LESSON PLAN-6TH SEMESTER (2021)				
SUBJECT:**FONDRY TECHNOLOGY (TH 1)**				
NAME OF THE FACULTY: **SUSHREE SUBHASHREE DAS**				
MONTH	**MODULE/UNIT**	**COURSE TO BE COVERED**	**CLASSES REQUIRED**	**REMARKS**
APRIL	**UNIT-1**	**Introduction to Foundry as a Manufacturing Process**	03	
		Define casting as a process of manufacturing. State principles of casting	01	
		State the basic steps involved in making a casting.	01	
		Mention advantages & disadvantages of metal casting.	01	
	UNIT-2	**Pattern and Pattern Making**	04	
		Define pattern Differentiate between pattern and casting	01	
		State the reason for selection of pattern materials. Describe different pattern materials.	01	
		Explain different types of pattern giving examples. Explain different types of pattern allowances.	01	
		State the basis and me its of pattern colours given examples. Mention the utilities of storing and preservation of patterns.	01	
MAY	**UNIT-3**	**Moulding Materials**	11	
		State different sources of moulding sand. State different types of moulding sand	01	
		Give different ingredients of moulding sand. State the classification of moulding sand in two different ways namely:	01	
		Classification based upon grain size Classification base upon grain shape.	01	
		State the properties desired for moulding sand.	01	
		Differentiate between facing sand and backing sand.	01	
		Differentiate between sand preparation and sand conditioning.	01	
		State the functions of sand preparation/conditioning	01	
		State the reasons of sand reclamation. Explain different sand reclamation techniques	01	
		Testing of moulding sand. Derive an expression for AFS grain fineness	01	

		number of moulding sand		
		Describe the procedure for clay content test of moulding sand. Describe the procedure for mould hardness test.	01	
		Derive an expression for permeability number of moulding sand. Describe the procedure for compression strength of moulding sand.	01	
	UNIT-4	**Binders and Additives.**	04	
		State the functions of binder Explain different types of clay binders	01	
		State the function of additives State the different types of additives.	01	
		Differentiate between facing materials and coarse materials.	01	
		Describe the utilities of different cushion materials giving examples. Explain the functions of special additives giving examples.	01	
	UNIT-5	**Core and Core Making**	04	
		Define core State different functions of core	01	
		State essential characteristics of core and explain different types of core with sketches.	01	
		Describe the steps involved for core making.	01	
		Explain various methods of core baking Explain different core baking machines.	01	
	UNIT-6	**Moulds and Mould Making**	09	
		Define mould	01	
		State different characteristics of mould	01	
		Explain with sketches different types of mould.	01	
		Describe different moulding methods such as: a. Bench Moulding b. Floor Moulding c. Pit Moulding d. Machine Moulding.	06	
JUNE	**UNIT-7**	**Special moulding process**	04	
		Describe the different methods of ramming: 1. Hard ramming 2. Squeezing 3. Jolting 4. Sand slinging	01	
		Name special moulding processes Explain the moulding method in	01	

		permanent mould		
		Describe the method of shell moulding giving sketch Give the essential feature of investment mould.	01	
		Describe the carbon dioxide moulding process.	01	
	UNIT-8	**Melting Practices**	09	
		State different types of furnaces with sketches that are used in foundry for melting of ferrous and non-ferrous metals.	01	
		Describe Induction furnace of coreless high frequency type.	01	
		Explain the working principle of induction furnace.	01	
		Explain the construction and operation of cupola used for cast iron melting.	01	
		Estimate the different quantities of raw material to get a specific grade of C.I. with the help of simple charge calculation.	01	
		State the advantages and limitation of cupola.	01	
		Mention modern development of cupola. Explain different electric arc furnaces namely a. Direct Arc type b. Indirect Arc type	02	
		Highlight recent trends in melting techniques.	01	
	UNIT-9	**Methods of Pouring and Feeding**	10	
		Explain gating system. State elements of gating system with sketch.	01	
		State function of a riser. Describe different types of riser with sketches.	01	
		Explain the importance of size and shape of riser in metal casting.	01	
		Justify the location of riser in the gating system.	01	
		Define directional solidification. Describe progressive and directional solidification and use of chills.	01	
		State the factors which increase the efficiency of riser	01	
		a. Use of insulating material	03	

		b. Use of exothermic materials c. Use of chills d. Use of padding e. Use of chaplets f. Use of moulding 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.	01	
JULY	**UNIT-10**	**Cleaning of Casting**	04	
		Explain shake out Explain fettling. Classify fettling operation in two stages namely a. Removal of cores b. Cleaning of canting surfaces.	01	
		Compare between sand blasting and shot blasting	01	
		Describe the process of chemical cleaning	01	
		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.	01	
	UNIT-11	**Special Casting Techniques**	07	
		Explain the following die casting techniques and processes a. Gravity die casting b. Pressure die casting c. Vacuum die casting d. Cold chamber process e. Hot chamber process	02	
		Explain the following centrifugal casting techniques a. True centrifugal casting having b. The De Lavaud process c. Moore casting system d. Semi centrifugal casting	02	

		e. Centrifuging		
		Mention the advantages of die casting	01	
		Mention the advantages of centrifugal casting	01	
		Explain investment casting process	01	
	UNIT-12	**Casting Defects**	06	
		Mention different types of casting defects with example and their remedies a. Defects caused by patterns and moulding box. b. Defects caused by improper moulding and core making.	02	
		c. Defects caused by improper mixing and distribution. d. Defects caused by improper moulding core making and gating	01	
		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	02	
		i. Defects due to faulty heat treatment j. Solidification Shrinkage of cast metal. k. Warpage	01	