C3,C4,C5	
B. Behavioral and Cognitive Objectives: Trainee should be able to:							
1. Know the Windows installation steps		List the steps		Computer's user technician assistant		C7	
2. Know the concept of Operating system management		Realize Network Management		Computer's user technician assistant		C7, E2	
3. Know the steps of Network services configuration		List the steps		Computer's user technician assistant		C7, E2	
4. Know how to solve OS troubles		List the steps		Computer's user technician assistant		C7, E1, E2	

Safety conditions:			
<ul style="list-style-type: none"> <li>Maintain devices safety.</li> <li>Follow the safety instructions when using tools.</li> <li>Follow the safety instructions of location.</li> <li>Tide up the place when finishing work.</li> </ul>			
Theoretical and Practical Topics:	NOSS Related tasks		
	Because this course is shared between all courses of Computer Technology so the following tasks from the professional standard for a career were adapted.		
	Professional Standard	Task	Task Description
○ OS basics:	Computer's users Technician supporter	C2	Uses the inspection programs.
		D4	Ensures that the spare part meets the specifications.
		G2	Participates in training courses.
		G3	Follows the magazines and specialized news.
○ Internet Protocols:	Computer's users Technician supporter	C7	Upgrades the programs and operating systems.
		E2	Examines the network settings.
		E3	Examines the network card (NIC).
○ Network services:	Computer's users Technician supporter	C7	Upgrades the programs and operating systems.
		E2	Examines the network settings.
		E3	Examines the network card (NIC).
		E4	Examines the network cable.
		E5	Examines the network connection points.
○ Network Operating systems approach:	Computer's users Technician supporter	C4	Back up the computer data.
		C6	Restores user data.
		C7	Upgrades the programs and operating systems.
○ Installation and launching OS:	Computer's users Technician supporter	C7	Upgrades the programs and operating systems.
○ Windows OS:	Computer's users Technician supporter	C7	Upgrades the programs and operating systems.
○ Network Service Configuration:	Computer's users Technician supporter	E2	Examines the network settings.
		E3	Examines the network card (NIC).
		E4	Examines the network cable.
		E5	Examines the network connection points.
○ Advanced management of network OS:	Computer's users Technician supporter	B3	Makes the examination on the computer.
		C2	Uses the inspection programs.
		C4	Back up the computer data.
		C6	Restores user data.
		C7	Upgrades the programs and operating systems.
		E2	Examines the network settings.
		E3	Examines the network card (NIC).
		F3	Updates the security programs.
		F4	Automatically alerts the user on emergency cases.
○ OS Error fixing:	Computer's users Technician supporter	F5	Removes the unnecessary files & programs.
		C2	Uses the inspection programs.
		C3	Determines the possible solutions.
		C4	Back up the computer data.
		C5	Applies the suitable solution.
		D4	Ensures that the spare part meets the specifications.
		F3	Updates the security programs.
		F4	Automatically alerts the user on emergency cases.
		F5	Removes the unnecessary files & programs.
		B6	Sends the device to the maintenance center when problem is hard to be solved.
		B7	Follows the problem solution.



o Network Security:	Computer's users Technician supporter	C2	Uses the inspection programs.
		C4	Back up the computer data.
		C7	Upgrades the programs and operating systems.
		E2	Examines the network settings.
		E3	Examines the network card (NIC).
		F1	Follow the frequently schedule maintenance.
		F3	Updates the security programs.
		F4	Automatically alerts the user on emergency cases.
		F5	Removes the unnecessary files & programs.
		F6	Prepares the periodic maintenance reports.

Detailed theoretical Contents		
Hours	Contents	Evaluation Tools
2	<b>Operating systems basics:</b> <ul style="list-style-type: none"> <li>o OS basics.</li> <li>o Windows OS.</li> <li>o Network OS preview.</li> </ul>	Oral questions Written questions Self- test
2	<b>Internet Protocols:</b> <ul style="list-style-type: none"> <li>o Internet websites.</li> <li>o Internet search.</li> <li>o Internet Protocol.</li> </ul>	Oral questions Written questions Self- test
2	<b>Network Services:</b> <ul style="list-style-type: none"> <li>o Network Services.</li> <li>o Remote access services.</li> <li>o Guides.</li> <li>o Other network OS Services.</li> </ul>	Oral questions Written questions Self- test
2	<b>Network Os approach:</b> <ul style="list-style-type: none"> <li>o Network OS specifications.</li> <li>o Windows OS.</li> </ul>	Oral questions Written questions Self- test
3	<b>Installation and launching preview:</b> <ul style="list-style-type: none"> <li>o Installation preparation.</li> <li>o Installation process.</li> <li>o Launching.</li> <li>o Network OS installation errors.</li> </ul>	Oral questions Written questions Self- test
2	<b>Windows OS:</b> <ul style="list-style-type: none"> <li>o Installation.</li> <li>o Administrator Control Panel.</li> <li>o User accounts.</li> <li>o File system.</li> <li>o Services.</li> </ul>	Oral questions Written questions Self- test
4	<b>Network service configuration:</b> <ul style="list-style-type: none"> <li>o DHCP Configuration.</li> <li>o DNS configuration.</li> <li>o Web Server configuration.</li> </ul>	Oral questions Written questions Self- test
4	<b>Advanced Administration of network OS:</b> <ul style="list-style-type: none"> <li>o Admin control panel.</li> <li>o Groups and user accounts.</li> <li>o File system and services.</li> </ul>	Oral questions Written questions Self- test
2	<b>OS errors fixing:</b> <ul style="list-style-type: none"> <li>o Disaster recovery.</li> <li>o Network error fixing.</li> <li>o Knowledge about general errors.</li> <li>o LILO errors.</li> <li>o Specify and report errors.</li> </ul>	Oral questions Written questions Self- test



3	<b>Network security:</b> <ul style="list-style-type: none"> <li>○ Network security police creation.</li> <li>○ Network security threats.</li> <li>○ Network security procedures.</li> <li>○ Updates and upgrades applications.</li> <li>○ Firewall.</li> </ul>	Oral questions Written questions Self- test
---	--	---

Detailed Practical Contents		
Hours	Contents	Evaluation Tools
4	<b>Operating systems basics:</b> <ul style="list-style-type: none"> <li>○ OS basics.</li> <li>○ Windows OS.</li> <li>○ Network OS preview.</li> </ul>	Notice (Practical performance) Oral questions Written questions Self- test
4	<b>Internet Protocols:</b> <ul style="list-style-type: none"> <li>○ Internet websites.</li> <li>○ Internet search.</li> <li>○ Internet Protocol.</li> </ul>	Notice (Practical performance) Oral questions Written questions Self- test
4	<b>Network Services:</b> <ul style="list-style-type: none"> <li>○ Network Services.</li> <li>○ Remote access services.</li> <li>○ Guides.</li> <li>○ Other network OS Services.</li> </ul>	Notice (Practical performance) Oral questions Written questions Self- test
4	<b>Network Os approach:</b> <ul style="list-style-type: none"> <li>○ Network OS specifications.</li> <li>○ Windows OS.</li> </ul>	Notice (Practical performance) Oral questions, Written questions, Self- test
6	<b>Installation and launching preview:</b> <ul style="list-style-type: none"> <li>○ Installation preparation.</li> <li>○ Installation process.</li> <li>○ Launching.</li> <li>○ Network OS installation errors.</li> </ul>	Notice (Practical performance) Oral questions Written questions Self- test
6	<b>Windows OS:</b> <ul style="list-style-type: none"> <li>○ Installation.</li> <li>○ Administrator Control Panel.</li> <li>○ User accounts.</li> <li>○ File system.</li> <li>○ Services.</li> </ul>	Notice (Practical performance) Oral questions Written questions Self- test
6	<b>Network service configuration:</b> <ul style="list-style-type: none"> <li>○ DHCP Configuration.</li> <li>○ DNS configuration.</li> <li>○ Web Server configuration.</li> </ul>	Notice (Practical performance) Oral questions Written questions Self- test
6	<b>Advanced Administration of network OS:</b> <ul style="list-style-type: none"> <li>○ Admin control panel.</li> <li>○ Groups and user accounts.</li> <li>○ File system and services.</li> </ul>	Notice (Practical performance) Oral questions Written questions Self- test

6	<b>OS errors fixing:</b> <ul style="list-style-type: none"> <li>o Disaster recovery.</li> <li>o Network error fixing.</li> <li>o Knowledge about general errors.</li> <li>o LILO errors.</li> <li>o Specify and report errors.</li> </ul>	Notice (Practical performance) Oral questions Written questions Self- test
6	<b>Network security:</b> <ul style="list-style-type: none"> <li>o Network security police creation.</li> <li>o Network security threats.</li> <li>o Network security procedures.</li> <li>o Updates and upgrades applications.</li> <li>o Firewall.</li> </ul>	Notice (Practical performance) Oral questions Written questions Self- test
<b>References</b>	IT Essentials II, Cisco Networking Academy Program, Student Companion Guide, Cisco Press.	

Department	Computer and Info. Technology			Major	Computing Technology		
Course Name	Operating System -2			Course Code	SUP 232		
Prerequisites	132 SUP						
Trimester	1	2	3	4	5	6	
Credit Hours					4	Cooperative	
Contact Hours (hours per week)	L				2		
	W				4		
	T				0		
L = Lecture Hours, W = Workshop/Laboratory Hours, T = Tutorial Hours							
Course description:							
<p>This course introduce basic skills required for Network programs and operating systems in general, and Linux Operating System specifically plus Internet Protocols and services and Linux Operating systems troubleshooting.</p> <p>This course is part of Server Cert. (Linux).</p>							
General Objective:							
This course aims to provide trainees with basic skills required for network programs and Linux operating systems and internet protocols.							
Specific Objectives	Required Performance Specifications		NOSS Related tasks				
			From The Criterion		Task No.		
A. Procedural Objectives: Trainee should be able to:							
1. Installs Linux.	Installs Linux		Computer's user technician assistant		C3		
2. Administrates networks with Linux.	Administrates networks with Linux		Computer's user technician assistant		F4		
3. Fixes Linux errors.	Fixes Linux errors		Computer's user technician assistant		F4		
4. Installs and maintain Linux contents.	Installs and maintain Linux contents		Computer's user technician assistant		C2 , C3		
5. Secure the network.	Applies Network security with Linux		Computer's user technician assistant		F5		
B. Behavioral and Cognitive Objectives: Trainee should be able to:							
1. List Linux Properties.	List Linux Properties		Computer's user technician assistant		C7		
2. List some network services with Linux.	List some network services with Linux		Computer's user technician assistant		C7, E2		
3. List some general errors in Linux.	List some general errors in Linux		Computer's user technician assistant		C7, E1, E2		
4. List security specification in Linux.	List security specification in Linux		Computer's user technician assistant		C4, C7, E2		
Safety conditions:							
<ul style="list-style-type: none"><li>• Maintain devices safety.</li><li>• Follow the safety instructions when using tools.</li><li>• Follow the safety instructions of location.</li><li>• Tide up the place when finishing work.</li></ul>							

