ENGINEERING WORKSHOP PRACTICE (COMPUTER GROUP)   **Course Code : 311002**

Programme Name/s	**: Artificial Intelligence/ Artificial Intelligence and Machine Learning/ Cloud Computing and Big Data/ Computer Technology/** **Computer Engineering/ Computer Science & Engineering/ Data Sciences/ Computer Hardware & Maintenance/** **Information Technology/ Computer Science & Information Technology**
Programme Code	**: AI/ AN/ BD/ CM/ CO/ CW/ DS/ HA/ IF/ IH**
Semester	**: First**
Course Title	**: ENGINEERING WORKSHOP PRACTICE (COMPUTER GROUP)**
Course Code	**: 311002**

I.   RATIONALE

A diploma engineer in his/her professional life works in a typical business environment where s/he interacts with computers, peripherals and related devices and instruments. They must be able to use and maintain these equipment's authentically. Diploma pass out must be able to use and maintain these system peripherals authentically. They must also possess basic skills of assembling desktop computers, interfacing with peripheral devices, installing new devices and carry out basic preventive and breakdown maintenance. Hence, this course is designed to develop these vital skills in them through various workshop-based activities.

II.   INDUSTRY / EMPLOYER EXPECTED OUTCOME

The aim of this course is to help the student to attain the following industry identified Outcome through various teaching learning experiences: Perform simple maintenance operations on computer system, peripherals and network. Set up small LAN

III.   COURSE LEVEL LEARNING OUTCOMES (COS)

Students will be able to achieve & demonstrate the following COs on completion of course based learning

- CO1 - Carry-out elementary level maintenance of a PC.
- CO2 - Create partitions and format hard disk drive.
- CO3 - Install and configure Operating system.
- CO4 - Configure different types of peripheral devices.
- CO5 - Setup small Local Area Network.
- CO6 - Use diagnostic software for fault finding in Computer system.

IV.   TEACHING-LEARNING & ASSESSMENT SCHEME

Course Code	Course Title	Abbr	Course Category/s	Learning Scheme					Credits	Assessment Scheme											Total Marks
				Actual Contact Hrs./Week			SLH	NLH		Paper Duration	Theory				Based on LL & TL				Based on SL		
																	Practical				
				CL	TL	LL					FA-TH	SA-TH	Total		FA-PR		SA-PR		SLA		
											Max	Max	Max	Min	Max	Min	Max	Min	Max	Min	
311002	ENGINEERING WORKSHOP PRACTICE (COMPUTER GROUP)	WPC	SEC	-	-	4	-	4	2	-	-	-	-	-	50	20	50@	20	-	-	100

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Total IKS Hrs for Sem. : 0 Hrs

Abbreviations: CL- ClassRoom Learning , TL- Tutorial Learning, LL-Laboratory Learning, SLH-Self Learning Hours, NLH-Notional Learning Hours, FA - Formative Assessment, SA -Summative assessment, IKS - Indian Knowledge System, SLA - Self Learning Assessment

Legends: @ Internal Assessment, # External Assessment, *# On Line Examination , @$ Internal Online Examination

Note :

1. FA-TH represents average of two class tests of 30 marks each conducted during the semester.
2. If candidate is not securing minimum passing marks in FA-PR of any course then the candidate shall be declared as "Detained" in that semester.
3. If candidate is not securing minimum passing marks in SLA of any course then the candidate shall be declared as fail and will have to repeat and resubmit SLA work.
4. Notional Learning hours for the semester are (CL+LL+TL+SL)hrs.* 15 Weeks
5. 1 credit is equivalent to 30 Notional hrs.
6. * Self learning hours shall not be reflected in the Time Table.
7. * Self learning includes micro project / assignment / other activities.

V. THEORY LEARNING OUTCOMES AND ALIGNED COURSE CONTENT

Sr.No	Theory Learning Outcomes (TLO's)aligned to CO's.	Learning content mapped with Theory Learning Outcomes (TLO's) and CO's.	Suggested Learning Pedagogies.

