University of Kerala

Discipline	**PHYSICS**				
Course Code	**UK3DSEPHY206**				
Course Title	**COMPUTER HARDWARE AND OPERATING SYSTEM**				
Type of Course	**DSE**				
Semester	**III**				
Academic Level	**200 - 299**				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	4 Hrs	-	-	4 Hrs
Pre-requisites					
Course Summary	This course gives an overview of different hardware components used in a personal computer. It also discusses how to assemble or disassemble components of a computer for better performance. General idea of operating system is discussed and procedure to configure a computer with a new operating system (Linux and Windows) is discussed in detail. This course will helps one to assemble a new PC and configure it with a new OS.				

BOOKS FOR STUDY:

1. PC Hardware A Beginner's Guide: Ron Gilster, McGraw-Hill Education (India) Pvt Ltd.
2. The architecture of computer hardware, system software and networking-An information technology approach: Irv Englander, Wiley Publications
3. PC Assembly and Installation: Dr. Tariq Hussain Sheikh, Naresh Kumar, Books clinic Publications
4. Operating Systems: Achyut S Godbole, Atul Kahate, Tata Mc Graw-Hill Education
5. The official Ubuntu Book: Benjamin Mako Hill, Matthew Helmke, Corey Burger, Pearson Education Inc.

BOOKS FOR REFERENCE:

1. Computing Fundamentals, Introduction to Computers: Faithe Wempen, Wiley publications
2. Guide to Operating Systems: Greg Tomsho, Cengage Learning.
3. Operating Systems made easy: C. Madana Kumar Reddy, Lexmi Publications.
4. Operating Systems Internals and Design principles: William Stallings, Prentice Hall publication 7th Edn

DETAILED SYLLABUS: THEORY

Module	Unit	Content	Hrs	CO No
I		**Evolution of computers (Book 1)**	**12**	
	1	Overview of Systems and components, Electronics of the PC – Conductors, Insulators, and Semiconductors – Electronic building blocks of PC (Book1: Chapter1 &2)	3	1
	2	Components of the computer, the concept of virtualization, Architectural history of the computer - hardware, operating system, communication network and internet (Book 2: Chapter1)	5	1
	3	Evolution of PC microprocessor (Book1: Chapter 3)	2	1
	4	The general concepts of systems, IT System architecture (Book2: Chapter 2)	2	1
II		**Overview of Computer Hardware (Book 1, 3)**	12	
	5	Computer hardware-CPU, Motherboard, RAM, HDD, ODD, the power supply (SMPS), Mouse, Monitor.	2	1
	6	Motherboard-Definition, Architecture, Chipset, Bus, CPU Sockets, Interface Ports used to connect different Peripherals I/O Ports (PS/2, Serial, Parallel, USB, VGA, HDMI, Audio, Ethernet).	5	1
	7	Memory-Introduction to RAM, ROM, Cache Memory, Buffer Memory, Virtual Memory, SD, RD, DDR, DDR2, DDR3, Hybrid Memory.	5	1
III		**Computer Assembly (Book 3)**	**12**	
	8	Assembling and Disassembling a PC, Precautions to be taken while assembling the PC.	4	2

	9	Introduction to BIOS/CMOS Setup, POST (Power on Self-Test). BIOS/CMOS Configuration (Date, Time, Enable/Disable Devices).	4	2
	10	Dual BIOS Feature BIOS/CMOS Setup, Booting Sequence/Boot Order	4	2
IV	**Operating Systems (Book 4, 5)**		**12**	
	11	Operating Systems objectives and functions	2	3
	12	Evolution of operating systems, Types of operating systems, Different services of the operating system	4	3
	13	GUI, Kernel, Booting, Virtual Machine, OS design consideration for Multiprocessor and Multicore	4	3
	14	Overview on Operating Systems- WINDOWS, UNIX, LINUX	2	4
V*	**Configuring a computer with Linux OS (Book 4, 5)**		**12**	
	15	Choosing Ubuntu version, Getting Ubuntu, Installing Ubuntu	8	5
	16	Performing Dual Boot / Multi Boot	4	5

COURSE OUTCOMES

No.	Upon completion of the course the graduate will be able to	Cognitive Level	PSO addressed
CO-1	Discuss the main features of computer hardware, peripherals various memory systems used in it.	U	PSO 5
CO-2	Examine the assembling of PC and introduce the Basic Input/Output System -BIOS	U, Ap	PSO 5,7
CO-3	Describe the evolution, objectives and functions of various operating systems	U	PSO 5
CO-4	Identify various operating Systems and their applications	U	PSO 5
CO-5	Illustrate the methods to configure a computer with Linux and Windows OS	U, Ap	PSO 5,7

R-Remember, U-Understand, Ap-Apply, An-Analyse, E-Evaluate, C-Create

Name of the Course: COMPUTER HARDWARE AND OPERATING SYSTEM

Credits: 4:0:0 (Lecture: Tutorial: Practical)

CO No.	CO	PO / PSO	Cognitive Level	Knowledge Category	Lecture (L)/ Tutorial (T)	Practical (P)
CO-1	Discuss the features of computer hardware and peripherals and compare various memory systems	PO 1/ PSO 5	U	C	L	-
CO-2	Examine the assembling of PC and introduce the Basic Input/Output System	PO1,6/ PSO 5,7	U, Ap	C, P	L	-
CO-3	Describe the evolution, objectives and functions of various operating systems	PO1/ PSO 5	U	C	L	-
CO-4	Identify various operating Systems and their applications	PO1/ PSO 5	U	C	L	-
CO-5	Illustrate the methods to configure a computer with Linux and Windows OS	PO1,6/ PSO 5,7	U, Ap	C, P	T	-

F-Factual, C- Conceptual, P-Procedural, M-Metacognitive

Mapping of COs with PSOs and POs :

	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
CO-1	-	-	-	-	1	-	-	1	-	-	-	-	-	-	-
CO-2	-	-	-	-	1	-	2	1	-	-	-	-	2	-	-
CO-3	-	-	-	-	2	-	-	1	-	-	-	-	-	-	-
CO-4	-	-	-	-	1	-	-	1	-	-	-	-	-	-	-
CO-5	-	-	-	-	2	-	2	1	-	-	-	-	2	-	-

Correlation Levels:

Level	-	1	2	3
Correlation	Nil	Slightly / Low	Moderate / Medium	Substantial / High

Assessment Rubrics:

- Quiz / Assignment/ Discussion / Seminar
- Midterm Exam
- Programming Assignments
- Final Exam

Mapping of COs to Assessment Rubrics:

CO No	Internal Exam	Assignment	Project Evaluation	End Semester Examinations
CO-1	✓	-	-	✓
CO-2	✓	-	-	✓
CO-3	✓	-	-	✓
CO-4	-	✓	-	✓
CO-5	-	✓	-	-