Theoretical and Practical Topics:	NOSS Related tasks		
	Because this course is shared between all courses of Computer Technology so the following tasks from the professional standard for a career were adapted.		
	Professional Standard	Task	Task Description
○ Installs Linux:	Computer's users Technician supporter	C7	Upgrades the programs and operating systems
○ Administrate Linux:	Computer's users Technician supporter	C7	Upgrades the programs and operating systems
○ Administrates networks with Linux:	Computer's users Technician supporter	C7	Upgrades the programs and operating systems
○ Fixes Linux errors:	Computer's users Technician supporter	C3	Determines the possible solutions
		C7	Upgrades the programs and operating systems
○ Installs and maintain Linux contents:	Computer's users Technician supporter	C2	Uses the inspection programs
		C7	Upgrades the programs and operating systems
○ Secure the network:	Computer's users Technician supporter	C7	Upgrades the programs and operating systems
		F5	Removes the unnecessary files & programs

Detailed theoretical Contents		
Hours	Contents	Evaluation Tools
4	<b>Linux installation:</b> <ul style="list-style-type: none"> <li>○ Format.</li> <li>○ Installation Process.</li> <li>○ Launching system.</li> </ul>	Oral questions Editing Questions Self Practice Test
4	<b>Administrate Linux:</b> <ul style="list-style-type: none"> <li>○ Administrate User Accounts.</li> <li>○ Administrate File System.</li> </ul>	Oral questions Editing Questions Self Practice Test
6	<b>Administrate Network with Linux:</b> <ul style="list-style-type: none"> <li>○ Setup FTP.</li> <li>○ DHCP Setup.</li> <li>○ Web Server Setup.</li> </ul>	Oral questions Editing Questions Self Practice Test
4	<b>Linux contents installation and maintenance:</b> <ul style="list-style-type: none"> <li>○ Content names and concepts.</li> <li>○ Content Installation and setup.</li> <li>○ Testing content performance.</li> <li>○ Laptop contents.</li> </ul>	Oral questions Editing Questions Self Practice Test
4	<b>Linux errors Fixing:</b> <ul style="list-style-type: none"> <li>○ Disaster recovery.</li> <li>○ Network errors fixing.</li> <li>○ Identify general errors.</li> </ul>	Oral questions Editing Questions Self Practice Test
4	<b>Network Security:</b> <ul style="list-style-type: none"> <li>○ Create Security policy.</li> <li>○ Network security threats.</li> <li>○ Execute security procedures.</li> <li>○ Upgrades and updates applications.</li> <li>○ Firewalls.</li> </ul>	Oral questions Editing Questions Self Practice Test

Detailed Practical Contents		
Hours	Contents	Evaluation Tools
8	<b>Linux installation:</b> <ul style="list-style-type: none"> <li>o Format.</li> <li>o Installation Process.</li> <li>o Launching system.</li> </ul>	Notice (Practical performance) Oral questions Editing Questions Self Practice Test
8	<b>Administrate Linux:</b> <ul style="list-style-type: none"> <li>o Administrate User Accounts.</li> <li>o Administrate File System.</li> </ul>	Notice (Practical performance) Oral questions Editing Questions Self Practice Test
10	<b>Administrate Network with Linux:</b> <ul style="list-style-type: none"> <li>o Setup FTP.</li> <li>o DHCP Setup.</li> <li>o Web Server Setup.</li> </ul>	Notice (Practical performance) Oral questions Editing Questions Self Practice Test
10	<b>Linux contents installation and maintenance:</b> <ul style="list-style-type: none"> <li>o Content names and concepts.</li> <li>o Content Installation and setup.</li> <li>o Testing content performance.</li> <li>o Laptop contents.</li> </ul>	Notice (Practical performance) Oral questions Editing Questions Self Practice Test
8	<b>Linux errors Fixing:</b> <ul style="list-style-type: none"> <li>o Disaster recovery.</li> <li>o Network errors fixing.</li> <li>o Identify general errors.</li> </ul>	Notice (Practical performance) Oral questions Editing Questions Self Practice Test
8	<b>Network Security:</b> <ul style="list-style-type: none"> <li>o Create Security policy.</li> <li>o Network security threats.</li> <li>o Execute security procedures.</li> <li>o Upgrades and updates applications.</li> <li>o Firewalls.</li> </ul>	Notice (Practical performance) Oral questions Editing Questions Self Practice Test
<b>References</b>	IT Essentials II, Cisco Networking Academy Program, Student Companion Guide, Cisco Press.	

Department	Computer and Info. Technology			Major	Computing Technology		
Course Name	Computer Network Fundamentals			Course Code	NET 107		
Prerequisites							
Trimester	1	2	3	4	5	6	Cooperative
Credit Hours				4			
Contact Hours (hours per week)	L			2			
	W			4			
	T			0			
L = Lecture Hours, W = Workshop/Laboratory Hours, T = Tutorial Hours							
Course description:							
<p>This course provides the necessary knowledge of computer network work and its components by preparing the trainee through a set of theory lessons and practical training that makes him able to understand the computer network components and how to build it.</p> <p>This course is considered as one of courses that help to pass the Cisco Certified Network Associate CCNA precisely CCNA 1.</p>							
General Objective:							
The goal of this course is to provide the trainee with the necessary skills and knowledge of computer network components and how to build a network.							
Specific Objectives		Required Performance Specifications		NOSS Related tasks			
				From The Criterion		Task No.	
A. Procedural Objectives: Trainee should be able to:							
1. Build and install network media		Installs specific network cable. Builds cable connection correctly.		Computer's user technician assistant		E	
				Networks technician		C6, C7, C8	
				Systems administrator		A, B	
2. Build Ethernet LAN		Builds network made of two or more Ethernet network Checks network running.		Computer's user technician assistant		E	
				Networks technician		A1, A2, A3	
				Systems administrator		A, B	
3. Use switch to build high performance network		Uses switch to create many collision domain. Achieves high network performance.		Computer's user technician assistant		E	
				Networks technician		C1, C2	
				Systems administrator		A, B	
4. Use Router to segment the network		Divide network into many broadcast domain and achieves high network performance by using router.		Computer's user technician assistant		E	
				Networks technician		F1, C9	
				Systems administrator		A, B	
5. Perform IP sub netting		Divides IP address.		Computer's user technician assistant		E	
				Networks technician		C9, E1, E2, E3, E4, E5	
				Systems administrator		A, B	
B. Behavioral and Cognitive Objectives: Trainee should be able to:							
1. Define the 7 layers of OSI model.		Specify the task of each layer of the OSI model.		Computer's user technician assistant		E	
				Networks technician		A6, A7	



		Systems administrator	A, B
2. Differentiate between different cables.	Name and specify the properties of the presented cable.	Computer's user technician assistant	E
		Networks technician	C5, C6, C7
		Systems administrator	A, B
3. Define network connection devices and their properties.	Enumerate some connection devices and state their properties.	Computer's user technician assistant	E
		Networks technician	C2
		Systems administrator	A, B
4. State properties and work of the network of Ethernet type.	Enumerate the characteristics of Ethernet.	Computer's user technician assistant	E
		Networks technician	A1, A3
		Systems administrator	A, B
5. Define the concept of router and switch in the network.	Differentiate between the routing and switching task.	Computer's user technician assistant	E
		Networks technician	A7
		Systems administrator	A, B
6. Define the different type of IP classes.	State different type of IP class.	Computer's user technician assistant	E
		Networks technician	A7
		Systems administrator	A, B
7. Define the different ways of IP sub netting.	State the way of dividing IP.	Computer's user technician assistant	E
		Networks technician	A7
		Systems administrator	A, B
8. Differentiate between routing protocols.	Enumerate the difference between routing protocols.	Computer's user technician assistant	E
		Networks technician	A7
		Systems administrator	A, B
9. Enumerate the well known problems of LAN.	Enumerate the well known LAN problems. Specify the possible causes of the problem. Specify a solution for the problem.	Computer's user technician assistant	E
		Networks technician	F1, F2, F3, F4, F6
		Systems administrator	A, B

**Safety conditions:**

- Preserves the state of devices.
- Follow instructions of place safety.
- Follow instructions when using tools.
- Tide up the place once the work is finished.

Theoretical and Practical Topics:	NOSS Related tasks		
	Because this course is shared between all courses of Computer Technology so the following tasks from the professional standard for a career were adapted.		
	Professional Standard	Task	Task Description
○ <b>Network and daily communication services:</b>	Computer's users Technician supporter	E	Prepares the device to access the network.
	Network computer's technician	A6	Helps in determining the computer specifications.
		F4	Provides appropriate operative environment for network devices.
		C1	Requests the network devices and tools.
	Systems administrator	A	Prepares the software and systems.
		B	Manages user accounts.



		D5	Manage the system run ( OS, server, support services).
○ <b>Communication using network:</b>	Computer's users Technician supporter	E	Prepares the device to access the network.
	Network computer's technician	C8	Connects between devices.
	Systems administrator	A	Prepares the software and systems.
		B	Manages user accounts.
		D5	Manage the system run ( OS, server, support services).
○ <b>Task of application layer protocols:</b>	Computer's users Technician supporter	E	Prepares the device to access the network.
	Network computer's technician	C8	Connects between devices.
	Systems administrator	A	Prepares the software and systems.
		B	Manages user accounts.
		D5	Manage the system run ( OS, server, support services).
○ <b>Transport layer:</b>	Computer's users Technician supporter	E	Prepares the device to access the network.
	Network computer's technician	A1	Participates in defining the network types.
		A2	Explores the network location.
		A3	Participates in defining the connection type.
		C8	Connects between devices.
	Systems administrator	A	Prepares the software and systems.
		B	Manages user accounts.
		D5	Manage the system run ( OS, server, support services).
○ <b>Network layer:</b>	Computer's users Technician supporter	E	Prepares the device to access the network.
	Network computer's technician	A7	Participates in developing network design.
		C2	Build network devices.
		C5	Supervises network cables run.
	Systems administrator	A	Prepares the software and systems.
		B	Manages user accounts.
		D5	Manage the system run ( OS, server, support services).
○ <b>IP v4 addressing:</b>	Computer's users Technician supporter	E	Prepares the device to access the network.
	Network computer's technician	A7	Participates in developing network design.
		C2	Build network devices.
		C5	Supervises the network cables installation.
	Systems administrator	A	Prepares the software and systems.
		B	Manages user accounts.
		D5	Administrates system performance (operating system, server, support services).
○ <b>Data link layer:</b>	Computer's users Technician supporter	E	Prepares the device to access the network.
	Network computer's technician	E1	Receive problem description.
		E2	Repairs network cables.
		E3	Changes network card.
		E4	Repairs network devices.
		E5	Prepares network card for a device.
		C9	Test the network devices operation.
	Systems	A	Prepares the software and systems.

	administrator	B	Manages user accounts.
		D5	Administrates system performance (operating system, server, support services).
○ <b>Physical layer:</b>	Computer's users Technician supporter	E	Prepares the device to access the network.
	Network computer's technician	C6	Installs network cables.
		C7	Inspects the network cables installations.
	Systems administrator	A	Prepares the software and systems.
		B	Manages user accounts.
		D5	Administrates system performance (operating system, server, support services).
○ <b>Ethernet:</b>	Computer's users Technician supporter	E	Prepares the device to access the network.
	Network computer's technician	C6	Installs network cables.
		C7	Inspects the network cables installations.
		C9	Test the network devices operation.
	Systems administrator	A	Prepares the software and systems.
		B	Manages user accounts.
		D5	Administrates system performance (operating system, server, support services).
○ <b>Planning and connecting network:</b>	Computer's users Technician supporter	E	Prepares the device to access the network.
	Network computer's technician	C6	Installs network cables.
		C7	Inspects the network cables installations.
		C9	Test the network devices operation.
	Systems administrator	A	Prepares the software and systems.
		B	Manages user accounts.
		D5	Administrates system performance (operating system, server, support services).
○ <b>Preparing and testing the network:</b>	Computer's users Technician supporter	E	Prepares the device to access the network.
	Network computer's technician	F1	Continuously monitor the network operation.
		F2	Test the solutions before implementation.
		F3	Cooperates for finding solutions to maintain the network operation continuity.
		F6	Provides the backup copies of the operating systems and configuration files of network devices.
	Systems administrator	A	Prepares the software and systems
		B	Manages user accounts.
		D5	Administrates system performance (operating system, server, support services).

