

"PVC" NSSK GOVT POLYTECHNIC BILASPUR
PLANNED THEORY SYLLABUS COVERAGE

| Department: Mechanical Engg. | | | Subject: CNC MACHINES AND AUTOMATION | | | |
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| Sem. & Branch: 6th / Mec h. Engg. | | | Duration: 3 Year | | | |
| Syllabus coverage | | Total periods:-56 | | | Practical : Yes | |
| SR. NO | Period/ hours | Topic | Details | Instruction Reference | Additional study | Remarks |
| 1 | 8 hrs | Milling | | 1. Programming and Applications by M Adithan and BS Pabla; New Age International (P) Ltd., Delhi. | 1. Programming and Applications by M Adithan and BS Pabla; New Age International (P) Ltd., Delhi. | |
| 2 | 16 hrs | Introduction | Basic concepts of NC, CNC & DNC, advantages & disadvantage of CNC; Machines, Application of CNC Machines, difference between conventional & CNC Machines, Profitable applications of CNC Machines. Introduction to CAM | 2.Computer Aided Manufacturing by Rao, Kundra and Tiwari; Tata Mc GrawHill,New Delhi. | 2.Computer Aided Manufacturing by Rao, Kundra and Tiwari; Tata Mc GrawHill,New Delhi. | |
| 3 | 8 hrs | Construction of CNC Machines | Machine control unit, NC control, PLC control, its advantages &disadvantages, Application and limitations of PLC machines, Axis designate of CNC machines, special constructional requirement of CNC machines, slide ways, bolt screw & nut assembly, Lubrication & cooling of CNC machines, Spindle & spindle motors, axis drives motor, Swarf removal &safety provision of CNC machines, Feedback mechanism in CNC machines. | | | |
| 4 | 10 hrs | Tooling of CNC Machines | Introduction, various cutting tools for CNC machines, Work holding devices, automatic tool changer. | | | |
| 5 | 10 hrs | 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 | | | |
| 6 | 8 hrs | Part Programming | Part programming and basic concepts of part programming, NC words, part programming formats, simple programming for rational components, part programming using conned cycles, subroutines and do loops, tool off se cutter radius compensation and wear compensation | | | |
| 7 | 6 hrs | Common Problems in CNC Machines | Common problems in mechanical, electrical, pneumatic, electronic and PC components of NC machines, diagnostic study of common problems and remedies, use of on-time fault finding diagnosis tools in CNC machines | | | |
| 8 | 6 hrs | Industrial Automation | Meaning of automation, need of automation, different types of automation, advantages/ disadvantages of automation, Components of automated system, concept of FMS. | | | |

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| Approved | Sign HOD/IOC |
| Date:- 10-02-2023 | <i>Chavara</i> |