VI. LABORATORY LEARNING OUTCOME AND ALIGNED PRACTICAL / TUTORIAL EXPERIENCES.

Practical / Tutorial / Laboratory Learning Outcome (LLO)	Sr No	Laboratory Experiment / Practical Titles / Tutorial Titles	Number of hrs.	Relevant COs
LLO 1.1 Identify desktop/laptop by its type and verify its specifications LLO 1.2 Identify type of server and verify its Specification	1	Lab Exp:1 Desktop/laptop/server type identification and its specification	2	CO1
LLO 2.1 Open PC Panel and Identify Components LLO 2.2 Clean inside PC - Boards and Slots	2	Lab Exp:2 Identification and cleaning of Components	4	CO1
LLO 3.1 Undertake Preventive Maintenance of PC using vacuum cleaner and simple tools	3	Lab Exp:3 Preventive Maintenance of PC	2	CO1
LLO 4.1 Connect/disconnect power socket and controller socket to disk drives and motherboard.	4	Lab Exp:4 Perform Internal socket connections	2	CO1
LLO 5.1 Configure different BIOS settings in computer system	5	Lab Exp:5 Perform BIOS settings	2	CO1
LLO 6.1 Partition and manage hard disk LLO 6.2 Format hard drives with different file systems.	6	Lab Exp:6 Manage a Hard disk	2	CO2
LLO 7.1 Install Operating System – Windows family (such as Windows 10, 11)	7	Lab Exp:7 Installation of Windows Operating System	2	CO3
LLO 8.1 Install Operating System –Unix family (such as Linux/Ubuntu/Centos)	8	Lab Exp:8 Installation of Unix family Operating System	2	CO3
LLO 9.1 Clean peripheral devices and connect it to computer	9	Lab Exp:9 Peripheral devices cleaning	4	CO4
LLO 10.1 Install local printer by applying various types of configuration settings LLO 10.2 Remove and mount cartridge, troubleshoot paper jam	10	Lab Exp:10 Installation of local and Network printer	2	CO4
LLO 11.1 Share the printer, devices, folders on a network	11	Lab Exp:11 Share devices, files and folders	4	CO4
LLO 12.1 Install and configure scanner	12	Lab Exp:12 Installation of scanner	2	CO4

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Practical / Tutorial / Laboratory Learning Outcome (LLO)	Sr No	Laboratory Experiment / Practical Titles / Tutorial Titles	Number of hrs.	Relevant COs
LLO 13.1 Set and configure monitor/display, Speaker, Microphone and LCD Projector	13	Lab Exp:13 Set Input/output devices	2	CO4
LLO 14.1 Prepare and test crossover and straight cable, CAT5, CAT6 Cable, using connector, crimping tools, splicer	14	Lab Exp:14 Make CAT5, CAT6 Cable	2	CO5
LLO 15.1 Connect/disconnect LAN Cable, External Hard disk, Modem, LCD/DLP Projector	15	Lab Exp:15 Connect devices to external port	2	CO5
LLO 16.1 Connect Modem, Hub/Switches/routers and verify the connection	16	Lab Exp:16 Networking devices connection	2	CO5
LLO 17.1 Check different types of fiber optic cable's construction and connectivity	17	Lab Exp:17 Fiber optic cable construction	2	CO5
LLO 18.1 Connect two Switches/Hubs using normal and uplink port	18	Lab Exp:18 Connection of Switches/Hubs	2	CO5
LLO 19.1 Configure devices to setup Wi-Fi environment	19	Lab Exp:19 Setup Wi-Fi environment	2	CO5
LLO 20.1 Create a small wired network environment	20	Lab Exp:20 Setup wired network environment	4	CO5
LLO 21.1 Set and configure blue tooth based wireless mouse, keyboard and other devices	21	Lab Exp:21 Setup wireless I/O devices	2	CO5
LLO 22.1 Use diagnostic software for PC fault finding	22	Lab Exp:22 Fault diagnostics	4	CO6
LLO 23.1 Install Antivirus and Configure various settings	23	Lab Exp:23 Anti-viruses installation	2	CO6
LLO 24.1 Replace internal components of PC	24	Lab Exp:24 Component replacement	4	CO6

Note : Out of above suggestive LLOs -

- '*' Marked Practicals (LLOs) Are mandatory.
- Minimum 80% of above list of lab experiment are to be performed.
- Judicial mix of LLOs are to be performed to achieve desired outcomes.

VII. SUGGESTED MICRO PROJECT / ASSIGNMENT/ ACTIVITIES FOR SPECIFIC LEARNING / SKILLS DEVELOPMENT (SELF LEARNING)

Assignment

- --

Micro project

- --

Note :

- Above is just a suggestive list of microprojects and assignments; faculty must prepare their own bank of microprojects, assignments, and activities in a similar way.
- The faculty must allocate judicial mix of tasks, considering the weaknesses and / strengths of the student in acquiring the desired skills.
- If a microproject is assigned, it is expected to be completed as a group activity.
- SLA marks shall be awarded as per the continuous assessment record.
- Incase the course does not have associated SLA component, above suggestive listings is applicable to Tutorials and maybe considered for FA-PR evaluations.