Detailed Theoretical Contents		
Hours	Contents	Assessment Tools
2	<b>Network and daily communication services:</b> <ul style="list-style-type: none"> <li>○ Network orientation.</li> <li>○ Examples of daily network services.</li> </ul>	Oral questions Written questions Self- test Online end of chapter exam
2	<b>Communication using network:</b> <ul style="list-style-type: none"> <li>○ Communication infrastructure.</li> <li>○ LAN and WAN.</li> <li>○ Protocols.</li> <li>○ Using multiple layer samples.</li> <li>○ Network addressing.</li> </ul>	Oral questions Written questions Self- test Online end of chapter exam
3	<b>Task of application layer protocols:</b> <ul style="list-style-type: none"> <li>○ Application- User interface.</li> <li>○ Protocols and application layer services.</li> <li>○ DNS service.</li> <li>○ WWW and HTTP service.</li> <li>○ Email service.</li> <li>○ File sharing.</li> <li>○ Remote access.</li> <li>○ FTP.</li> </ul>	Oral questions Written questions Self- test Online end of chapter exam
3	<b>Transport layer:</b> <ul style="list-style-type: none"> <li>○ Rules of transport layer.</li> <li>○ TCP- the trusted communication.</li> <li>○ Managing TCP sessions.</li> <li>○ UDP.</li> </ul>	Oral questions Written questions Self- test Online end of chapter exam
3	<b>Network layer:</b> <ul style="list-style-type: none"> <li>○ Ipv4 protocol.</li> <li>○ Network segmentation.</li> <li>○ Sub netting the subnet.</li> <li>○ Static routing.</li> <li>○ Dynamic routing.</li> </ul>	Oral questions Written questions Self- test Online end of chapter exam
3	<b>IP v4 addressing:</b> <ul style="list-style-type: none"> <li>○ IP v4 addresses.</li> <li>○ Different type of IP address in the network.</li> <li>○ Specifying IP addresses for network devices.</li> <li>○ Subnet Mask.</li> <li>○ Addresses calculation-sub network.</li> <li>○ Commands for testing network layer.</li> </ul>	Oral questions Written questions Self- test Online end of chapter exam
2	<b>Data link layer:</b> <ul style="list-style-type: none"> <li>○ Accessing the medium.</li> <li>○ Techniques for accessing the medium.</li> <li>○ Data addressing and encapsulation.</li> <li>○ Frame format.</li> </ul>	Oral questions Written questions Self- test Online end of chapter exam

2	<b>Physical layer:</b> <ul style="list-style-type: none"> <li>○ Tasks of physical layer.</li> <li>○ Signals and bit representation.</li> <li>○ Copper cables.</li> <li>○ Fiber cables.</li> <li>○ Wireless media.</li> <li>○ Connectors.</li> </ul>	Oral questions Written questions Self- test Online end of chapter exam
2	<b>Ethernet:</b> <ul style="list-style-type: none"> <li>○ General view.</li> <li>○ Communication through LAN.</li> <li>○ Ethernet frame.</li> <li>○ Accessing CSMA/CD.</li> <li>○ Physical layer of Ethernet.</li> <li>○ Switch and Hub devices.</li> <li>○ ARP protocol.</li> </ul>	Oral questions Written questions Self- test Online end of chapter exam
2	<b>Planning and connecting network:</b> <ul style="list-style-type: none"> <li>○ Choosing the network devices.</li> <li>○ Devices connection.</li> <li>○ IP distribution.</li> <li>○ Sub network calculation.</li> </ul>	Oral questions Written questions Self- test Online end of chapter exam
2	<b>Preparing and testing the network:</b> <ul style="list-style-type: none"> <li>○ Preparing Cisco devices. Principle of IOS.</li> <li>○ Basic configuration of IOS.</li> <li>○ Connectivity test.</li> <li>○ Network monitoring and logging.</li> </ul>	Oral questions Written questions Self- test Online end of chapter exam

Detailed Practical Contents		
Hours	Contents	Assessment Tools
2	<b>Network and daily communication services:</b> <ul style="list-style-type: none"> <li>Network orientation.</li> <li>Examples of daily network services.</li> </ul>	Direct notice ( practical performance) Oral questions Written questions, Self- test, Projects, Case studies
4	<b>Communication using network:</b> <ul style="list-style-type: none"> <li>Communication infrastructure.</li> <li>LAN and WAN.</li> <li>Protocols.</li> <li>Using multiple layer samples.</li> <li>Network addressing.</li> </ul>	Direct notice ( practical performance) Oral questions Written questions Self- test Projects Case studies
5	<b>Task of application layer protocols:</b> <ul style="list-style-type: none"> <li>Application- User interface.</li> <li>Protocols and application layer services.</li> <li>DNS service.</li> <li>WWW and HTTP service.</li> <li>Email service.</li> <li>File sharing.</li> <li>Remote access.</li> <li>FTP.</li> </ul>	Direct notice ( practical performance) Oral questions Written questions Self- test Projects Case studies
4	<b>Transport layer:</b> <ul style="list-style-type: none"> <li>Rules of transport layer.</li> <li>TCP- the trusted communication.</li> <li>Managing TCP sessions.</li> <li>UDP.</li> </ul>	Direct notice ( practical performance) Oral questions Written questions Self- test, Projects Case studies
5	<b>Network layer:</b> <ul style="list-style-type: none"> <li>Ipv4 protocol.</li> <li>Network segmentation.</li> <li>Sub netting the subnet.</li> <li>Static routing.</li> <li>Dynamic routing.</li> </ul>	Direct notice ( practical performance) Oral questions Written questions Self- test Projects Case studies
5	<b>IP v4 addressing:</b> <ul style="list-style-type: none"> <li>IP v4 addresses.</li> <li>Different type of IP address in the network.</li> <li>Specifying IP addresses for network devices.</li> <li>Subnet Mask.</li> <li>Addresses calculation-sub network.</li> <li>Commands for testing network layer.</li> </ul>	Direct notice ( practical performance) Oral questions Written questions Self- test Projects Case studies
5	<b>Data link layer:</b> <ul style="list-style-type: none"> <li>Accessing the medium.</li> <li>Techniques for accessing the medium.</li> <li>Data addressing and encapsulation.</li> <li>Frame format.</li> </ul>	Direct notice ( practical performance) Oral questions, Written questions Self- test Projects Case studies

5	<b>Physical layer:</b> <ul style="list-style-type: none"> <li>○ Tasks of physical layer.</li> <li>○ Signals and bit representation.</li> <li>○ Copper cables.</li> <li>○ Fiber cables.</li> <li>○ Wireless media.</li> <li>○ Connectors.</li> </ul>	Direct notice ( practical performance) Oral questions Written questions Self- test Projects Case studies
5	<b>Ethernet:</b> <ul style="list-style-type: none"> <li>○ General view.</li> <li>○ Communication through LAN.</li> <li>○ Ethernet frame.</li> <li>○ Accessing CSMA/CD.</li> <li>○ Physical layer of Ethernet.</li> <li>○ Switch and Hub devices.</li> <li>○ ARP protocol.</li> </ul>	Direct notice ( practical performance) Oral questions Written questions Self- test Projects Case studies
5	<b>Planning and connecting network:</b> <ul style="list-style-type: none"> <li>○ Choosing the network devices.</li> <li>○ Devices connection.</li> <li>○ IP distribution.</li> <li>○ Sub network calculation.</li> </ul>	Direct notice ( practical performance) Oral questions Written questions Self- test Projects Case studies
5	<b>Preparing and testing the network:</b> <ul style="list-style-type: none"> <li>○ Preparing Cisco devices. Principle of IOS.</li> <li>○ Basic configuration of IOS.</li> <li>○ Connectivity test.</li> <li>○ Network monitoring and logging.</li> </ul>	Direct notice ( practical performance) Oral questions Written questions Self- test Projects Case studies
<b>References</b>	CCNA Discovery or CCNA Exploration 1, Online Curriculum. Cisco Networking Academy Program, First Year - Student Companion Guide, Cisco Press.	

