



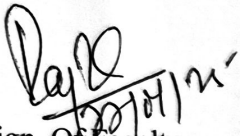
GOVERNMENT POLYTECHNIC, NABARANGPUR
DEPARTMENT OF MECHANICAL ENGINEERING

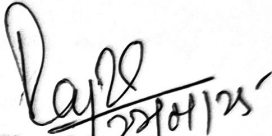
Discipline: MECHANICAL ENGG	Semester: 4TH	Name of the Teaching Faculty: Er. Raso Bihari Nayak
Subject: MANUFACTURING TECHNOLOGY	No. of days/per week class allotted: 04	Semester From date: 04.02.2025 To Date: 17.05.2025 No. of Weeks: 15
COURSE OUTCOMES	1. Comprehending required material properties for cutting tools 2. Comprehending machining mechanism principle and factors affecting machining performance 3. Comprehending working principle and components in machining tools including lathe, milling, shaping, planning, slotting machines 4. Comprehending requirement of surface finish and realize principles involved in grinding and super finishing operations	
Week	Class Day	Theory/Practical Topics
1ST	1ST	Tool Materials - Introduction
	2ND	Composition of various tool materials
	3RD	Physical properties & uses of such tool materials.
	4TH	Revision
2ND	1ST	Cutting Tools - Introduction
	2ND	Cutting action of various tools such as Chisel, hacksaw blade, dies and reamer
	3RD	Contd.
	4TH	Turning tool geometry and purpose of tool angle
3RD	1ST	Machining process parameters (Speed, feed and depth of cut)
	2ND	Coolants and lubricants in machining and purpose
	3RD	Lathe Machine – Introduction Construction and working of lathe and CNC lathe
	4TH	Contd.
4TH	1ST	Major components of a lathe and their function Operations carried out in a lathe (Turning, thread cutting, taper turning, internal machining, parting off, facing, knurling)
	2ND	Safety measures during machining
	3RD	Capstan lathe Difference with respect to engine lathe
	4TH	Major components and their function Define multiple tool holders
5TH	1ST	Turret Lathe Difference with respect to capstan lathe Major components and their function
	2ND	Draw the tooling layout for preparation of a hexagonal bolt & bush
	3RD	Shaper - Introduction Potential application areas of a shaper machine
	4TH	Major components and their function

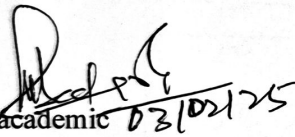
6 TH	1 ST	Explain the automatic table feed mechanism
	2 ND	Explain the construction & working of tool head
	3 RD	Explain the quick return mechanism through sketch
	4 TH	State the specification of a shaping machine.
7 TH	1 ST	Planing Machine - Introduction
	2 ND	Application area of a planer and its difference with respect to shaper
	3 RD	Major components and their functions
	4 TH	The table drive mechanism
8 TH	1 ST	Working of tool and tool support
	2 ND	Clamping of work through sketch
	3 RD	Milling Machine - Introduction Types of milling machine and operations performed by them and also same for CNC milling machine
	4 TH	Contd.
9 TH	1 ST	Explain work holding attachment
	2 ND	Construction & working of simple dividing head, universal dividing head
	3 RD	Contd.
	4 TH	Procedure of simple and compound indexing
10 TH	1 ST	Illustration of different indexing methods
	2 ND	Slotter – Introduction , Types
	3 RD	Contd.
	4 TH	Major components and their function
11 TH	1 ST	Construction and working of slotter machine
	2 ND	Contd.
	3 RD	Tools used in slotter
	4 TH	Grinding - Introduction Significance of grinding operations
12 TH	1 ST	Manufacturing of grinding wheels
	2 ND	Criteria for selecting of grinding wheels
	3 RD	Specification of grinding wheels with example
	4 TH	Working of Cylindrical Grinder
13 TH	1 ST	Surface Grinder Centre less Grinder
	2 ND	Internal Machining operations Classification of drilling machines
	3 RD	Working of Bench drilling machine Pillar drilling machine Radial drilling machine
	4 TH	Contd.
14 TH	1 ST	Boring - Basic Principle of Boring Difference between Boring and drilling
	2 ND	Contd. & Broaching
	3 RD	Types of Broaching (pull type, push type) Advantages of Broaching and applications
	4 TH	Surface finish, lapping Definition of Surface finish
15 TH	1 ST	Description of lapping & explain their specific cutting.
	2 ND	Contd.
	3 RD	REVISION
	4 TH	REVISION

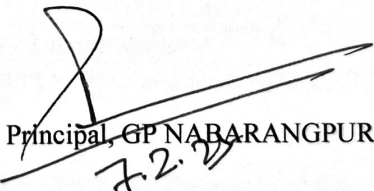
LEARNING RESOURCES:

Sl. No.	Name of the Book	Author Name
1.	Text Book of Workshop Technology	Hazra Choudhury Vol.-I & II
2.	Text Book of Workshop Technology	W.A.S Chapman Vol.-I & II
3.	Text Book of Manufacturing Process	P.N. Rao


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