
LESSON PLAN

Date/ Revision 23 May 2015

Faculty Engineering

Approval

SUBJECT : FUNDAMENTAL OF COMPUTER SCIENCE

1. Identification of Subject:

Name of Subject : Fundamental of Computer Science
Code of Subject : FOM-1000
SKS / ECTS : 2/ 3
Semester : 1
Study Program : All Study Programs.
Lecturer : Dipl.Ing. Maralo Sinaga / Dr. Ir. Rusman Rusyadi, MSc.

2. Competency

After having the course, students are expected to:

- present the most up-to-date technology in ever changing discipline;
- explain why computer are essential components in business and society;
- explain the fundamental of computer and computer nomenclature, particularly
- differentiate among laptops, tablets, and servers
- describe the purpose and uses of smartphones, digital cameras, portable media players, e-book readers, and game devices
- describe the relationship between data and information
- briefly explain various input options
- explain the purpose of a browser, a search engine, and an online social network
- describe digital security risks associated with viruses and other malware, privacy, health, and the environment;
- differentiate between an operating system and applications;
- differentiate between wired and wireless technologies, and identify reasons individuals and businesses use networks;
- discuss how society uses technology in education, retail, finance, entertainment, health care, travel, government, science, publishing, and manufacturing;
- identify technology used by home users, small office/home office users, mobile users, power users, and enterprise users.

3. Description of Subject:

This course introduces standard fundamentals of computer hardware and software; IT tools as well as fundamental applications of Information Technology in today's activities. The course provides an introduction to basic concepts of information, information systems and the "Information Age", and

also provides an overview on the creation, organization, analysis, storage, retrieval, and communication of information. Students will develop an understanding of basic computing and information systems principles and the social implications of information and information technology. In this course the following major topics are covered:

- The "Information Age" and the role of information in knowledge work
- Information systems and information technologies
- Planning for and developing information systems
- Personal information and information technology skills

These topics through in-class presentations, laboratory exercises discussions (both face-to-face and online), readings (from both text and on-line sources), exercises (both individual and group-based), and a variety of graded assignments and tests.

4. Learning Approach

Approach	: Combination of Expository - inquiry and collaborative
Method	: Discussion, question answer, sample problem, group work
Student Task	: Home work, presentation
Media	: LCD projector, film.

5. Evaluation

a) Absence maximum	: 25%
b) Participation in discussion	: 5 points
c) Homework, Classwork	: 5 points
d) Presentation, Simulation	: 10 points
e) Daily Quiz	: 20 points
f) Final Examination	: 60 points
Total	: 100 points

6. Book Reference:

- a) **Main Text Book:** *“Discovering Computers - 2014, Technology in a world of Computers, Mobile Devices, and the Internet”*, **Authors: Misty E. Vermaat** Purdue University Calumet, **Publisher:** Delmar, Cengage Learning, **ISBN-13:** 9781285161761.
- b) **Supplement Textbooks:**
- “Foundations of Computer Science”, Author: Behrouz Forouzan, Firouz Mosharraf, Publisher: Longman; ISBN: 0 582 50720 0.
 - *“Discovering Computers: Fundamentals, Fifth Edition”*, **Authors:** Gary B. Shelly & Misty E. Vermaat, **Publisher:** Delmar, Cengage Learning, **ISBN-13:** 978-1-4239-2702-0.