Department	Computer and Info. Technology			Major	Computing Technology		
Course Name	Computer client O.S.			Course Code	CMT 124		
Prerequisites	CMT 127						
Trimester	1	2	3	4	5	6	
Credit Hours			4			Cooperative	
Contact Hours (hours per week)	L		2				
	W		4				
	T		0				
L = Lecture Hours, W = Workshop/Laboratory Hours, T = Tutorial Hours							
Course description:							
<p>This course provides the essential concepts of computer operating by training on installing the right operating system and dealing with on different types of operating system’s messages and characteristics</p> <p>This course with its skills represents the programming part of the A+ and IT Essential 1 Certification.</p>							
General Objective:							
This Course aims to provide trainees with basic skills in Computer operating and operating system installation.							
Specific Objectives	Required Performance Specifications		NOSS Related tasks				
			From The Criterion		Task No.		
A. Procedural Objectives: Trainee should be able to:							
1. Installs the Operating System.	Starts the operating system after installation	Computer’s user technician assistant		C7			
		Networks technician		C3, C4, F			
		Systems administrator		A			
2. Network configuration	Configures the PC to join the network	Computer’s user technician assistant		E2, E3, E4, E5			
		Networks technician		C3, C4, F			
		Systems administrator		A			
3. Installs and software .	Installs some software	Computer’s user technician assistant		C6, C7,			
		Networks technician		C3, C4,F			
		Systems administrator		A			
4. Installs, changes, and configures network Card	Installs network card by following the steps in the manual	Computer's user technician assistant		D3, D4, D5, D6, D11, D12, F2, E2, F3, G3			
		Networks technician		C3, C4, F			
		Systems administrator		A			
5. Test PC performance	Computer function normally	Computer’s user technician assistant		C2, C3, C4, C5			
		Networks technician		-			
		Systems administrator		-			
6. Scan disk for errors	Defines a specific problem in the configuration	Computer’s user technician assistant		B3, B4, B5, B6, B7, C3, C5			
		Networks technician		-			
		Systems administrator		-			
7. Installs and manages printers	Prints a test page after installation	Computer’s user technician assistant		D4			
		Networks technician		-			
		Systems administrator		-			



B. Behavioral and Cognitive Objectives: Trainee should be able to:			
1. Differentiates between different types of operating system.	List some operating system specifications	Computer’s user technician assistant	C7
		Networks technician	C3, C7, F
		Systems administrator	A
2. Defines Operating system ‘s installation steps.	List installation steps	Computer’s user technician assistant	C7
		Networks technician	C3, C4, F
		Systems administrator	A
3. Differentiates between different network cards.	States some of network card’s features	Computer’s user technician assistant	D3, D4, D5, D6, D11, D12, F2, E2, F3, G3
		Networks technician	C3, C4, F
		Systems administrator	C7
4. Defines printer specifications.	List main printer’s specifications	Computer’s user technician assistant	C3, C7, F
		Networks technician	A
		Systems administrator	C7
Safety conditions:			
<ul style="list-style-type: none"><li>• Keep devices safe.</li><li>• Follow the safety instructions when using tools.</li><li>• Follow the safety instructions of location.</li><li>• Tide up the place when finishing work.</li></ul>			
Theoretical and Practical Topics:	NOSS Related tasks Because this course is shared between all courses of Computer Technology so the following tasks from the professional standard for a career were adapted.		
	Professional Standard	Task	Task Description
o Advance personnel computer:	Computer’s users Technician supporter	G2	Participates in training courses.
		G3	Follow up reading in specialized books, journals and newsletters.
		D4	Ensures the conformity with the standard.
		C7	Upgrades OS and software.
	Network computer’s technician	C3	Performs the main configuration of network devices.
	Systems administrator	A	Prepares systems and software.
o Advanced operating systems:	Computer’s users Technician supporter	D4	Ensures the conformity with the standard.
		C7	Upgrades OS and software.
	Network computer’s technician	C3	Installs network operating system.
		C4	Performs the main configuration of network devices.
		F	Works for the uninterrupted network function.
	Systems administrator	A	Prepares systems and software.
o Laptops and small mobile devices:	Computer’s users Technician supporter	C2	Uses Software inspection.
		C4	Makes backup copy of computer data.
		F3	Update protection programs.
		F4	Alerts user automatically in emergency cases.
		F5	Erases unnecessary software and files.
	Network computer’s technician	C3	Installs network operating system.
		F	Works for an uninterrupted network function.
		A	Prepares systems and software.

○ Advanced printers and scanners:	Computer's users Technician supporter	D4	Ensures the conformity with the standard.
	Network computer's technician	C3	Installs network operating system.
		C4	Performs the main configuration of network devices.
		F	Works for an uninterrupted network function.
	Systems administrator	A	Prepares systems and software.
○ Advanced computer network:	Computer's users Technician supporter	D4	Ensures the conformity with the standard.
		E2	Checks network configuration.
		E3	Checks network cards.
		E4	Checks network cable.
		E5	Checks network points.
	Network computer's technician	C3	Installs network operating system.
		C4	Performs the main configuration of network devices.
		F	Works for an uninterrupted network function.
	Systems administrator	A	Prepares systems and software.
○ Advanced computer security:	Computer's users Technician supporter	C2	Uses Software inspection.
		C4	Makes backup copy of computer data.
		F3	Update protection programs.
	Network computer's technician	C3	Installs network operating system.
		C4	Performs the main configuration of network devices.
		F	Works for an uninterrupted network function.
	Systems administrator	A	Prepares systems and software.

Detailed Theoretical Contents		
Hours	Contents	Assessment Tools
4	<b>Advance personnel computer:</b> <ul style="list-style-type: none"> <li>General overview of computer maintenance technician 's tasks.</li> <li>Changing computer components.</li> <li>Upgrading computer components.</li> <li>Maintained prevention of personnel computer.</li> <li>Repairing personnel computer's faults.</li> </ul>	Oral questions Written questions Homework Self- test Online end of Chapters
5	<b>Advanced operating systems:</b> <ul style="list-style-type: none"> <li>Choosing network operating system.</li> <li>Installing network operating system.</li> <li>Upgrading operating system.</li> <li>Maintaining operating system.</li> <li>Repairing operating system's faults.</li> </ul>	Oral questions Written questions Homework Self- test Online end of Chapters
4	<b>Advanced laptops and mobile devices:</b> <ul style="list-style-type: none"> <li>Wireless communication.</li> <li>Repairing laptops and mobile devices.</li> <li>Choosing laptop's components.</li> <li>Maintenance prevention procedures of laptops.</li> <li>Repairing laptop's faults .</li> </ul>	Oral questions Written questions Homework Self- test Online end of Chapters
4	<b>Advanced printers and scanners:</b> <ul style="list-style-type: none"> <li>Safety procedures.</li> <li>Installing and configuring local printer and scanner.</li> <li>Installing and configuring network printer and scanner.</li> <li>Upgrading printer and scanner.</li> <li>Maintenance prevention.</li> <li>Repairing scanners and printers faults.</li> </ul>	Oral questions Written questions Homework Self- test Online end of Chapters
5	<b>Advanced computer network:</b> <ul style="list-style-type: none"> <li>Safety procedures.</li> <li>Designing a network based on client requirement.</li> <li>Network components.</li> <li>Network installation.</li> <li>Network upgrade.</li> <li>Installing and configuring email server.</li> <li>Network Maintenance prevention.</li> <li>Repairing network's faults</li> </ul>	Oral questions Written questions Homework Self- test Online end of Chapters
4	<b>Advanced computer security:</b> <ul style="list-style-type: none"> <li>Client's Security needs.</li> <li>Security elements based on client request.</li> <li>Applying security policies for the client.</li> <li>Maintenance prevention.</li> <li>Repairing computer security's faults.</li> </ul>	Oral questions Written questions Homework Self- test Online end of Chapters

detailed Practical Contents		
Hours	Contents	Assessment Tools
10	<b>Advance personnel computer:</b> <ul style="list-style-type: none"> <li>General overview of computer. Maintenance technician 's tasks.</li> <li>Changing computer components.</li> <li>Upgrading computer components.</li> <li>Maintained prevention of personnel computer.</li> <li>Repairing personnel computer's faults.</li> </ul>	Direct notice ( practical performance) Imitation Oral questions Written questions Self- test Projects Case studies
10	<b>Advanced operating systems:</b> <ul style="list-style-type: none"> <li>Choosing network operating system.</li> <li>Installing network operating system.</li> <li>Upgrading operating system.</li> <li>Maintaining operating system.</li> <li>Repairing operating system's faults.</li> </ul>	Direct notice ( practical performance), Imitation Oral questions Written questions Self- test, Projects Case studies
8	<b>Advanced laptops and mobile devices:</b> <ul style="list-style-type: none"> <li>Wireless communication.</li> <li>Repairing laptops and mobile devices.</li> <li>Choosing laptop's components.</li> <li>Maintenance prevention procedures of laptops.</li> <li>Repairing laptop's faults.</li> </ul>	Direct notice ( practical performance), Imitation Oral questions Written questions Self- test, Projects Case studies
8	<b>Advanced laptops and mobile devices:</b> <ul style="list-style-type: none"> <li>Wireless communication.</li> <li>Repairing laptops and mobile devices.</li> <li>Choosing laptop's components.</li> <li>Maintenance prevention procedures of laptops.</li> <li>Repairing laptop's faults.</li> </ul>	Direct notice ( practical performance), Imitation Oral questions Written questions Self- test, Projects Case studies
8	<b>Advanced computer network:</b> <ul style="list-style-type: none"> <li>Safety procedures.</li> <li>Designing a network based on client requirement.</li> <li>Network components.</li> <li>Network installation.</li> <li>Network upgrade.</li> <li>Installing and configuring email server.</li> <li>Network Maintenance prevention.</li> <li>Repairing network's faults.</li> </ul>	Direct notice ( practical performance) Imitation Oral questions Written questions Self- test Projects Case studies
8	<b>Advanced computer security:</b> <ul style="list-style-type: none"> <li>Client's Security needs.</li> <li>Security elements based on client request.</li> <li>Applying security policies for the client.</li> <li>Maintenance prevention.</li> <li>Repairing computer security's faults.</li> </ul>	Direct notice ( practical performance), Imitation Oral questions Written questions Self- test, Projects Case studies
<b>References</b>	IT Essentials I v4.0 : PC Hardware and Software , Chapters (11-16)□	



---

# NETWORKING TECHNOLOGY COURSES

---

1430H – 2010G

Department	Computer and Info. Technology			Major	Networking		
Course Name	Routing Technology			Course Code	NET 117		
Prerequisites	NET 107						
Trimester		1	2	3	4	5	6
Credit Hours				4			Cooperative
Contact Hours (hours per week)	L			2			
	W			4			
	T			0			
L = Lecture Hours, W = Workshop/Laboratory Hours, T = Tutorial Hours							
Course description:							
<p>This course provides the necessary knowledge on how to use and prepare the network devices. In this course the trainee will train on real routers devices and how to do their configuration and use them in network design through a set of theoretical and practical courses. It is advisable that this course covers at least three exams and four homeworks.</p> <p>This course is considered as one of courses that help to pass the Cisco Certified Network Associate CCNA2</p>							
General Objective:							
<p>The goal of this course is to provide the trainee with the necessary skills that help him use the routers and prepare them to work.</p>							
Specific Objectives				Required Performance Specifications Criterion of computer network technician		NOSS Related tasks	
						Task No.	
A. Procedural Objectives: Trainee should be able to:							
1. Prepare Router with necessary configuration				Prepare router with specific configuration		C1, C2, C3, C4	
2. Configure RIP protocol				Prepare RIP protocol with specific configuration		C1, C2, C3, C4	
3. Configure IGRP protocol				Prepare IGRP protocol with specific configuration		C1, C2, C3, C4	
4. Configure ACL				Prepare ACLwith specific configuration		C1, C2, C3, C4	
5. Prepare router with IOS				Load new IOS		F8	
6. Identify the general fault on router				Discover known faults		E4	
7. Troubleshoot the general fault on router				Troubleshoot known faults		E4	
B. Behavioral and Cognitive Objectives: Trainee should be able to:							
1. State network devices properties				Enumerates some of network devices properties		A1	
2. Specify router components				Names each component and identify the properties of router components		C4	
3. Enumerate types and features of routing protocols				Enumerates types features of routing protocols		A5	
4. Specify the work and properties of TCP/IP				Explains how TCP/IP works		A5	

