

# GOVERNMENT POLYTECHNIC JAJPUR

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## DEPARTMENT OF METALLURGICAL ENGINEERING

### LESSON PLAN

<u>Discipline</u> Metallurgy	<u>Semester</u> 6th	Name of teaching faculty: <b>Biren Kumar Samal</b> P.T.G.F in metallurgy
<u>Subject</u> Foundry Technology	<u>No day/ week class:</u> 5	<b>No of week: 15 Session: Summer-2023 (14/02/2023 to 23/5/2023)</b>
<b>Week</b>	<b>Class Day</b>	<b>Topic</b>
1st	1st	Introduction about the Foundry Technology and Casting definition
	2nd	State principles of casting
	3rd	Basic steps invoved in making a casting
	4th	Advantages and disadvantages of metal casting
	5th	Define pattern
2nd	1st	Differentiate between pattern and casting
	2nd	Selection of pattern material
	3rd	Different pattern material
	4th	Differnce between wood and metal pattern
	5th	Objective question discussion
3rd	1st	Different types of pattern
	2nd	Draw the picture of different types of pattern
	3rd	Different types of pattern allowances
	4th	Illustration of difference allownces
	5th	Practice figure in class different pattern and allownces.
4th	1st	Basis and merits of pattern colour giving example
	2nd	Utilities of storing and preservation of patterns.
	3rd	Moulding Materials and source
	4th	Different types of moulding sand
	5th	lingredients of moulding sand
5th	1st	Classification of moulding sand and based upon grain size or shape.
	2nd	Different properties of moulding sand
	3rd	Types of sands used in mold

	4th	Differentiate between facing sand and backing sand
	5th	Two mark question discussion
6th	1st	Sand preparation and conditioning
	2nd	Sand muller and working
	3rd	Sand Reclamation & techniques
	4th	Testing of molding sand
	5th	Moisture and clay content test of moulding sand
7th	1st	Permeability test of moulding sand
	2nd	Strength test of moulding sand
	3rd	Mould hardness test
	4th	Compression strength of moulding sand
	5th	Grain fineness number of molding sand
8th	1st	Objective question discussion with picture practice of different mould sand test
	2nd	Revision class of molding sand test
	3rd	Doubt clearing class
	4th	Introduction class of binder and additives Function of binder
	5th	Different types of clay binder
9th	1st	Different types of additives Question and answer discussion of previous year question paper
	2nd	Facing and coarse material
	3rd	Utilities of different cushion material with examples.
	4th	Function of special additives with examples
	5th	Introduction class of core and core making and define core
10th	1st	Different functions of core
	2nd	Characteristics of core and types of core with sketches
	3rd	Steps involve for core making
	4th	Various methods of core baking
	5th	Different core baking machines.
11th	1st	Introduction of moulds and mould making
	2nd	Define mould and different characteristics of mould
	3rd	Sketches different types of mould
	4th	Describe different moulding methods
	5th	Class test-1
12th	1st	Introduction of special molding process and different methods of ramming
	2nd	Name special molding processes and molding method in permanent mould
	3rd	Method of shell molding with sketch
	4th	Investment mould

	5th	Carbon dioxide molding process
13th	1st	Introduction class of melting practices or types of furnaces with sketches
		Use of furnace in foundry for metal melting
	2nd	Induction Furnace
	3rd	Cupola Furnace
	4th	Electric Arc Furnace
	5th	Methods of pouring and feeding Gating system with sketch
14th	1st	Function of riser and types
		Sketches of riser types
	2nd	Directional solidification
	3rd	Progressive and directional solidification
	4th	State the factors which increase the efficiency of riser: use of insulating material, chills, chaplets and topping up.
5th	Chvorinov's rule, the effect of pouring temp. On the quality of casting.	
15th	1st	Introduction of casting cleaning
	2nd	Compare between sand blasting and shot blasting
		Different methods of removal of gates and riser.
	3rd	Introduction of special casting techniques
	4th	Die casting techniques
5th	Centrifugal casting techniques Casting defect	

Biren K U Samal.  
Signature of faculty