7. Detail of Lecturing Activity (LESSON PLAN):

WEEK	: 1
Duration	: 2 x 50 minutes
Topic	: Digital Literacy: Introducing a World of Technology
Sub-Topic	: World of Computer, the Components of Computer Advantage and Disadvantage of Using Computers Network and Internet Computer Software: OS and Application SW Categories of Computers: PC, Laptop / Notebook / Servers / Mainframe Element of Information System Computer in the Society

Learning Outcomes of Lesson :

- Main Competency.** The students are expected able to:
 - Explain why computer literacy is vital to success in today's world
 - Define the term, computer, and describe the relationship between data and information
 - Define the term, network, and identify benefits of sharing resources on a network
 - Distinguish between system software and application software
- Supporting Competency.** The students are expected able to:
 - Describe the five components of a computer: input devices, output devices, system unit, storage devices, and communications devices
 - Describe the uses of the Internet and World Wide Web
 - Differentiate among types, sizes, and functions of computers in each of these categories: personal computers (desktop), mobile computers and mobile devices, game consoles, servers, mainframes, supercomputers, and embedded computers
 - Describe the role of each element in an information system
 - Explain how home users, small office/home office users, mobile users, power users, and enterprise users each interact with computers
 - Describe how society uses computers in education, finance, government, health care, science, publishing, travel, and manufacturing

DETAIL OF LECTURING ACTIVITY

Phase	TOPIC: Lecturer / Facilitator Activity	Students activity	Method / Lecturing Tools / Remarks
Introduction	<ul style="list-style-type: none"> • Introduce the course objective, regulation and policy • Introduce the Textbooks Chap- 1 		Lecturing

Delivery	<ul style="list-style-type: none"> • What is a computer? • The components of a computer • Advantages and disadvantages of using computers • Networks and the internet • Computer software • Categories of computers • Elements of an information system • Examples of computer usage • Computer applications in society 	<ul style="list-style-type: none"> • Listening into the Lecturer • Read the Text Book • Surf the web 	<p>Beamer/ LCD Black / White Board</p> <p>Students Laptop,</p>
Closing	<ul style="list-style-type: none"> • Inform the student the next 2nd meeting material • give assessment / homework to the students 	<ul style="list-style-type: none"> • Listening to the lecturer 	Lecturing
Evaluation	<ul style="list-style-type: none"> • evaluate the students activity during the lesson • evaluate and observe, how the students solve the problem 		
Reference	Acad Regulation; Text Book Chap- 1		

WEEK : 2
 Duration : 2 x 50 minutes
 Topic : The Internet
 Sub-Topic : The Internet and the World Wide Web
 Accessing, Searching, Sharing, and Communicating.
 Connecting to the internet;
 Types of websites;
 Media on the Web;
 Other Internet Services

Learning Outcomes of Lesson :

1. **Main Competency.** The students are expected able to:
 - Describe uses of various types of websites
 - Briefly describe various broadband Internet connections
 - Describe the purpose of an IP address and its relationship to a domain name
 - Describe features of browsers and identify the components of a web address
 - Describe ways to enter effective search text
 - Explain benefits and risks of using social networking sites

2. **Supporting Competency.** The students are expected able to:
 - Identify and briefly describe the steps required for web publishing
 - Explain how the web uses graphics, animation, audio, video, and virtual reality
 - Explain how email, instant messaging, chat rooms, discussion forums, VoIP, and FTP work
 - Identify the rules of netiquette

DETAIL OF LECTURING ACTIVITY

Phase	TOPIC: Lecturer / Facilitator Activity	Students activity	Method / Lecturing Tools / Remarks
Introduction	<ul style="list-style-type: none"> • Introduce the Chapter 2 objectives; • Introduce the computer network and Internet 		Lecturing
Delivery	<ul style="list-style-type: none"> • Evolution of the internet • Connecting to the internet, access providers, how data & information travel the internet, IP-Address • Other internet services: E-Mail, instant messaging, Chat Rooms, VoIP, Newsgroups, FTP. 	<ul style="list-style-type: none"> • Listening into the Lecturer 	Beamer/ LCD Black / White Board Students Laptop,

Closing	<ul style="list-style-type: none"> • Inform the student the next 3rd meeting material • give assessment / homework to the students 	<ul style="list-style-type: none"> • Listening to the lecturer 	Lecturing
Evaluation	<ul style="list-style-type: none"> • evaluate the students activity during the lesson • evaluate and observe, how the students solve the problem 		
Reference	Text Book : Chapter 2		

WEEK : 3
Duration : 2 x 50 minutes
Topic : Computers and Mobile Devices
Sub-Topic : Desktop and Mobile Computers;
 Terminals, Servers, Supercomputers, and Embedded Computers;
 Cloud Computing;
 Mobile Devices, Game Devices;
 Ports and Connections;
 Health concerns of using Technology.