5. State the possible faults of routers	Enumerates the possible faults of routers	F1, F2, F3
6. Enumerate network devices properties	States some of network devices properties	A1
<b>Safety conditions:</b>		
<ul style="list-style-type: none"> <li>○ Wear suitable clothes.</li> <li>○ Follow instructions of place safety.</li> <li>○ Preserve network devices and tools.</li> <li>○ Follow manual's instructions that comes with network devices.</li> </ul>		
Theoretical and Practical Topics:	NOSS Related tasks	
	Criterion of computer network technician	
	Task	Task Description
○ <b>Introduction to routing.</b>	A1	Participate in determining the network type
○ <b>Static routing.</b>	A1	Participate in determining the network type
○ <b>Introduction to dynamic protocols.</b>	C1	Requests the network devices and tools
	C2	Installs network devices
	C3	Installs the operating systems of the network devices
	C4	Makes the basic configuration of the network devices
○ <b>Distance Vector protocol.</b>	C9	Test the network devices operation
	F8	Updates the operating systems of the network devices
	C4	Makes the basic configuration of the network devices
	C5	Supervises the network cables installation
○ <b>RIP version 1 protocol.</b>	C4	Makes the basic configuration of the network devices
	C5	Supervises the network cables installation
○ <b>VLSM and CIDRv.</b>	F1	Continuously monitor the network operation
	E4	Configures network cards
○ <b>RIP version 2 protocol.</b>	C4	Makes the basic configuration of the network devices
	F2	Test the solutions before implementation
	F3	Cooperates for finding solutions to maintain the network operation continuity
○ <b>EIGRP protocol.</b>	C4	Makes the basic configuration of the network devices



Detailed theoretical Contents		
Hours	Contents	Evaluation Tools
3	<b>Introduction to routing:</b> <ul style="list-style-type: none"> <li>Inside the router.</li> <li>Router configuration and addressing.</li> <li>Building routing table.</li> <li>Path calculation and switching.</li> </ul>	Oral questions Written questions Self- test Online end of chapter exam
3	<b>Static routing:</b> <ul style="list-style-type: none"> <li>Routers and networks.</li> <li>Router configuration revision.</li> <li>Directly connected networks.</li> <li>Static routing and IP next hop.</li> <li>Static routing with ports directions.</li> <li>Summarization and default gateway.</li> <li>Managing and correcting static paths.</li> </ul>	Oral questions Written questions Self- test Online end of chapter exam
3	<b>Introduction to dynamic protocols:</b> <ul style="list-style-type: none"> <li>Introduction and characteristics.</li> <li>Dynamic routing protocol types.</li> <li>Routing decision.</li> <li>Administrative distance.</li> <li>Routing protocol and sub network.</li> </ul>	Oral questions Written questions Self- test Online end of chapter exam
3	<b>Distance Vector protocol:</b> <ul style="list-style-type: none"> <li>Introduction.</li> <li>Network discovery.</li> <li>Routing table maintenance.</li> <li>Routing loops.</li> <li>RIP protocol.</li> <li>EIGRP protocol.</li> </ul>	Oral questions Written questions Self- test Online end of chapter exam
2	<b>RIP version 1 protocol:</b> <ul style="list-style-type: none"> <li>RIP version 1 characteristics.</li> <li>Basic configuration.</li> <li>Checking and troubleshooting.</li> <li>Auto summary.</li> <li>Default path and RIP v1.</li> </ul>	Oral questions Written questions Self- test Online end of chapter exam
3	<b>VLSM and CIDR:</b> <ul style="list-style-type: none"> <li>Classless and classful#VLSM.</li> <li>CIDR.</li> </ul>	Oral questions Written questions Self- test Online end of chapter exam
2	<b>RIP version 2 protocol:</b> <ul style="list-style-type: none"> <li>RIP version limitations.</li> <li>RIP v 2 configuration.</li> <li>VLSM and RIP v2.</li> <li>CIDR and RIP v2.</li> <li>Checking and troubleshooting.</li> </ul>	Oral questions Written questions Self- test Online end of chapter exam
2	<b>EIGRP protocol:</b> <ul style="list-style-type: none"> <li>Introduction.</li> <li>Basic configuration.</li> </ul>	Oral questions Written questions Self- test

	<ul style="list-style-type: none"> <li>○ Path calculation metric.</li> <li>○ DUAL.</li> <li>○ EIGRP advanced configuration.</li> </ul>	Online end of chapter exam
2	<b>Link state protocol:</b> <ul style="list-style-type: none"> <li>○ Link state routing.</li> <li>○ Applying link state protocol.</li> <li>○ Link state characteristics.</li> <li>○ Differentiation between link state protocol.</li> </ul>	Oral questions Written questions Self- test Online end of chapter exam
3	<b>OSPF protocol:</b> <ul style="list-style-type: none"> <li>○ Introduction.</li> <li>○ Basic configuration.</li> <li>○ OSFP metrics.</li> <li>○ OSPF and multipoint network.</li> <li>○ Advanced configuration.</li> </ul>	Oral questions Written questions Self- test Online end of chapter exam

Detailed Practical Contents		
Hours	Contents	Evaluation Tools
6	<b>Router configuration:</b> <ul style="list-style-type: none"> <li>Network connection and basic router configuration.</li> <li>Basic router configuration.</li> <li>Advance router configuration.</li> </ul>	Direct notice ( practical performance) Oral questions Written questions Self- test Projects Case studies
6	<b>Static routing configuration:</b> <ul style="list-style-type: none"> <li>Basic static routing configuration.</li> <li>Advanced static routing configuration.</li> <li>Correction of static routing faults.</li> </ul>	Direct notice ( practical performance) Oral questions Written questions Self- test Projects Case studies
4	<b>Practical activity:</b> <ul style="list-style-type: none"> <li>Building routing table.</li> </ul>	Direct notice ( practical performance) Oral questions, Written questions, Self- test, Case studies و Projects
6	<b>RIP v1 configuration:</b> <ul style="list-style-type: none"> <li>Basic configuration.</li> <li>Advanced configuration.</li> <li>Faults correction.</li> </ul>	Direct notice ( practical performance) Oral questions Written questions Self- test, Projects, Case studies
6	<b>Classless and Classful:</b> <ul style="list-style-type: none"> <li>IP addressing and VLSM calculation.</li> <li>Advanced VLSM calculation.</li> <li>VLSM faults correction.</li> <li>Route summarization.</li> <li>Correcting route summarization faults.</li> </ul>	Direct notice ( practical performance) Oral questions Written questions Self- test Projects Case studies
6	<b>RIP v2 configuration:</b> <ul style="list-style-type: none"> <li>Basic configuration.</li> <li>Advanced configuration.</li> <li>Faults correction.</li> </ul>	Direct notice ( practical performance) Oral questions Written questions Self- test, Projects, Case studies
6	<b>Routing table:</b> <ul style="list-style-type: none"> <li>Routing table check up.</li> <li>Using the show ip route command.</li> </ul>	Direct notice ( practical performance) Oral questions, Written questions, Self- test Projects, Case studies
6	<b>EIGRP protocol:</b> <ul style="list-style-type: none"> <li>Basic configuration.</li> <li>Advanced configuration.</li> <li>Faults correction.</li> </ul>	Direct notice ( practical performance) Oral questions Written questions Self- test, Projects Case studies
6	<b>OSPF protocol:</b> <ul style="list-style-type: none"> <li>Basic configuration.</li> <li>Advanced configuration.</li> <li>Faults correction.</li> </ul>	Direct notice ( practical performance) Oral questions Written questions Self- test Projects, Case studies
<b>References</b>	1- CCNA Discovery 2 : Routing Protocols and Concepts, Online Curriculum Or - CCNA Exploration 2 : Routing Protocols and Concepts, Online Curriculum Cisco Networking Academy Program, First Year Companion Guide, Cisco Press	

Department	Computer and Info. Technology			Major	Networking		
Course Name	Switching technology			Course Code	NET 207		
Prerequisites	NET 107						
Trimester		1	2	3	4	5	6
Credit Hours					4		Cooperative
Contact Hours (hours per week)	L				2		
	W				4		
	T				0		
L = Lecture Hours, W = Workshop/Laboratory Hours, T = Tutorial Hours							
Course description:							
<p>This course provides the necessary knowledge on how to use and prepare the network devices. In this course the trainee will train on real switches devices and how to do their configuration and use them in network design through a set of theoretical and practical courses.</p> <p>This course is considered as one of courses that help to pass the Cisco Certified Network Associate CCNA3</p>							
General Objective:							
<p>The goal of this course is to provide the trainee with the necessary skills that help him to use the switches and configure them to control access to the network and secure them.</p>							
Specific Objectives				Required Performance Specifications Criterion of computer network technician		NOSS Related tasks	
						Task No.	
<b>A. Procedural Objectives: Trainee should be able to:</b>							
1. Distribute IP using VLSM				Prepare router with essential configuration		C1, C2,C3, C4, F3	
2. Configure OSPF protocol				Configure OSPF		C1, C2,C3, C4, F3	
3. Configure EIGRP protocol				Configure EIGRP		C1, C2,C3, C4, F3	
4. Switch configuration				Configure switch		C1, C2,C3, C4, F3	
5. STP configuration				Configure STP		C1, C2,C3, C4, F3	
6. Configure virtual networks				Configure virtual network		A1, C1, C2, C3, C4, F3	
<b>B. Behavioral and Cognitive Objectives: Trainee should be able to:</b>							
1. State network devices properties				Enumerates some of network devices properties		A1	
2. Specify switch components				Name each component and identify the properties of switch components		C4	
3. Enumerate types and features of routing protocols				Enumerate types and features of routing protocols		A1	
4. Explain the characteristics of VTP and				Stats some of STP and VTP characteristics		A1	

STP and how they work		
5. State virtual network characteristics	Enumerate the characteristics of virtual network	A1
<b>Safety conditions:</b>		
<ul style="list-style-type: none"> <li>○ Wear suitable clothes.</li> <li>○ Preserve network devices and tools.</li> <li>○ Follow safety instructions when using tools.</li> <li>○ Follow manual's instructions that comes with network devices.</li> </ul>		
Theoretical and Practical Topics:	NOSS Related tasks	
	Criterion of computer network technician	
	Task	Task Description
○ <b>Building LAN.</b>	A1	Observes backup process.
	C2	Installs the network devices.
○ <b>Basic concepts and configuration of switch.</b>	C4	Makes the basic configuration of the network devices.
	C4	Makes the basic configuration of the network devices.
○ <b>VLAN trunking protocol.</b>	A7	Cooperates for improving the network design.
○ <b>Spanning Tree Protocol.</b>	F3	Cooperates for finding solutions to maintain the network operation continuity.
○ <b>Inter VLAN routing.</b>	C4	Makes the basic configuration of the network devices.
○ <b>Concepts and Wireless network configuration.</b>	C2	Installs the network devices.

