IIPM SCHOOL OF ENGINEERIN AND TECHNOLOGY

LESSON PLAN: 2023-24

PRODUCTION TECHNOLOGY

Branch : Mechanical **Semester: 3rd**
Duration : 60
Faculty name : Prasanna Mohanty

SYLLABUS

Unit – I	**Metal Forming Processes** 1.1 Extrusion: Definition & Classification 1.2 Explain direct, indirect and impact extrusion process. 1.3 Define rolling. Classify it. 1.4 Differentiate between cold rolling and hot rolling process. 1.5 List the different types of rolling mills used in Rolling process.
Unit – II	**Welding** 2.1 Define welding and classify various welding processes. 2.2 Explain fluxes used in welding. 2.3 Explain Oxy-acetylene welding process. 2.4 Explain various types of flames used in Oxy-acetylene welding process. 2.5 Explain Arc welding process. 2.6 Specify arc welding electrodes. 2.7 Define resistance welding and classify it. 2.8 Describe various resistance welding processes such as butt welding, spot welding, flash welding, projection welding and seam welding. 2.9 Explain TIG and MIG welding process 2.10 State different welding defects with causes and remedies.
Unit – III	**Casting** 3.1 Define Casting and Classify the various Casting processes. 3.2 Explain the procedure of Sand mould casting. 3.3 Explain different types of molding sands with their composition and properties. 3.4 Classify different pattern and state various pattern allowances. 3.5 Classify core. 3.6 Describe construction and working of cupola and crucible furnace. 3.7 Explain die casting method. 3.8 Explain centrifugal casting such as true centrifugal casting, centrifuging with advantages, limitation and area of application. 3.9 Explain various casting defects with their causes and remedies.

Unit – IV	**Powder Metallurgy** 4.1 Define powder metallurgy process. 4.2 State advantages of powder metallurgy technology technique 4.3 Describe the methods of producing components by powder metallurgy technique. 4.4 Explain sintering.
Unit – V	**Press Work** 5.1 Describe Press Works: blanking, piercing and trimming. 5.2 List various types of die and punch 5.3 Explain simple, Compound & Progressive dies 5.4 Describe the various advantages & disadvantages of above dies
Unit – VI	**Jigs and fixtures** 6.1 Define jigs and fixtures 6.2 State advantages of using jigs and fixtures 6.3 State the principle of locations 6.4 Describe the methods of location with respect to 3-2-1 point location of rectangular jig 6.5 List various types of jig and fixtures.

TEXT BOOKS& OTHER REFERENCES BOOKS

Text Books	
1.	O.P. Khanna Production Technology, Vol- I& II Dhanpat Rai Publication
2.	P.N. Rao Manufacturing technology, Vol- I&II
Suggested / Reference Books	
1.	P.C.Sharma Manufacturing technology, Vol- I S. Chand
2.	Manufacturing Proces, MIKELL GROVER.

Objective **:** At the end of the course the students will be able to

1. Understand the different components and processes involved in press tool operation.
2. Understand how to minimize the job setting and tool setting times in mass production.
3. Understand the industrial requirements of fabrication systems.
4. Understand the manufacturing processes like casting and powder metallurgy.

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Sl. No	Chapter	Proposed Week for Teaching	Period No.	Subject Name	Important Teaching Points	Content Source
1	**I**	1st	1	**Metal Forming Process**	**Metal Forming Processes Classification**	O.P. Khanna
2			2		➢ Extrusion: Definition & Classification ➢ Direct, indirect and impact extrusion process.	
3			3		➢ Rolling & its classification	
4			4		➢ Differentiate between cold rolling and hot rolling process.	
5		2nd	1		➢ Different types of rolling mills used in Rolling process.	
			2		➢ Types of Rolling Mill & Rolling Defects.	
6	**II**		3	Welding	➢ Types of Joints ➢ welding and classify various welding processes	O.P. Khanna
7			4		➢ Oxy-acetylene welding process.	
8			1		➢ various types of flames used in Oxy-acetylene welding process.	
9		3RD	2		➢ Arc welding process.	
10			3		➢ Arc welding electrodes.	
11			4		➢ Resistance welding and its classification.	
12			1		➢ Resistance welding & its classification.	
13		4TH	2		➢ Various resistance welding processes	
14			3		➢ Butt welding, spot welding, flash welding, projection welding and seam welding.	

15	**III**		4		➢ TIG and MIG welding process ➢ Different welding defects with causes and remedies.	
16			1	Casting	➢ Casting and Classify the various Casting processes. ➢ Procedure of Sand mould casting.	P.N.Rao
17		5th	2		➢ Different types of molding sands with their composition and properties. ➢ Different pattern and state various pattern allowances.	
18			3		➢ Core, Chills & Chaplets. ➢ Switches and relay	
19			4		➢ Construction and working of cupola and crucible furnace. ➢ Die casting method	
20			1		➢ Centrifugal casting such as true centrifugal casting, centrifuging.	
21		6th	2		➢ Specification and control of stepper motors	
22			3		➢ Various casting defects with their causes and remedies.	
23			4		➢ ASSIGNMENT	
24			1		➢ CLASS TEST	
19	**IV**		2	Powder Metallurgy	➢ Introduction	O.P. Khanna
20			3		➢ Powder metallurgy process.	
			4		➢ Advantages of powder metallurgy technology technique.	
21			1			
22		6th	2		➢ Methods of producing components by powder metallurgy technique.	
23			3		➢ Sintering,Compacting.	
24			4		➢ Revision	
25			1		➢ Discussion	
27			2		➢ ASSIGNMENT	
28			3		➢ CLASS TEST	

32			4		➢ Press Works: blanking, piercing and trimming. ➢ Various types of die and punch	
33			1		➢ Simple, Compound & Progressive dies.	
34		9th	1		➢ various advantages & disadvantages of above dies	
35			2		➢ Discussion	
36			3		➢ ASSIGNMENT	
37			4		➢ CLASS TEST	
46	**IV**	**12th**	1	Jigs & Fixture	➢ Definition, jigs and fixtures	
47			2		➢ Advantages of using jigs and fixtures	
					➢ Principle of locations	
48			3		➢ the methods of location with respect to 3-2-1 point location of rectangular jig	
49			4		➢ various types of jig and fixtures.	
50		**10th**	1		➢ Class Test	

Faculty Member HOD Principal/ Director