Learning Outcomes of Lesson :

1. **Main Competency.** The students are expected able to:
 - Describe the characteristics and uses of desktops, laptops, tablets, and handheld computers
 - Describe the characteristics and types of servers
 - Differentiate among POS terminals, ATMs, and self-service kiosks
 - Describe cloud computing and identify its uses
 - Describe the characteristics and uses of smartphones, digital cameras, portable media players, and e-book readers

1. **Supporting Competency.** The students are expected able to:
 - Describe the characteristics of and ways to interact with game devices
 - Identify uses of embedded computers
 - Differentiate a port from a connector, identify various ports and connectors, and differentiate among Bluetooth, Wi-Fi, and NFC wireless device connections
 - Identify safeguards against hardware theft and vandalism and hardware failure
 - Identify safeguards against hardware theft and vandalism and hardware failure

DETAIL OF LECTURING ACTIVITY

Phase	TOPIC: Lecturer / Facilitator Activity	Students activity	Method / Lecturing Tools / Remarks
Introduction	<ul style="list-style-type: none"> • Introduce the Chapter 3 objectives; • Introduce the computer and Mobile Devices 		Lecturing
Delivery	<ul style="list-style-type: none"> • the classification of Computers: Desktop (PC), Laptop, Tablets, Notebook, Servers, Cloud computing, Terminals; • the Mobile Devices: Smartphone, 	<ul style="list-style-type: none"> • Listening into the Lecturer • Surf the internet 	Beamer/ LCD Black / White Board

	Digital Camera, portable media players, E-Book reader; <ul style="list-style-type: none"> • the type of ports and connections; • the health concerns of using technology. 		Students Laptop,
Closing	<ul style="list-style-type: none"> • Inform the student the next 4th meeting material • give assessment / homework to the students 	<ul style="list-style-type: none"> • Listening to the lecturer 	Lecturing
Evaluation	<ul style="list-style-type: none"> • evaluate the students activity during the lesson • evaluate and observe, how the students solve the problem 		
Reference	Text Book : Chapter 3		

WEEK : 4, 5
Duration : 2 x 2 x 50 minutes
Topic : Programs and Apps: Using Software at Work, School, and Home.
Sub-Topic : Programs and Apps: The role of Operating System
 Application Software: Business SW, Graphics and Multimedia SW, Software for Home, Personal and Education Use;
 Application Software for Communications;
 Security Tools, File and Disk Management Tools;

Learning Outcomes of Lesson :

1. **Main Competency.** The students are expected able to:
 - Identify the general categories of programs and apps
 - Describe how an operating system interacts with applications and hardware
 - Differentiate among the ways you can acquire programs and apps
 - Identify key features of productivity applications
 - Identify the key features of graphics and multimedia applications

2. **Supporting Competency.** The students are expected able to:
 - Identify the uses of personal interest applications
 - Identify the purpose of software used in communications
 - Identify the key features of security tools
 - Identify the key features of file and disk management tools

DETAIL OF LECTURING ACTIVITY

Phase	TOPIC: Lecturer / Facilitator Activity	Students activity	Method / Lecturing Tools / Remarks
Introduction	<ul style="list-style-type: none"> • Introduce the Chapter 4 objectives; • Introduce the operating system (OS) and the apps briefly. 		Lecturing
Delivery	<ul style="list-style-type: none"> • Explain the role of system software (OS) in a computer; • Explain and shoe example of Business Software: Word Processing-, Spreadsheet-, Data base- Presentation-Software, Project Management SW, Accounting SW, Enterprise Computing SW; 	<ul style="list-style-type: none"> • Listening into the Lecturer • Read the Text Book 	Beamer/ LCD Black / White Board Students Laptop,