Detailed theoretical Contents		
Hours	Contents	Evaluation Tools
4	<b>Building LAN:</b> <ul style="list-style-type: none"> <li>Building LAN</li> <li>Features and concepts of switches</li> </ul>	Oral questions Written questions Self- test Online end of chapter exam
4	<b>Basic concepts and configuration of switch:</b> <ul style="list-style-type: none"> <li>Introduction to Ethernet/802.3 network</li> <li>Ethernet network design consideration</li> <li>Packet forwarding using switch</li> <li>Managing and configuring switch device</li> <li>Security configuration</li> </ul>	Oral questions Written questions Self- test Online end of chapter exam
4	<b>VLAN trunking protocol:</b> <ul style="list-style-type: none"> <li>VTP concepts</li> <li>How VTP works</li> <li>VTP configuration</li> <li>Fault discovery and repairs</li> </ul>	Oral questions Written questions Self- test Online end of chapter exam
5	<b>Spanning Tree Protocol:</b> <ul style="list-style-type: none"> <li>Building network with high availability</li> <li>Introduction to STP</li> <li>STP stability</li> <li>PVST, RSTP and Rapid PVST protocols</li> </ul>	Oral questions Written questions Self- test Online end of chapter exam
4	<b>Inter VLAN routing:</b> <ul style="list-style-type: none"> <li>Introduction to inter VLAN routing</li> <li>Principal sub interfaces</li> <li>Inter V;AN configuration</li> <li>Fault discovery and repairs</li> </ul>	Oral questions Written questions Self- test Online end of chapter exam
5	<b>Concepts and Wireless network configuration:</b> <ul style="list-style-type: none"> <li>Wireless network</li> <li>Wireless network standards</li> <li>Wireless network's infrastructure</li> <li>Wireless network working</li> <li>Wireless network security</li> <li>Wireless network configuration</li> <li>Fault discovery and repairs</li> </ul>	Oral questions Written questions Self- test Online end of chapter exam



Detailed Practical Contents		
Hours	Contents	Evaluation Tools
6	<b>Building LAN:</b> <ul style="list-style-type: none"> <li>Network concepts</li> <li>Fault discovery and repairs</li> </ul>	Direct notice ( practical performance) Oral questions Written questions Self- test Projects Case studies
8	<b>Basic switch configuration:</b> <ul style="list-style-type: none"> <li>Basic configuration</li> <li>Management of IOS and configuration file 1</li> <li>Management of IOS and configuration file 2</li> </ul>	Direct notice ( practical performance) Oral questions Written questions Self- test Projects Case studies
8	<b>Virtual network configuration:</b> <ul style="list-style-type: none"> <li>Basic configuration</li> <li>Advance configuration</li> <li>Fault discovery and repairs</li> </ul>	Direct notice ( practical performance) Oral questions Written questions Self- test Projects Case studies
8	<b>VTP protocol:</b> <ul style="list-style-type: none"> <li>Basic configuration</li> <li>Advance configuration</li> <li>Fault discovery and repairs</li> </ul>	Direct notice ( practical performance) Oral questions Written questions Self- test Projects Case studies
6	<b>STP configuration:</b> <ul style="list-style-type: none"> <li>Basic configuration</li> <li>Advance configuration</li> <li>Fault discovery and repairs</li> </ul>	Direct notice ( practical performance) Oral questions Written questions Self- test Projects Case studies
8	<b>Inter VLAN routing:</b> <ul style="list-style-type: none"> <li>Basic configuration</li> <li>Advance configuration</li> <li>Fault discovery and repairs</li> </ul>	Direct notice ( practical performance) Oral questions Written questions Self- test Projects Case studies
8	<b>Wireless network configuration:</b> <ul style="list-style-type: none"> <li>Basic configuration</li> <li>Advance configuration of WRT300N device</li> <li>Fault discovery and repairs</li> </ul>	Direct notice ( practical performance) Oral questions, Written questions Self- test Projects Case studies
<b>References</b>	1- CCNA Discovery 3 : LAN switching and Wireless, Online Curriculum Or - CCNA Exploration 3: LAN switching and Wireless, Online Curriculum Cisco Networking Academy Program, Second Year Companion Guide, Cisco Press	

Department	Computer and Info. Technology			Major	Networking		
Course Name	Fundamentals Of Wireless LANs			Course Code	NET 246		
Prerequisites	NET 117						
Trimester		1	2	3	4	5	6
Credit Hours					4		Cooperative
Contact Hours (hours per week)	L				2		
	W				4		
	T				0		
L = Lecture Hours, W = Workshop/Laboratory Hours, T = Tutorial Hours							
Course description:							
<p>This course provides the necessary skills to use and run wireless network devices. The trainee will be trained on how to run access point, bridges, install antennas, secure wireless network through a set of theory and practical courses.</p> <p>This course is part of wireless network course from Cisco academy curriculum.</p>							
General Objective:							
This course aims at providing the trainee with the necessary skills and knowledge of using wireless network devices and how to build and a check them.							
Specific Objectives				Required Performance Specifications Criterion of computer network technician		NOSS Related tasks	
						Task No.	
A. Procedural Objectives: Trainee should be able to:							
1. Prepare the wireless access points.				Prepare an Access point		C1, C2, C3, C4	
2. Prepare and build bridges.				Prepare and build a wireless brides in a specific location		C1, C2, C3, C4	
3. Specify the right antenna for each wireless network.				Specify a type of antenna for a specific wireless network Build a specific antenna in a designated location		C1, C2, C3, C4	
4. Secure a wireless network.				Secure a wireless network		F4	
5. Site Survey.				Visit a site and do a survey using tools and softwares.		A2	
6. Discover and repair wireless network problem.				Discover and repair a specific problems in a network		E4	
B. Behavioral and Cognitive Objectives: Trainee should be able to:							
1. Specify the properties of wireless network.				State some of network devices properties		A7	
2. State the properties of 802.11a/b/g standards.				Speak about properties of 802.11 standard		F8	
3. Specify the security attributes of wireless network.				Speak about wireless network security properties		F4	
4. Specify the radio technology attributes for wireless network.				State some of Radio technology properties		F4	
5. Enumerate the most known problems.				State some of probable problems in the network		F1, F2, F3	

**Safety conditions:**

- Wear the appropriate clothes.
- Preserve network devices and tools.
- Follow safety instructions when using tools.
- Follow manual's instructions that comes with network devices.

Theoretical and Practical Topics:	NOSS Related tasks	
	Criterion of computer network technician	
	Task	Task Description
○ <b>802.11a/b/g standard:</b>	A1	Helps in determining the network type.
○ <b>Wireless radio technology:</b>	A1	Helps in determining the network type.
○ <b>Wireless network building:</b>	A3	Helps in determining the connection type.
○ <b>Access points:</b>	C2	Installs the network devices.
○ <b>Wireless bridges:</b>	C2	Installs the network devices.
○ <b>Antennas:</b>	C2	Installs the network devices.
○ <b>Wireless network security:</b>	F1	Continuously monitor the network operation.
○ <b>Site survey:</b>	A2	Explores the wireless network location.

Detailed theoretical Contents		
Hours	Contents	Evaluation Tools
4	<b>802.11a/b/g standard:</b> <ul style="list-style-type: none"> <li>802.11b standard.</li> <li>802.11g standard.</li> <li>802.11a standard.</li> </ul>	Oral questions Written questions Self- test
4	<b>Wireless Radio Technology:</b> <ul style="list-style-type: none"> <li>Radio waves.</li> <li>Electromagnetic waves.</li> <li>Modulation techniques.</li> <li>Radio waves propagation.</li> </ul>	Oral questions Written questions Self- test
3	<b>Wireless LAN topology:</b> <ul style="list-style-type: none"> <li>Scalability.</li> <li>Roaming.</li> <li>Channels preparation.</li> </ul>	Oral questions Written questions Self- test
2	<b>Access points:</b> <ul style="list-style-type: none"> <li>Access point types.</li> <li>Access point as a Repeater.</li> <li>Access point configuration.</li> </ul>	Oral questions Written questions Self- test
2	<b>Wireless Bridges:</b> <ul style="list-style-type: none"> <li>Wireless Bridge types.</li> <li>Point to point connection.</li> <li>Point to multipoint connection.</li> <li>Wireless Bridges configuration.</li> </ul>	Oral questions Written questions Self- test
3	<b>Antennas:</b> <ul style="list-style-type: none"> <li>Antennas characteristics.</li> <li>Omni directional antenna.</li> <li>Directional antennas.</li> <li>Properties of gain, distance, height and frequencies.</li> </ul>	Oral questions Written questions Self- test
4	<b>WLAN security:</b> <ul style="list-style-type: none"> <li>Wireless security fundamental.</li> <li>Encryption.</li> <li>WEP protocol.</li> <li>Advanced security protocols.</li> </ul>	Oral questions Written questions Self- test
4	<b>Design and site survey:</b> <ul style="list-style-type: none"> <li>Site survey.</li> <li>Application.</li> <li>WLAN repair.</li> <li>Designing network for buildings connection.</li> <li>Site survey tools.</li> <li>Site survey documentation.</li> </ul>	Oral questions Written questions Self- test

Detailed Practical Contents		
Hours	Contents	Evaluation Tools
4	<b>802.11a/b/g standard:</b> <ul style="list-style-type: none"> <li>802.11b standard.</li> <li>802.11g standard.</li> <li>802.11a standard.</li> </ul>	Direct notice ( practical performance) Oral questions Written questions Self- test, Projects, Case studies
8	<b>Wireless Radio Technology:</b> <ul style="list-style-type: none"> <li>Radio waves.</li> <li>Electromagnetic waves.</li> <li>Modulation techniques.</li> <li>Radio waves propagation.</li> </ul>	Direct notice ( practical performance) Oral questions Written questions Self- test, Projects Case studies
8	<b>Wireless LAN topology:</b> <ul style="list-style-type: none"> <li>Scalability.</li> <li>Roaming.</li> <li>Channels preparation.</li> </ul>	Direct notice ( practical performance) Oral questions Written questions Self- test, Projects, Case studies
8	<b>Access points:</b> <ul style="list-style-type: none"> <li>Access point types.</li> <li>Access point as a Repeater.</li> <li>Access point configuration.</li> </ul>	Direct notice ( practical performance) Oral questions Written questions Self- test, Projects, Case studies
6	<b>Wireless Bridges:</b> <ul style="list-style-type: none"> <li>Wireless Bridge types.</li> <li>Point to point connection.</li> <li>Point to multipoint connection.</li> <li>Wireless Bridges configuration.</li> </ul>	Direct notice ( practical performance) Oral questions Written questions Self- test, Projects Case studies
6	<b>Antennas:</b> <ul style="list-style-type: none"> <li>Antennas characteristics.</li> <li>Omni directional antenna.</li> <li>Directional antennas .</li> <li>Properties of gain, distance, height and frequencies.</li> </ul>	Direct notice ( practical performance) Oral questions Written questions Self- test Projects Case studies
6	<b>WLAN security:</b> <ul style="list-style-type: none"> <li>Wireless security fundamental.</li> <li>Encryption.</li> <li>WEP protocol.</li> <li>Advanced security protocols.</li> </ul>	Direct notice ( practical performance) Oral questions, Written questions Self- test Projects Case studies
6	<b>Design and site survey:</b> <ul style="list-style-type: none"> <li>Site survey.</li> <li>Application.</li> <li>WLAN repair.</li> <li>Designing network for buildings connection.</li> <li>Site survey tools.</li> <li>Site survey documentation.</li> </ul>	Direct notice ( practical performance) Oral questions Written questions Self- test Projects Case studies
<b>References</b>	Wireless Network Fundamentals, Cisco Networking Academy Program, Student Companion Guide, Cisco Press.	

