



“PVCNSSK” GOVT. POLYTECHNIC BILASPUR, AT KALOL

Academic Lecture Plan (w.e.f 02.03.2022)

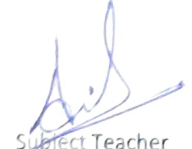
Name of the course teacher:	Er. Anil Verma
Course	Diploma in Mechanical Engg.
Semester/ Branch	6th /ME
Course Title	CNC Machines and Automation
Theory	56 Lectures

Sr. No.	No. of Lectures	Chapter/ Unit Description	Detail of Contents	Reference Resources	Remarks
1	6	Introduction to CNC machines and automation	Basic concepts of NC, CNC & DNC, advantages & disadvantage of CNC Machines, (Emendation of demanded Topics)	R1 ,R2,R3	Pedagogical Tools:- Black board ; PPT
			Application of CNC Machines, difference between conventional & CNC Machines, Profitable applications of CNC Machines. Introduction to CAM. (Emendation of demanded Topics)	R1 ,R2,R3	Pedagogical Tools:- Black board ; PPT
2	14	Construction of CNC machines	Application of CNC Machines, difference between conventional & CNC Machines, Profitable applications of CNC Machines. Introduction to CAM. Machine control unit, NC control, (Emendation of demanded Topics)	R1 ,R2,R3	Pedagogical Tools:- Black board ; PPT
			PLC Control and its advantages & disadvantages, Application and limitations of PLC machines, Axis designation of CNC machines, (Emendation of demanded Topics)	R1 ,R2,R3	Pedagogical Tools:- Black board ; PPT
			special constructional requirement of CNC machines, slide ways, bolt screw & nut assembly, Lubrication & cooling of CNC machines, (Emendation of demanded Topics)	R1 ,R2,R3	Pedagogical Tools:- Black board ; PPT
			Spindle & spindle motors, axis drives motor, Swarf removal & safety provision of CNC machines, (Emendation of demanded Topics)	R1 ,R2,R3	Tools:- Black board ; PPT
			Feedback mechanism in CNC machines. Swarf removal & safety provision of CNC machines, Feedback mechanism in CNC machines. (Emendation of demanded Topics)	R1 ,R2,R3	Pedagogical Tools:- Black board ; PPT
3	6	Tooling of CNC machines	Introduction, various cutting tools for CNC machines, Work holding devices, automatic tool changer (Emendation of demanded Topics)	R1 ,R2,R3	Pedagogical Tools:- Black board ; PPT
4	8	Control System	Open & close loop control system, fundamental problem in control: Accuracy, resolution, repeatability, instability, response & damping, type of position control: • Point to point, Straight line, continuous.	R1 ,R2,R3	Pedagogical Tools:- Black board ; PPT

5	10	PART Programming	Part programming and basic concepts of part programming, NC words, (Emendation of demanded Topics)	R1 ,R2,R3	Pedagogical Tools:- Black board ; PPT
			part programming formats,(Emendation of demanded Topics) simple programming for rational components, part programming using conned cycles,	R1 ,R2,R3	Pedagogical Tools:- Black board ; PPT
			subroutines and do loops, tool off secutter radius compensation and wear compensation. (Emendation of demanded Topics)	R1 ,R2,R3	Pedagogical Tools:- Black board ; PPT
6	6	Common problems in CNC machines	Common problems in mechanical, electrical, pneumatic, electronic and PC components of NC machines, (Emendation of demanded Topics)	R1 ,R2,R3	Pedagogical Tools:- Black board ; PPT
			diagnostic study of common problems and remedies, use of on-time fault finding diagnosis tools in CNC machines. (Emendation of demanded Topics)	R1 ,R2,R3	Pedagogical Tools:- Black board ; PPT
7	6	Industrial Automation	Meaning of automation, need of automation, different types of automation, (Emendation of demanded Topics)	R1 ,R2,R3	Pedagogical Tools:- Black board ; PPT
			Advantages/disadvantages of automation, (Emendation of demanded Topics)	R1 ,R2,R3	Pedagogical Tools:- Black board ; PPT
			Components of automated system, concept of FMS. (Emendation of demanded Topics)	R1 ,R2,R3	Pedagogical Tools:- Black board ; PPT

Recommended Books:

1. *CNC Machines - Programming and Applications* by M Adithan and BS Pabla; New Age International (P) Ltd., Delhi.
2. *Computer Aided Manufacturing* by Rao, Kundra and Tiwari; Tata Mc GrawHill, New Delhi.
3. *CNC Machine* by Bharaj; Satya Publications, New Delhi .


 Subject Teacher
 (Anil Verma)


 H.O.D (Mech.)