GOVERNMENT POLYTECHNIC, NAGPUR.
(An Autonomous Institute of Govt. of Maharashtra)

COURSE CURRICULUM

PROGRAMME	:	**DIPLOMA IN CM/IT**
LEVEL NAME	:	**PROFESSIONAL COURSES**
COURSE CODE	:	**CM412E**
COURSE TITLE	:	**COMPUTER HARDWARE AND MAINTENANCE**
PREREQUISITE	:	**NIL**
TEACHING SCHEME	:	**TH: 00; TU: 00; PR: 04(CLOCK HRs.)**
TOTAL CREDITS	:	**02**(1 TH/TU CREDIT = 1 CLOCK HR., 1 PR CREDIT = 2 CLOCK HR.)
TH. TEE	:	**NIL**
PR. TEE	:	**02 HRs (External)**
PT.	:	**NIL**

❖ **RATIONALE:**

       Computer architecture is concerned with the structure and behavior of the various functional modules of the computer and their interaction, the course provides the necessary understanding of the hardware operation of digital computers. This course develops student's technology skills required for troubleshooting computer software and hardware problems. Students will learn software and hardware troubleshooting techniques used to identify and correct computer problems.

❖ **COURSE OUTCOMES:**
After completing this course students will be able to–

1. Connect the computer peripherals by identifying their matching internal/external ports.
2. Assemble/setup and upgrade personal computer system.
3. Install, configure, and upgrade computer hardware and software.
4. Use CMOS setup to perform system setting.
5. Perform preventive maintenance of computer peripherals.
6. Identify Hazardous Substances in e-Waste and different ways of e-Recycling

❖ **COURSE DETAILS:**

A. THEORY :

Units	Specific Learning Outcomes (Cognitive Domain)	Topics and subtopics	Hrs.
NIL			

B. LIST OF PRACTICALS/LABORATORY EXPERIENCES/ASSIGNMENTS:

Practicals	Specific Learning Outcomes (Psychomotor Domain)	Units	Hrs.
1.	Identify major components and sub-systems of Personal Computer by visual examination.	Introduction to Computer Hardware	2
2	Identify the components needed to convert a PC into a "Multimedia PC".		2
3	Assemble and disassemble a PC, with a view towards upgrading PCs by motherboard replacement and substitution of major components.		4
4	Identify the hardware layout of Desktop computer and Laptops.		4
5	Install and configure hard disk drive.	Installation of Peripheral Devices	4
6	Install and configure CD-ROM drive, sound card and video card.		6
7	Install Scanner, Modem, Laser Printer.		6
8	Perform system setting using CMOS setup	CMOS Setup	6
9	Identify most typical kinds of hardware failures in an IBM-class PC when presented with a faulty PC.	Troubleshooting of Computer Hardware	4
10	Troubleshoot following : a) Problems related to Monitor b) Problems related to Processor c) Problems related to Keyboard and Mouse d) Problems related to Printer.		4
11	Install antivirus software.		2
12	Use diagnostic and evaluation software (such as Check it or Norton Utilities) to analyze or troubleshoot an operating system or faulty PC.		4
13	Prepare the checklist needed for preventive maintenance of computer hardware.	Hardware Maintenance and Introduction to e-Waste	2
14	Perform Preventive Maintenance of a computer system.		4
15	Identify Hazardous Substances in e-Waste and different ways of e-Recycling.		2
16	Install and use network software and other kinds of data communications software (such as Novell Netware and Procomm).	Network Related Troubleshooting	2
17	Install and troubleshoot a network card in a PC.		2
		Skill Assessment	4
		Total	64

❖ **SPECIFICATION TABLE FOR THEORY PAPER** : NIL

❖ **QUESTION PAPER PROFILE FOR THEORY PAPER** : NIL

❖ **ASSESSMENT AND EVALUATION SCHEME:**

		What	To Whom	Frequency	Max Marks	Min Marks	Evidence Collected	Course Outcomes
Direct Assessment Theory	**CA (Continuous Assessment)**	Progressive Test (PT)	Students	Two PT (average of two tests will be computed)	--	--	--	--
		Assignments		Continuous	--	--	--	--
	TEE (Term End Examination)	End Exam	Students	End Of the Course	--	--	--	--
				Total	--	--		
Direct Assessment Practical	**CA (Continuous Assessment)**	Skill Assessment	Students	Continuous	20	--	Rubrics & Assessment Sheets	1, 2, 3, 4,5,6
		Journal Writing		Continuous	05	--	Journal	1, 2, 3, 4,5,6
				TOTAL	**25**	**10**		
	TEE (Term End Examination)	End Exam	Students	End Of the Course	**50**	**20**	Rubrics & Practical Answer Sheets	1, 2, 3, 4,5,6
Indirect Assessment		Student Feedback on course	Students	After First Progressive Test	Student Feedback Form			1, 2, 3, 4,5,6
		End Of Course		End Of The Course	Questionnaires			