Department	Computer and Info. Technology			Major	Networking	
Course Name	WAN Technology			Course Code	NET 218	
Prerequisites	NET 117, NET 207					
Trimester	1	2	3	4	5	6
Credit Hours					3	Cooperative
Contact Hours (hours per week)	L				2	
	W				2	
	T				0	
L = Lecture Hours, W = Workshop/Laboratory Hours, T = Tutorial Hours						
Course description:						
<p>This course is the forth part of a group of courses that give the student the basic skills for using, operating, and configuring network devices. In this course the student is trained on using the Wan technologies and the devices that are associated with it, and deal with it using his theoretical knowledge and practical training.</p> <p>This course is considered as one of courses that help to pass the Cisco Certified Network Associate CCNA 4.</p>						
General Objective:						
This course aims at giving the student the basic skills of using and dealing with the Wan technology and the devices that are associated with it and making its basic configuration.						
Specific Objectives			Required Performance Specifications Criterion of computer network technician		NOSS Related tasks	
					Task No.	
A. Procedural Objectives: Trainee should be able to:						
1. Participate in determining the type of the network			The specified network conform to the standards		A1	
2. Participate in determining the network connection type			Final network design conform to the standards		A3	
3. Discuss the network design with the design maker			Network changes conform to the standards and network improvement		A5	
4. Participate in determining the devices' specification			Connections between devices have good running based on a performance measurement		A6	
5. Participate in improving network design			The available backups have the right version for the network devices		A7	
6. Install and configure the device OS and test its operation			The specified network conform to the standards		C3, C4, C9	
7. Connect the devices and assure its operation			Final network design conform to the standards		C8, D2, D3	
8. Backup the device configuration and upgrade its OS			Network changes conform to the standards and network improvement		F6, F8	



**B. Behavioral and Cognitive Objectives: Trainee should be able to:**

1. Enumerates well known network WAN devices	States one definition for WAN	Knowledge in A1-A7, C4, C5, F1-F4
2. Specify private and public address	Network addressing appropriate for the design and scale well	Knowledge in A1-A7, C4, C5, F1-F4
3. Enumerate the different technologies used in scaling network address	Enumerates the different technologies used in scaling network address	Knowledge in A1-A7, C4, C5, F1-F4
4. Enumerate types and features of WAN protocols	States some types and features of WAN protocols	Knowledge in A1-A7, C4, C5, F1-F4
5. Specify the type of WAN network for each network design	WAN protocols appropriate for the specified performance and budget	Knowledge in A1-A7, C4, C5, F1-F4

**Safety conditions:**

- Wear appropriate clothes.
- Follow safety instructions when using tools.
- Follow manual's instructions that comes with network devices.

Theoretical and Practical Topics:	NOSS Related tasks Criterion of computer network technician	
	Task	Task Description
○ <b>Introduction to the WAN:</b>	A1	Participates in defining network type.
	A3	Participates in defining network connections.
	A5	Discusses the design with the decision maker.
	A6	Helps in determining the computer specifications.
	A7	Cooperates for improving the network design.
	C3	Installs the operating systems of the network devices.
	C4	Makes the basic configuration of the network devices.
	C9	Test the network devices operation.
○ <b>PPP protocol:</b>	C8	Connects between network devices.
	D2	Continuously examines the connectivity of network/devices.
	D3	Continuously examines the communication lines performance.
○ <b>Frame Relay technology:</b>	C8	Connects between network devices.
	D2	Continuously examines the connectivity of network/devices.
	D3	Continuously examines the communication lines performance.
○ <b>Network security:</b>	C8	Connects between network devices.
	D2	Continuously examines the connectivity of network/devices.
	D3	Continuously examines the communication lines performance.
○ <b>ACL:</b>	C8	Connects between network devices.
	D2	Continuously examines the connectivity of network/devices.

	D3	Continuously examines the communication lines performance.
○ <b>Remote access:</b>	C8	Connects between network devices.
	D2	Continuously examines the connectivity of network/devices.
	D3	Continuously examines the communication lines performance.
○ <b>IP services:</b>	C8	Connects between network devices.
	D2	Continuously examines the connectivity of network/devices.
	D3	Continuously examines the communication lines performance.
○ <b>Faults discovery and repair:</b>	C8	Connects between network devices.
	D2	Continuously examines the connectivity of network/devices.
	D3	Continuously examines the communication lines performance.

Detailed theoretical Contents		
Hours	Contents	Evaluation Tools
2	<b>Introduction to the WAN:</b> <ul style="list-style-type: none"> <li>Introducing full services.</li> <li>Understanding WAN technology.</li> <li>WAN communication choices.</li> </ul>	Oral questions Written questions Self- test Online end of chapter exam
2	<b>PPP protocol:</b> <ul style="list-style-type: none"> <li>Telecommunication sequences.</li> <li>PPP understanding.</li> <li>PPP configuration.</li> <li>PPP authentication configuration.</li> </ul>	Oral questions Written questions Self- test Online end of chapter exam
4	<b>Frame Relay technology</b> <ul style="list-style-type: none"> <li>Essential understanding</li> <li>Frame relay configuration</li> <li>Advanced Frame relay configuration</li> </ul>	Oral questions Written questions Self- test Online end of chapter exam
4	<b>Network security:</b> <ul style="list-style-type: none"> <li>Introduction.</li> <li>Known security threats.</li> <li>Types of network attacks.</li> <li>Cisco router security.</li> <li>Securing router services and ports.</li> <li>Using SDM.</li> <li>Managing router in secure manner.</li> </ul>	Oral questions Written questions Self- test Online end of chapter exam
4	<b>ACL:</b> <ul style="list-style-type: none"> <li>Using ACL to secure network.</li> <li>Standard ACL configuration.</li> <li>Extended ACL configuration.</li> </ul>	Oral questions Written questions Self- test Online end of chapter exam
4	<b>Remote access:</b> <ul style="list-style-type: none"> <li>The need of businesses to remote access service.</li> <li>Wide services.</li> <li>Cable service.</li> <li>DSL service.</li> <li>Wide Wireless communication.</li> <li>VPN technology.</li> </ul>	Oral questions Written questions Self- test Online end of chapter exam
3	<b>IP services:</b> <ul style="list-style-type: none"> <li>DHCP protocol.</li> <li>NAT service.</li> <li>IPv6 addressing.</li> </ul>	Oral questions Written questions Self- test Online end of chapter exam
3	<b>Faults discovery and repair:</b> <ul style="list-style-type: none"> <li>Performance line designation.</li> <li>Known WAN problems.</li> <li>Network repairing.</li> </ul>	Oral questions Written questions Self- test Online end of chapter exam

Detailed Practical Contents		
Hours	Contents	Evaluation Tools
2	<b>Revision of essential practical skills:</b>	Direct notice ( practical performance) Oral questions Written questions Self- test Project Case studies
4	<b>PPP configuration:</b> <ul style="list-style-type: none"> <li>Basic configuration.</li> <li>Advanced configuration.</li> <li>Discovering and repairing faults.</li> </ul>	Direct notice ( practical performance) Oral questions Written questions Self- test Project Case studies
4	<b>Frame relay technology:</b> <ul style="list-style-type: none"> <li>Basic configuration.</li> <li>Advanced configuration.</li> <li>Discovering and repairing faults.</li> </ul>	Direct notice ( practical performance) Oral questions Written questions Self- test Project Case studies
4	<b>Network security:</b> <ul style="list-style-type: none"> <li>Basic configuration.</li> <li>Advanced configuration.</li> <li>Discovering and repairing faults.</li> </ul>	Direct notice ( practical performance) Oral questions Written questions Self- test Project Case studies
4	<b>ACL configurations:</b> <ul style="list-style-type: none"> <li>Basic ACL configuration.</li> <li>Advanced ACL configuration.</li> <li>Discovering and repairing faults.</li> </ul>	Direct notice ( practical performance) Oral questions Written questions Self- test Project Case studies
5	<b>IP services:</b> <ul style="list-style-type: none"> <li>DHCP and NAT configuration.</li> <li>Advanced configuration.</li> <li>Discovering and repairing faults.</li> </ul>	Direct notice ( practical performance) Oral questions Written questions Self- test Project Case studies
3	<b>Repairing network problems:</b> <ul style="list-style-type: none"> <li>Repairing faults of wide network (1).</li> <li>Repairing faults of wide network (2).</li> <li>Repairing faults of wide network (3).</li> </ul>	Direct notice ( practical performance) Oral questions, Written questions Self- test Project Case studies
<b>References</b>	1- CCNA4 Discovery or Exploration, Online Curriculum. CNAP: First Fourth Semester Companion Guide, Cisco.	

Department	Computer and Info. Technology			Major	Networking		
Course Name	Introduction to network security			Course Code	NET 244		
Prerequisites	NET 207						
Trimester		1	2	3	4	5	6
Credit Hours					4		Cooperative
Contact Hours (hours per week)	L				2		
	W				4		
	T				0		
L = Lecture Hours, W = Workshop/Laboratory Hours, T = Tutorial Hours							
Course description:							
<p>This course provides the essential skills to protect networks by securing network devices using firewalls and security softwares.</p> <p>This course also provides training in using routers as firewalls that protect network from unauthorized access. It also trains the trainees in using PIX Firewalls and other security techniques to protect the network. This course is considered as part of security course of Cisco Academy.</p>							
General Objective:							
This course aims at providing the necessary skills to protect networks from unauthorized access.							
Specific Objectives				Required Performance Specifications Criterion of computer network technician		NOSS Related tasks	
						Task No.	
A. Procedural Objectives: Trainee should be able to:							
1. Detect network vulnerabilities and unauthorized access entry.				Detects network vulnerabilities		F1, F3	
2. Configure server to access to the network.				Access to the network by using server		C4	
3. Configure authentication.				Prepares necessary configuration to authenticate users		C	
4. Prepare security properties in security devices.				Prepares routers and switches with security configuration		C	
5. Prepare security properties in Firewalls.				Prepares Firewalls with security properties		C	
B. Behavioral and Cognitive Objectives: Trainee should be able to:							
1. Numerates the possible vulnerabilities in the network.				Numerate some of vulnerabilities		F3	
2. Differentiates between network attacks and possible threats.				Specify a kind of attacks or threat		D1	
3. Know the possible security policies.				Specify a security policy for a known security threat		D1	
4. Know the security properties in network devices.				Numerate security properties of some network devices		C	
5. Know the methods and ways used by				Numerate some methods used		G1, G2, G3	

hackers to access the network.	by hackers to access network	
<b>Safety conditions:</b>		
<ul style="list-style-type: none"> <li>○ Take care of used devices</li> <li>○ Follow the safety instruction when using tools</li> <li>○ Use experiments on virtual network</li> <li>○ Do not install any viruses or spyware softwares on devices or networks without the consent of the trainer.</li> </ul>		
Theoretical and Practical Topics:	NOSS Related tasks	
	Criterion of computer network technician	
	Task	Task Description
○ <b>Vulnerabilities and threats:</b>	F1	Continuously monitor the network operation.
○ <b>Planning and security policies:</b>	F3	Cooperates for finding solutions to maintain the network operation continuity.
○ <b>Trust and methods of authentication:</b>	F3	Cooperates for finding solutions to maintain the network operation continuity.
○ <b>Access server:</b>	C4	Makes the basic configuration of the network devices.
○ <b>Trust and authentication methods at layer three:</b>	F3	Cooperates for finding solutions to maintain the network operation continuity.
○ <b>Trust and authentication methods at layer two:</b>	F3	Cooperates for finding solutions to maintain the network operation continuity.
○ <b>Security configuration in router:</b>	C	Installs network.
	D1	Uses network monitoring programs.
○ <b>Security configuration in firewall:</b>	C	Install network.
	D1	Uses network monitoring programs.
○ <b>Security configuration in Switch:</b>	C	Installs network.
	D1	Uses network monitoring programs.



