Lesson Plan

Subject: **Foundry Technology**(TH-1) Name of faculty:

Semester: 6th Class allotted:5p/week Branch: Metallurgy Session: 2025(S)

Discipline	Semester	From date: To date:	Teaching Aid
Subject:	No. of days/ per week	Theory/ Practical –Topics/Lesson	
Week	Date/Period		
1	04/02/2025 TO 08/02/2025	**1.Introduction to Foundry as a Manufacturing Process :** Define casting as a process of manufacturing. State principles of casting. State the basic steps involved in making a casting. Mention advantages &disadvantages of Casting. 2.**Pattern and Pattern Making** : Define pattern Differentiate between pattern and casting. State the reason for selection of pattern materials. Describe different pattern materials.	White Board Marker Smart board
2	10/02/2025 TO 15/02/2025	Explain different types of pattern giving examples. , Explain different types of pattern allowances. State the basis and merits of pattern colours giving examples. Mention the utilities of storing and preservation of patterns. **3.Moulding Materials:** State different sources of moulding sand. State different types of moulding sand Give different ingredients of moulding sand.	White Board Marker Smart board
3	17/02/2025 TO 22/02/2025	State the classification of moulding sand in two different ways namely. Classification based upon grain size. Classification base upon grain shape. .State the properties desired for moulding sand. Differentiate between facing sand and backing sand. Differentiate between sand preparation and sand conditioning. State the functions of sand preparation/conditioning .State the reasons of sand reclamation. Explain different sand reclamation techniques. Testing of moulding sand.	White Board Marker Smart board
4	24/02/2025 TO 01/03/2025	Describe the procedure f moisture content test of molding sand. Derive an expression for AFS grain fineness number of moulding sand .Describe the procedure for clay content test of moulding sand. Describe the procedure for mould hardness test. Derive an expression for permeability number of moulding sand. Describe the procedure for compression strength of moulding sand. **4.Binders and Additives;** State the functions of binder .Explain different types of clay binders	White Board Marker Smart board

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5	03/03/2025 TO 08/03/2025	State the function of additives State the different types of additives. Differentiate between facing materials and coarse materials. Describe the utilities of different cushion materials giving examples. Explain the functions of special additives giving examples. 5.**Core and Core Making:** Define core .State different functions of core .State essential characteristics of core and explain different types of core with sketche	White Board Marker Smart board
6	10/03/2025 TO 15/03/2025	Describe the steps involved for core making. Explain various methods of core baking .Explain different core baking machines. **6.Moulds and Mould Making:** Define mould. State different characteristics of mould	White Board Marker Smart board
7	17/03/2025 TO 22/03/2025	Explain with sketches different types of mould. Describe different moulding methods such as: a. Bench Moulding b. Floor Moulding c. Pit Moulding d. Machine Moulding.	White Board Marker Smart board
8	24/03/2025 TO 29/03/2025	**7.Special molding process** : Describe the different methods of ramming: .Hard ramming .Squeezing . Jolting .Sand slinging .Name special molding processes . Explain the molding method in permanent mould . Describe the method of shell molding giving sketch .Give the essential feature of investment mould. Describe the carbon dioxide molding process.	White Board Marker Smart board
9	31/03/2025 TO 05/04/2025	**8.Melting Practices** : 8 State different types of furnaces with sketches that are used in foundry for melting of ferrous and non-ferrous metals. Describe Induction furnace of coreless high frequency type. Explain the working principle of induction furnace. Explain the construction and operation of cupola used for cast iron melting. Estimate the different quantities of raw material to get a specific grade of C.I. with the help of simple charge calculation.	White Board Marker Smart board
10	07/04/2025 TO 12/04/2025	State the advantages and limitation of cupola. Mention modern development of cupola. Explain different electric arc furnaces namely a. Direct Arc type b. Indirect Arc type Highlight recent trends in melting techniques. **9.Methods of Pouring and Feeding** : Explain gating system.	Marker White Board Smart board
11	14/04/2025 TO 19/04/2025	State elements of gating system with sketch. State function of a riser. Describe different types of riser with sketches. Explain the importance of size and shape of riser in metal casting. Justify the location of riser in the gating system. Define directional solidification. Describe progressive and directional solidification and use of chills.	White Board Marker Smart board

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12	21/04/2025 TO 26/04/2025	State the factors which increase the efficiency of riser such as: a. Use of insulating material b. Use of exothermic materials c. Use of chills d. Use of padding e. Use of chaplets f. Use of molding materials of different chill capacities. g. Use of topping up h. Use of electric arc feeding i. Riser head design State Chvorinov's rule. Mention the effects of poring temp. on the quality of casting. **10.Cleaning of Casting** : Explain shake out.	Marker White Board Smart board
13	28/04/2025 TO 03/05/2025	, Explain fettling. Classify fettling operation in two stages namely a. Removal of cores b. Cleaning of canting surfaces. Compare between sand blasting and shot blasting Describe the process of chemical cleaning . Explain different methods or removal of gates and risers etc. such as: a. Chipping by hammers b. Flogging c. Sheering d. Sawing e. Abrasive wheel slitting f. Machining g. Flame cutting h. Plasma cutting i. Grinding j. Gouging k. Trimming and sizing. **11.Special Casting Techniques** : Explain the following die casting techniques and processes a. Gravity die casting	White Board Marker Smart board
14	05/05/2025 TO 10/05/2025	b. Pressure die casting c. Vacuum die casting d. Cold chamber process e. Hot chamber process .Explain the following centrifugal casting techniques a. True centrifugal casting having b. The De Lavaud process c. Moore casting system d. Semi centrifugal casting e. Centrifuging .Mention the advantages of die casting .Mention the advantages of centrifugal casting . Explain investment casting process .	White Board Marker Smart board
15	12/05/2025 TO 17/05/2025	**12.Casting Defects:** Mention different types of casting defects with example and their remedies a. Defects caused by patterns and molding box. b. Defects caused by improper molding and core making. c. Defects caused by improper mixing and distribution. d. Defects caused by improper molding core making and gating e. Defects due to improper mold drying and core baking f. Defects occurring while closing and Pouring in the moulds g. Defects caused by molten metal h. Defects occurring during fettling. i. Defects due to faulty heat treatment j. Solidification Shrinkage of cast metal. k. Warpage	White Board Marker Smart board

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