	<ul style="list-style-type: none"> • Explain and introduce the Graphics and Multimedia SW: CAD, Desktop Publishing, Image Processing, Photo Editing SW, Video/Audio Editing SW, and Multimedia Authoring SW. • Software for Home and Education Use: Personal Financial SW, Travel and Mapping SW, Entertainment SW. • App. Software for Communication; • Security tools, File and Disk Management Tools. 		
Closing	<ul style="list-style-type: none"> • Inform the student the next 6th meeting material • give assessment / homework to the students 	<ul style="list-style-type: none"> • Listening to the lecturer 	Lecturing
Evaluation	<ul style="list-style-type: none"> • evaluate the students activity during the lesson • evaluate and observe, how the students solve the problem 		
Reference	Text Book : Chapter 4		

WEEK : 6
 Duration : 2 x 50 minutes
 Topic : Digital Safety and Security: Identifying Threats, Issues, and Defenses
 Sub-Topic : Digital Security Risk;
 Internet and Network Attacks;
 Unauthorized Access and use;
 Software theft and Information thefts;
 Hardware thefts, vandalism, and Failure;
 Backing Up – the Ultimate Safeguards;
 Wireless Security;
 Ethics and society
 Information Privacy

Learning Outcomes of Lesson :

1. **Main Competency.** The students are expected able to:
 - Define the term, digital security risks, and briefly describe the types of cybercriminals
 - Describe various types of Internet and network attacks, and explain ways to safeguard against these attacks
 - Discuss techniques to prevent unauthorized computer access and use
 - Explain the ways that software manufacturers protect against software piracy
 - Discuss how encryption, digital signatures, and digital certificates work

3. **Supporting Competency.** The students are expected able to:
 - Identify safeguards against hardware theft, vandalism, and failure
 - Explain the options available for backing up
 - Identify risks and safeguards associated with wireless communications
 - Recognize issues related to information accuracy, intellectual property rights, codes of conduct, and green computing
 - Discuss issues surrounding information privacy

DETAIL OF LECTURING ACTIVITY

Phase	TOPIC: Lecturer / Facilitator Activity	Students activity	Method / Lecturing Tools / Remarks
Introduction	<ul style="list-style-type: none"> • Introduce the Chapter 5 objectives; • Introduce the Digital Safety and Security. 		Lecturing

Delivery	<ul style="list-style-type: none"> • Explain the cybercrime: Digital security and Risk; • Internet and network attacks: Malware , Botnets, Denial of Service Attacks, Back Doors, spooling, Safeguards against internet and Network attacks, and firewalls; • Unauthorized Access and Use: Safeguards against misused of access, access controls, possessed objects, biometric devices, digital forensic; • Software- Information- and Hardware Theft, vandalism, and Failure; • Wireless security; • Ethics and society, information privacy; 	<ul style="list-style-type: none"> • Listening into the Lecturer • Read the Text Book 	<p>Beamer/ LCD Black / White Board</p> <p>Students Laptop,</p>
Closing	<ul style="list-style-type: none"> • Inform the student the next 7th meeting material • give assessment / homework to the students: Topic to be prepare for the 15minutes presentation 	<ul style="list-style-type: none"> • Listening to the lecturer 	Lecturing
Evaluation	<ul style="list-style-type: none"> • evaluate the students activity during the lesson • evaluate and observe, how the students solve the problem 		
Reference	Text Book : Chapter 5		

WEEK : 7, 8
 Duration : 2 x 2 x 50 minutes
 Topic : Student Presentations.
 Sub-Topic : Students Presentations;

Learning Outcomes of Lesson :

1. **Main Competency.** The students are expected able to:
 - Show in their presentation an example of fundamental computer science in the daily life ;
 - Present a special topic in a the computer science;