VIII. LABORATORY EQUIPMENT / INSTRUMENTS / TOOLS / SOFTWARE REQUIRED

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Sr.No	Equipment Name with Broad Specifications	Relevant LLO Number
1	Computer system with all necessary components like: motherboard, random access memory (RAM), read-only memory (ROM), Graphics cards, sound cards, internal hard disk drives, DVD drive, network interface card	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,2
2	Laser Printer	10,11
3	Scanner	12
4	Cat5/Cat6 cable, with RJ 45 Connectors, LAN tester	14
5	LCD/DLP Projector(Epson EB-X49 XGA Projector Brightness: 3600lm with HDMI Port (Optional Wi-Fi).	15
6	EXternal Hard Disk(500 GB/1 TB)	15
7	Modems, hubs, switches, Router	16
8	Fiber optic cable with SC, ST, LC Connectors	17
9	Hub/Switches/Routers	18
10	Wi-Fi set-up with access point and repeater	19
11	Computer Maintenance kit	2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,
12	Light vacuum cleaner, approx. 200 watts with brushes and accessories	2,3,9
13	Bluetooth based wireless mouse and keyboard or any other device	21
14	Fault finding software, antivirus	22,23
15	Operating System, Hard Disk	6,8

IX. SUGGESTED WEIGHTAGE TO LEARNING EFFORTS & ASSESSMENT PURPOSE (Specification Table) : NOT APPLICABLE

X. ASSESSMENT METHODOLOGIES/TOOLS

Formative assessment (Assessment for Learning)

- Rubrics for COs , Terms work , Presentation

Summative Assessment (Assessment of Learning)

- End of Term Examination (Lab. performance), Viva-voce

XI. SUGGESTED COS - POS MATRIX FORM

Course Outcomes (COs)	Programme Outcomes (POs)							Programme Specific Outcomes* (PSOs)		
	PO-1 Basic and Discipline Specific Knowledge	PO-2 Problem Analysis	PO-3 Design/ Development of Solutions	PO-4 Engineering Tools	PO-5 Engineering Practices for Society, Sustainability and Environment	PO-6 Project Management	PO-7 Life Long Learning	PSO-1	PSO-2	PSO-3
CO1	1	1	-	3	-	-	-			
CO2	1	-	-	2	-	-	-			
CO3	1	-	-	2	-	-	1			

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CO4	-	-	-	2	-	-	1			
CO5	1	1	1	2	-	-	-			
CO6	-	2	1	2	-	-	-			

Legends :- High:03, Medium:02,Low:01, No Mapping: -
*PSOs are to be formulated at institute level

XII. SUGGESTED LEARNING MATERIALS / BOOKS

Sr.No	Author	Title	Publisher with ISBN Number
1	James, K.L.	1 The computer hardware installation, interfacing, troubleshooting and maintenance	PHI Learning, New Delhi, 2014 ISBN: 978-81-203-4798-4
2	Minasi, Mark	The Complete PC Upgrade And maintenance Guide	BPB Publication, New Delhi ISBN:978-81-265-0627-9
3	Kadam, Sachin	Computer Architecture and Maintenance Vol.1	Shroff Publication, Mumbai ISBN: 978-9350230244
4	Craig Zacker, John Rourke	The Complete Reference PC Hardware	Mc Graw Hill Education ISBN-13:978-0070436060

XIII . LEARNING WEBSITES & PORTALS

Sr.No	Link / Portal	Description
1	http://www.ciscopress.com/articles/article.asp?p=2086239&seqNum=4 Essential Introduction to Computer	Reading material about computer Lab Procedure and tool use
2	http://www.instructables.com/id/Computer-Assembly/	Reading material about Computer assembly
3	http://www.liutilities.com/how-to/operate-a-laptop-computer/	Article about How To Operate a Laptop Computer
4	https://video.search.yahoo.com/search/video?fr=mcafee&ei=UTF-8&p=hardware+maintenance+and+troublesho	Video about Trouble Shooting of Computer
5	geeksforgeeks.org/how-to-set-up-a-LAN-network	Reading material about Process to set a LAN
6	https://www.youtube.com/watch?v=cc2fyg-B5WE	Video about setting a LAN

Note :

- Teachers are requested to check the creative common license status/financial implications of the suggested online educational resources before use by the students

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