❖ **SCHEME OF PRACTICAL EVALUATION:**

S.N.	Description	Max. Marks
1	Activities: Identification of hardware devices, Writing steps for installation and configuring hardware devices, finding problems of hardware parts	20
2	Performance	20
3	Viva voce	10
	TOTAL	**50**

❖ **MAPPING COURSE OUTCOMES WITH PROGRAM OUTCOMES:**

1. Computer Engineering :-

Course Outcomes	Program Outcomes (POs)										PSOs	
	1	2	3	4	5	6	7	8	9	10	1	2
1	-	3	3	3	-	-	-	3	3	3	-	-
2	-	3	3	3	-	-	-	3	3	3	-	-
3	-	3	3	3	-	-	-	3	3	3	-	-
4	-	3	3	3	-	-	-	3	3	3	-	1
5	-	3	3	3	-	-	-	3	3	3	-	-
6	-	3	3	3	-	1	-	3	3	3	-	-

1. Slight (Low)   2.Moderate (Medium)   3.Substantial (High)

2. Information Technology :-

Course Outcomes	Program Outcomes (POs)										PSOs	
	1	2	3	4	5	6	7	8	9	10	1	2
1	-	3	3	3	-	-	-	3	3	3	-	-
2	-	3	3	3	-	-	-	3	3	3	3	-
3	-	3	3	3	-	-	-	3	3	3	-	-
4	-	3	3	3	-	-	-	3	3	3	3	1
5	-	3	3	3	-	-	-	3	3	3	3	-
6	-	3	3	3	-	1	-	3	3	3	3	-

1. Slight (Low)   2.Moderate (Medium)   3.Substantial (High)

❖ **REFERENCE & TEXT BOOKS:**

S.N.	Title	Author, Publisher, Edition and Year Of publication	ISBN Number
1.	Modern Computer Hardware Course	Manahar Lotia, Pradeep Nair , Payal Lotia, BPB Publication,2006	10:0074639714
2.	The Complete PC Upgrade and Maintenance Guide	Mark Minasi, BPB Publication,Revised Second Edition,Sept 1997.	10:8170292328
3.	Upgrading and Repairing PCs	Scott Mueller,PHI Publication,15th edition,2003.	13:9780789712950

❖ **E-REFERENCES:**

- http://academic.pgcc.edu/~wlloyd/ent284.pdf , assessed on 06/09/2016
- http://www.nitkkr.ac.in/clientFiles/FILE_REPO/2015/JAN/14/1421225726725/COT-314_Computer_Hardware_and_Trouble_Shooting_Lab_Questions.pdf , assessed on 06/09/2016

❖ **LIST OF MAJOR EQUIPMENTS/INSTRUMENTS WITH SPECIFICATION**

1. Computer (Dual CORE and above)
2. Laser printer, scanner, modem.
3. Internet connectivity.

❖ **LIST OF EXPERTS & TEACHERS WHO CONTRIBUTED FOR THIS CURRICULUM:**

S.N.	Name	Designation	Institute / Industry
1.	Mr. S. P. Lambhade	Head of Computer Engineering	Government Polytechnic, Nagpur.
2.	Dr. A. R. Mahajan	Head of Information Technology	Government Polytechnic, Nagpur.
3.	Mrs. D. P. Chanmanwar	Lect. In IT	Government Polytechnic, Nagpur.
4.	Mrs. V. A. Raje	Lect. In CM	Government Polytechnic, Nagpur.
5.	Ms. S. N. Chaudhari	Lect. In CM	Government Polytechnic, Nagpur.
6.	Shri. Atul Upadhya	CEO	Vista Computers , Ram Nagar, Nagpur
7.	Shri. N. V. Chaudhari	Asst. Professor (CSE)	DBACEO, Wanadongri, Nagpur
8.	Shri. Manoj Jethawa	HOD , Computer Science	Shri Datta Meghe Polytechnic, Nagpur

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(Member Secretary PBOS)   **(Chairman PBOS)**