2. **Supporting Competency.** The students are expected able to:
 - Collect information from the internet and presenting in front of audience;
 -

DETAIL OF LECTURING ACTIVITY

Phase	TOPIC: Lecturer / Facilitator Activity	Students activity	Method / Lecturing Tools / Remarks
Introduction	<ul style="list-style-type: none"> • Introduce the objective of presentation; 		Lecturing
Delivery	<ul style="list-style-type: none"> • .Evaluate and take score for the presentation based on: <ul style="list-style-type: none"> ❖ Contents; ❖ Language and gesture; ❖ References; ❖ Presentation skill; 	<ul style="list-style-type: none"> • Presenting their topic in front of the class; 	Beamer/ LCD Black / White Board Students Laptop,
Closing	<ul style="list-style-type: none"> • Inform the student the next 9th meeting material • give assessment / homework to the students 	<ul style="list-style-type: none"> • Listening to the lecturer 	Lecturing
Evaluation	<ul style="list-style-type: none"> • evaluate the students activity during the presentation; • evaluate and observe, how the students raise questions. 		
Reference	Text Book : Chapter 1-4, internet/www.		

WEEK : 9
Duration : 2 x 50 minutes
Topic : Inside Computers and Mobile Devices: Exploring the Computers.
Sub-Topic : Motherboards, Processors;
 Memory: RAM, Cache, ROM, Flash Memory, CMOS and access time;
 Data Representations;
 Cloud Computing;
 Adapters, Busses ,power supply and Battery.

Learning Outcomes of Lesson :

1. **Main Competency.** The students are expected able to:
 - Describe the various computer and mobile device cases and the contents they protect
 - Describe multi-core processors the components of a processor, and the four steps in a machine cycle
 - Identify characteristics of various personal computer processors on the market today, and describe the ways processors are cooled
 - Explain the advantages and services of cloud computing
 - Define a bit, and describe how a series of bits represents data
 - Explain how program and application instructions transfer in and out of memory

2. **Supporting Competency.** The students are expected able to:
 - Differentiate among the various types of memory
 - Describe the purpose of adapter cards, USB adapters, and ExpressCard modules
 - Explain the function of a bus
 - Explain the purpose of a power supply and batteries
 - Understand how to care for computers and mobile devices

DETAIL OF LECTURING ACTIVITY

Phase	TOPIC: Lecturer / Facilitator Activity	Students activity	Method / Lecturing Tools / Remarks
Introduction	<ul style="list-style-type: none"> • Introduce the Chapter 6 objectives; • Introduce inside Computers and Mobile Devices. 		Lecturing
Delivery	<ul style="list-style-type: none"> • Motherboards, and Processors: the Control Unit, Arithmetic Logic Unit, Machine cycles, Registers, system clocks, PC and Mobile Device Processors, processor cooling; • Memory types: RAM, ROM, Flash disk, HDD, Solid state Memory, 	<ul style="list-style-type: none"> • Listening into the Lecturer • Read the Text Book 	Beamer/ LCD Black / White Board Students

	ROM, and Cloud; <ul style="list-style-type: none"> • Memory access time • Data Representation: Bits, Bytes, and coding scheme; • Buses systems, Power supply and adapter; 		Laptop,
Closing	<ul style="list-style-type: none"> • Inform the student the next 10th meeting material • give assessment / homework to the students 	<ul style="list-style-type: none"> • Listening to the lecturer 	Lecturing
Evaluation	<ul style="list-style-type: none"> • evaluate the students activity during the lesson • evaluate and observe, how the students solve the problem 		
Reference	Text Book : Chapter 6		

WEEK : **10**
Duration : 2 x 50 minutes
Topic : Inputs and Outputs: Examining the Popular Devices.
Sub-Topic : Input Devices: Keyboard, Pointing Devices, Touch Screens, Pen Input, Motion Input, Voice input, video input, scanner and reading devices;
 Output Devices: Displays, Printer, Speaker / Headphone,