Detailed theoretical Contents		
Hours	Contents	Evaluation Tools
3	<b>Threats and vulnerabilities</b> <ul style="list-style-type: none"> <li>○ Vulnerabilities</li> <li>○ Threats</li> <li>○ Security attacks</li> </ul>	Oral questions Written questions Self- test
3	<b>Planning and security policies</b> <ul style="list-style-type: none"> <li>○ Protecting network nodes</li> <li>○ Security building</li> <li>○ Security of routers</li> </ul>	Oral questions Written questions Self- test
3	<b>Security devices</b> <ul style="list-style-type: none"> <li>○ Security devices properties</li> <li>○ Using security device management</li> <li>○ Introduction to network devices</li> <li>○ PIX security appliance</li> <li>○ Firewall properties</li> </ul>	Oral questions Written questions Self- test
3	<b>Trust and methods of authentication</b> <ul style="list-style-type: none"> <li>○ AAA protocol</li> <li>○ Methods of authentication</li> </ul>	Oral questions Written questions Self- test
2	<b>Access Server</b> <ul style="list-style-type: none"> <li>○ Access server of Windows OS</li> <li>○ Configure TACAS+ and RADIUS server</li> </ul>	Oral questions Written questions Self- test
3	<b>Trust configuration and authentication at layer three</b> <ul style="list-style-type: none"> <li>○ Introduction to securing AAA in PIX appliance</li> <li>○ AAA configuration in PIX appliance</li> </ul>	Oral questions Written questions Self- test
2	<b>Trust configuration and authentication at layer two</b> <ul style="list-style-type: none"> <li>○ 802.1x configuration</li> </ul>	Oral questions Written questions Self- test
2	<b>Security configuration in Router device</b> <ul style="list-style-type: none"> <li>○ Filtering technologies</li> </ul>	Oral questions Written questions Self- test
3	<b>Security configuration in PIX appliance</b> <ul style="list-style-type: none"> <li>○ ACL configuration</li> <li>○ Groups objectives</li> <li>○ Security policies configurations</li> </ul>	Oral questions Written questions Self- test
2	<b>Security configuration in Switch device</b> <ul style="list-style-type: none"> <li>○ Vulnerabilities in DHCP, ARP, MAC address</li> <li>○ Vulnerabilities in Virtual networks</li> <li>○ Vulnerabilities in Spanning Tree Protocol</li> </ul>	Oral questions Written questions Self- test

Detailed Practical Contents		
Hours	Contents	Evaluation Tools
6	<b>Threats and vulnerabilities</b> <ul style="list-style-type: none"> <li>○ Vulnerabilities</li> <li>○ Threats</li> <li>○ Security attacks</li> </ul>	Direct notice ( practical performance) Oral questions Written questions, Self- test Projects, Case studies
6	<b>Planning and security policies</b> <ul style="list-style-type: none"> <li>○ Protecting network nodes</li> <li>○ Security building</li> <li>○ Security of routers</li> </ul>	Direct notice ( practical performance) Oral questions Written questions, Self- test, Projects, Case studies
6	<b>Security devices</b> <ul style="list-style-type: none"> <li>○ Security devices properties</li> <li>○ Using security device management</li> <li>○ Introduction to network devices</li> <li>○ PIX security appliance</li> <li>○ Firewall properties</li> </ul>	Direct notice ( practical performance) Oral questions Written questions Self- test Projects Case studies
6	<b>Trust and methods of authentication</b> <ul style="list-style-type: none"> <li>○ AAA protocol</li> <li>○ Methods of authentication</li> </ul>	Direct notice ( practical performance) Oral questions Written questions, Self- test, Projects, Case studies
6	<b>Access Server</b> <ul style="list-style-type: none"> <li>○ Access server of Windows OS</li> <li>○ Configure TACAS+ and RADIUS server</li> </ul>	Direct notice ( practical performance) Oral questions Written questions, Self- test, Projects, Case studies
4	<b>Trust configuration and authentication at layer three</b> <ul style="list-style-type: none"> <li>○ Introduction to securing AAA in PIX appliance</li> <li>○ AAA configuration in PIX appliance</li> </ul>	Direct notice ( practical performance) Oral questions Written questions Self- test, Projects, Case studies
4	<b>Trust configuration and authentication at layer two</b> <ul style="list-style-type: none"> <li>○ 802.1x configuration</li> </ul>	Direct notice ( practical performance) Oral questions Written questions, Self- test, Projects, Case studies
4	<b>Security configuration in Router device</b> <ul style="list-style-type: none"> <li>○ Filtering technologies</li> </ul>	Direct notice ( practical performance) Oral questions, , Written questions, Self- test Projects, Case studies
6	<b>Security configuration in PIX appliance</b> <ul style="list-style-type: none"> <li>○ ACL configuration</li> <li>○ Groups objectives</li> </ul>	Direct notice ( practical performance) Oral questions, , Written questions, Self- test Projects, Case studies
4	<b>Security configuration in Switch device</b> <ul style="list-style-type: none"> <li>○ Vulnerabilities in DHCP, ARP, MAC address</li> <li>○ Vulnerabilities in Virtual networks</li> <li>○ Vulnerabilities in Spanning Tree Protocol</li> </ul>	Direct notice ( practical performance) Oral questions Written questions Self- test, Projects, Case studies

<b>References</b>	Network security 1, Cisco Networking Academy Program, Student Companion Guide, Cisco Press
-------------------	--

Department	Computer and Info. Technology			Major	Networking		
Course Name	Preparation for Professional Certificates			Course Code	NET 290		
Prerequisites	NET 117 and NET 207						
Trimester		1	2	3	4	5	6
Credit Hours						1	Cooperative
Contact Hours (hours per week)	L					0	
	W					2	
	T					0	
L = Lecture Hours, W = Workshop/Laboratory Hours, T = Tutorial Hours							
Course description:							
<p>This course provides the necessary skills to train the trainee to get Cisco Certified Network Associate certification (CCNA). It also give the trainee a details description about the professional certificates needed in the job market, whish endorse his knowledge about the different level of certificate and how to prepare for them.</p> <p>It is advisable to give full mark to the trainee who get CCNA certificate.</p>							
General Objective:							
This course aims at gaining the trainee the necessary skills to get CCNA certificate.							
Specific Objectives			Required Performance Specifications Criterion of computer network technician			NOSS Related tasks	
						Task No.	
A. Procedural Objectives: Trainee should be able to:							
B. Behavioral and Cognitive Objectives: Trainee should be able to:							
1. Defines the professional certificate in computer field.			States the professional certificate in computer field			G	
2. Defines the professional certificate in networking.			States professional certificate in networking			G	
3. Defines the job perspective based on professional certificate in network technology of specialized company.			Defines the job perspective based on network specialized company			G	
4. Defines the prerequisite for CCNA certificate.			States the prerequisite for CCNA certificate			G	
5. Takes CCNA exam.			Prepares for CCNA exam			G	
Safety conditions:							
<ul style="list-style-type: none"><li>○ Preserve network devices.</li><li>○ Follow safety instructions when using tools.</li></ul>							
Theoretical and Practical Topics:				NOSS Related tasks Criterion of computer network technician			
				Task	Task Description		
○ Introduction to professional certificate in computer field:				G	Continuous to develop himself.		
○ Professional certificate in network:				G	Continuous to develop himself.		
○ Job perspective based on: professional certificate in network technology of specialized company:				G	Continuous to develop himself.		

○ <b>CCNA certificate:</b>	G	Continuous to develop himself.
○ <b>Preparing for CCNA Exam:</b>	G	Continuous to develop himself.

Detailed Practical Contents		
Hours	Contents	Evaluation Tools
2	<b>Introduction to professional certificate in computer field:</b> <ul style="list-style-type: none"> <li>Professional certificate in Network technology.</li> <li>Professional certificate in network management.</li> <li>Professional certificate in maintaining and operating computer.</li> <li>Professional certificate in information security.</li> </ul>	Direct notice ( practical performance) Imitation Written questions Self- test Projects Case studies
3	<b>Professional certificate in networking:</b> <ul style="list-style-type: none"> <li>Professional certificate in routing and switching.</li> <li>Professional certificate in network design.</li> <li>Professional certificate in network security.</li> <li>Professional certificate in VoIP.</li> <li>Professional certificate in network data storage SAN.</li> <li>Professional certificate in ISP.</li> </ul>	Direct notice ( practical performance) Imitation Written questions Self- test Projects Case studies
2	<b>Job perspective based on professional certificate of specialized company:</b> <ul style="list-style-type: none"> <li>Professionalism in routing and switching path.</li> <li>CCNA certificate.</li> <li>CCNP certificate.</li> <li>CCIE certificate.</li> </ul>	Direct notice ( practical performance) Imitation Written questions Self- test Projects Case studies
8	<b>CCNA certificate:</b> <ul style="list-style-type: none"> <li>Exam method.</li> <li>Number of questions.</li> <li>How to enroll for the exam.</li> <li>How to do the exam.</li> <li>Exam blueprint.</li> <li>Pass mark.</li> </ul>	Direct notice ( practical performance) Imitation Written questions Self- test Projects Case studies
11	<b>Preparing for CCNA Exam:</b> <ul style="list-style-type: none"> <li>Moral and psychological preparation.</li> <li>Exam sampling.</li> </ul>	Direct notice ( practical performance) Imitation, Written questions Self- test, Projects. Case studies

<b>References</b>	Todd Lammale. CCNA Study Guide, Sybex CCNA 6 <sup>th</sup> edition.
-------------------	---