Learning Outcomes of Lesson :

1. **Main Competency.** The students are expected able to:
 - Differentiate among various types of keyboards: standard, compact, on-screen, virtual, ergonomic, gaming, and wireless
 - Describe characteristics of various pointing devices: mouse, touchpad, pointing stick, and trackball
 - Describe various uses of touch screens
 - Describe various types of pen input: stylus, digital pen, and graphics tablet
 - Describe various uses of motion input, voice input, and video input

2. **Supporting Competency.** The students are expected able to:
 - Differentiate among various scanners and reading devices
 - Explain the characteristics of various displays
 - Summarize the various types of printers
 - Identify the purpose and features of speakers, headphones and ear buds, data projectors, interactive whiteboards, and force-feedback game controllers and tactile output
 - Identify various assistive technology input and output methods

DETAIL OF LECTURING ACTIVITY

Phase	TOPIC: Lecturer / Facilitator Activity	Students activity	Method / Lecturing Tools / Remarks
Introduction	<ul style="list-style-type: none"> • Introduce the Chapter 7 objectives; • Introduce Input- and Output-Devices. 		Lecturing
Delivery	<ul style="list-style-type: none"> • What is inputs; • Show and explain example of input-devices: Keyboards, Mouse, Touchpad, Pointing stick, Trackball, touch screen, stylus, digital pen, graphics tablet, scanners, RFID-, Barcode-readers, Audio- and video input; 	<ul style="list-style-type: none"> • Listening into the Lecturer • Read the Text Book 	Beamer/ LCD Black / White Board Students Laptop,

	<ul style="list-style-type: none"> • What is output • Display technology and quality: DTVs and smart TVs; • Printers: type and technology of printers; • Other output devices: speaker, headphone, interactive white boards, game controllers and tactile output. 		
Closing	<ul style="list-style-type: none"> • Inform the student the next 11th meeting material • give assessment / homework to the students 	<ul style="list-style-type: none"> • Listening to the lecturer 	Lecturing
Evaluation	<ul style="list-style-type: none"> • evaluate the students activity during the lesson • evaluate and observe, how the students solve the problem 		
Reference	Text Book : Chapter 7		

WEEK : 11
 Duration : 2 x 50 minutes
 Topic : Digital storage: Preserving on Media and in the Cloud.
 Sub-Topic : Storage, Hard disks, Flash Memory, optical Discs;
 Cloud storage,
 Enterprise Storage,
 Other memory types.

Learning Outcomes of Lesson :

1. **Main Competency.** The students are expected able to:

- Differentiate between storage and memory
- Describe the characteristics of internal hard disks
- Identify uses of external hard disks and RAID
- Describe the benefits of solid-state drives
- Differentiate among various types of memory cards and USB flash drives

2. **Supporting Competency.** The students are expected able to:

- Discuss the benefits and uses of cloud storage
- Describe characteristics of and differentiate among types of optical discs
- Explain types of enterprise storage
- Identify uses of magnetic stripe cards, smart cards, RFID tags, and microfilm and microfiche

DETAIL OF LECTURING ACTIVITY

Phase	TOPIC: Lecturer / Facilitator Activity	Students activity	Method / Lecturing Tools / Remarks
Introduction	<ul style="list-style-type: none"> • Introduce the Chapter 8 objectives; • Introduce Digital Storage 		Lecturing
Delivery	<ul style="list-style-type: none"> • What is storage and memory; • Storage vs. Memory, Storage-Capacity, and -access time; • Hard disk: characteristics, Disk cache, RAID, external HDD, maintaining data stored in HDD; • Flash memory: SSD, Memory cards, USB Flash drives; • Optical Discs: characteristics, CDs, and DVDs. • Cloud Memory; • Other type of Storage system. 	<ul style="list-style-type: none"> • Listening into the Lecturer • Read the Text Book 	Beamer/ LCD Black / White Board Students Laptop,

Closing	<ul style="list-style-type: none"> • Inform the student the next 12th meeting material • give assessment / homework to the students 	<ul style="list-style-type: none"> • Listening to the lecturer 	Lecturing
Evaluation	<ul style="list-style-type: none"> • evaluate the students activity during the lesson • evaluate and observe, how the students solve the problem 		
Reference	Text Book : Chapter 8		

WEEK : 12
Duration : 2 x 50 minutes
Topic : Operating Systems: Managing, Coordinating, and Monitoring Resources.
Sub-Topic : Operating systems and function;
 Type of Operating Systems;
 PC/Laptop/Notebook and Desktop OS,
 Smartphone OS, and Server OS.

Learning Outcomes of Lesson :

1. **Main Competency.** The students are expected able to:
 - Define an operating system
 - Describe the start-up process and shutdown options on computers and mobile devices
 - Explain how an operating system provides a user interface, manages programs, manages memory, and coordinates tasks
 - Describe how an operating system enables users to configure devices, establish an Internet connection, and monitor performance
 - Identify file management and other tools included with an operating system, along with ways to update operating system software

2. **Supporting Competency.** The students are expected able to:
 - Explain how an operating system enables users to control a network or administer security
 - Summarize the features of several desktop operating systems
 - Briefly describe various server operating systems
 - Summarize the features and uses of several mobile operating systems

DETAIL OF LECTURING ACTIVITY

Phase	TOPIC: Lecturer / Facilitator Activity	Students activity	Method / Lecturing Tools / Remarks
Introduction	<ul style="list-style-type: none"> • Introduce the Chapter 9 objectives; • Introduce the Operating Systems 		Lecturing
Delivery	<ul style="list-style-type: none"> • Operating System Function: Starting Up and shutting down of computer and Mobile devices, managing - programs, and -memory; • Types of PC/Laptop/Notebook OS: Windows, Linux, UNIX, MacOS. • Type of Mobile Devices OS: Android, iOS, Windows Phone. 	<ul style="list-style-type: none"> • Listening into the Lecturer • Read the Text Book 	Beamer/ LCD Black / White Board Students Laptop,

Closing	<ul style="list-style-type: none"> • Inform the student the next 13th meeting material • give assessment / homework to the students 	<ul style="list-style-type: none"> • Listening to the lecturer 	Lecturing
Evaluation	<ul style="list-style-type: none"> • evaluate the students activity during the lesson • evaluate and observe, how the students solve the problem 		
Reference	Text Book : Chapter 9		

WEEK : 13
 Duration : 2 x 50 minutes
 Topic : Communications and Networks: Sending and Receiving Digital Content.
 Sub-Topic : Communication Standard protocols;
 Communication Software;
 Communication -Lines and –devices.
 Home Network,
 Transmission Media, Wireless transmission Media

Learning Outcomes of Lesson :

1. **Main Competency.** The students are expected able to:
 - Define an operating system
 - Describe the start-up process and shutdown options on computers and mobile devices
 - Explain how an operating system provides a user interface, manages programs, manages memory, and coordinates tasks
 - Describe how an operating system enables users to configure devices, establish an Internet connection, and monitor performance
 - Identify file management and other tools included with an operating system, along with ways to update operating system software

2. **Supporting Competency.** The students are expected able to:
 - Explain how an operating system enables users to control a network or administer security
 - Summarize the features of several desktop operating systems
 - Briefly describe various server operating systems
 - Summarize the features and uses of several mobile operating systems

DETAIL OF LECTURING ACTIVITY

Phase	TOPIC: Lecturer / Facilitator Activity	Students activity	Method / Lecturing Tools / Remarks
Introduction	<ul style="list-style-type: none"> • Introduce the Chap- 10 objectives; • Introduce the Communications and Network System. 		Lecturing
Delivery	<ul style="list-style-type: none"> • Communication and Networks: LAN, MAN, WAN and PAN, Networks Architecture and Topology; • Network Communications standard protocols: Ethernet, Token Ring, TCP/IP, Wi-Fi, Bluetooth, UWB, IrDA, RFID, NFC, WiMAX; 	<ul style="list-style-type: none"> • Listening into the Lecturer • Read the Text Book 	Beamer/ LCD Black / White Board Students Laptop,

	<ul style="list-style-type: none"> • Communication software and lines: Cable, DSL, ISDN, FTTP, T-Carrier, ATM; • Communication Devices: Modem, cable, DSL and ISDN, Wireless Modem, Routers, Network cards, Hubs and Switches. • Physical Transmission Media: Twisted pair Cable, Coaxial cable, Fiber Optic cable; • Wireless Transmission media: Infrared, Broadcast Radio, Cellular Radio, Microwaves, Communication Satellites. 		
Closing	<ul style="list-style-type: none"> • Inform the student the next 14th meeting material • give assessment / homework to the students 	<ul style="list-style-type: none"> • Listening to the lecturer 	Lecturing
Evaluation	<ul style="list-style-type: none"> • evaluate the students activity during the lesson • evaluate and observe, how the students solve the problem 		
Reference	Text Book : Chapter 10		

WEEK : 14
 Duration : 2 x 50 minutes
 Topic : Information and Data Management:
 Sub-Topic : Organizing, Verifying, Maintaining, and Accessing.;
 Database, Data, and Information;
 File Processing vs. Database.
 Database Management System,
 Transmission Media, Wireless transmission Media

Learning Outcomes of Lesson :

1. **Main Competency.** The students are expected able to:
 - Define an operating system
 - Describe the start-up process and shutdown options on computers and mobile devices
 - Explain how an operating system provides a user interface, manages programs, manages memory, and coordinates tasks
 - Describe how an operating system enables users to configure devices, establish an Internet connection, and monitor performance
 - Identify file management and other tools included with an operating system, along with ways to update operating system software

2. **Supporting Competency.** The students are expected able to:
 - Explain how an operating system enables users to control a network or administer security
 - Summarize the features of several desktop operating systems
 - Briefly describe various server operating systems
 - Summarize the features and uses of several mobile operating systems

DETAIL OF LECTURING ACTIVITY

Phase	TOPIC: Lecturer / Facilitator Activity	Students activity	Method / Lecturing Tools / Remarks
Introduction	<ul style="list-style-type: none"> • Introduce the Chap- 10 objectives; • Introduce the Communications and Network System. 		Lecturing
Delivery	<ul style="list-style-type: none"> • Communication and Networks: LAN, MAN, WAN and PAN, Networks Architecture and Topology; • Network Communications standard protocols: Ethernet, Token Ring, TCP/IP, Wi-Fi, Bluetooth, UWB, IrDA, RFID, NFC, WiMAX; 	<ul style="list-style-type: none"> • Listening into the Lecturer • Read the Text Book 	Beamer/ LCD Black / White Board Students Laptop,

	<ul style="list-style-type: none"> • Communication software and lines: Cable, DSL, ISDN, FTTP, T-Carrier, ATM; • Communication Devices: Modem, cable, DSL and ISDN, Wireless Modem, Routers, Network cards, Hubs and Switches. • Physical Transmission Media: Twisted pair Cable, Coaxial cable, Fiber Optic cable; • Wireless Transmission media: Infrared, Broadcast Radio, Cellular Radio, Microwaves, Communication Satellites. 		
Closing	<ul style="list-style-type: none"> • Inform the student the next final exam materials and topics. 	<ul style="list-style-type: none"> • Listening to the lecturer 	Lecturing
Evaluation	<ul style="list-style-type: none"> • evaluate the students activity during the lesson • evaluate and observe, how the students solve the problem 		
Reference	Text Book : Chapter 10		