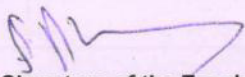


DEPARTMENT OF METALLURGICAL AND MATERIALS ENGINEERING					
NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI - 620 015					
LECTURE PLAN - M.Tech Industrial Metallurgy SEMESTER - I					
SUB CODE:	MT 701	MTPC	3 0 0 3	Subject Name	Foundry Technology
Teacher Name:	Dr.S.P.Kumaresh Babu			Credit:	3
				Slot:	B
Course Overview:					
To make the student to understand casting industry, processes and a chance to try their hand at it.					
Course Objectives:			Aligned Program Outcome		
To know the basic concepts of metal casting technology and to apply them to understand the molding and melting procedure of different alloys and solidification of alloys as well as defects in castings			1.Select the appropriate design of the moulds, patterns etc. [1, 3, 11] 2.Design a new pattern or mould for required applications, if needed [1, 8] 3.Choose the appropriate furnace for the production of alloys [3, 8] 4.Distinguish the casting microstructures for different alloys [1, 9] 5.To study the reasons for defects [4, 5]		
Text Books					
1. Heine R. W., Loper C. R., Rosenthal P. C., „ Principles of Metal Casting”, 2 nd Edition, Tata McGraw Hill Publishers, 1985					
2. Jain P. L., „ Principles of Foundry Technology”, 3 rd Edition, Tata McGraw Hill, 1995					
REFERENCES					
1. Srinivasan N. K., „Foundry Technology”, Khanna Publications, 1986					
Week	Activities	Period	Lecture No	Topics to be covered	Mode of Delivery CT, PP
Week 1		1	1.	Introduction to casting	CT
		4	2.	Introduction to metal casting and its importance	CT
		2	3.	basic principles of casting processes	CT
		1	4.	basic principles of casting processes and foundry	CT
Week 2		1	5.	sequence in foundry operations;	CT
		4	6.	patterns;	CT
		2	7.	Types of patterns	CT

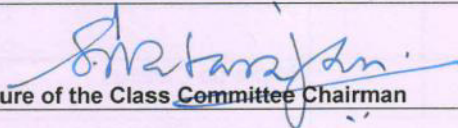
		1		Types of patterns	PPT
Week 3		1	8	moulding practice;	CT
		4	9	ingredients of moulding sand	CT
		2		core sand,	CT
Week 4		1	11	sand testing;	CT
		4	12	sand testing;	CT
		2		different moulding processes	CT
Week 5		1	14	Types of furnaces used in foundry	CT
		4	15	Types of furnaces used in foundry	CT
		2		Types of furnaces used in foundry	CT
Week 6		1	16	melting practice for steel,	CT
		4	17	melting practice for cast iron,	CT
		2		melting practice for cast iron	CT
Week 7		1		melting practice for aluminium alloys	CT
		4		melting practice for aluminium alloys,	CT
		2		melting practice for copper alloys	CT
Week 8		1	19	melting practice for magnesium alloys	CT
		4	20	safety considerations;	CT
		2		fluxing, degassing and inoculation	CT
Week 9		1	22	Sand casting,	CT
		4	23	Sand casting procedure	CT
		2		Sand casting applications	CT
Week 10		1	24	permanent mould casting, die casting,	CT
		4	25	centrifugal casting,	CT
		2		plaster mould casting,	CT
Week 11		1	27	investment casting, continuous casting, squeeze casting, full mould process, strip casting	CT
		4	28	squeeze casting, full mould process,	CT
		2		strip casting	CT
Week 12		1	29	Overview of pouring and solidification, (modeling), methoding	CT
		4	30	Overview of pouring and solidification,	CT

		2		concept of shrinkage,	CT
Week 13		1		Chvorinov's rule,	CT
		4		chilling; gating systems,	CT
		2		functions of riser, types of riser,	CT
Week 14		1		bottom pouring and top pouring , yield calculations,	CT
		4	31	visualization of mould filling (modeling), methoding	CT
		2		, visualization of mould filling (modeling), methoding	CT
Week 15		1	33	Concepts of solidification;	CT
		4	34	Concepts of solidification;	CT
		2		directional solidification,	CT
Week 16		1	36	; directional solidification, role of chilling;	CT
		4	37	filtration of liquid metals;	CT
		2		filtration of liquid metals;	CT
Week 17		1	38	consumables; details of inoculation and modification – with respect to cast irons and Al-Si system;	CT
		4	39	details of inoculation and modification – with respect to cast irons and Al-Si system;	CT
		2	40		CT
		5		Make up Classes	PPT
					PPT
Week 18		1		Make up Classes	PPT
		4		Make up Classes	PPT
		2		casting defects; soundness of casting and its assessment	CT
					CT
Week 19		1		casting defects; soundness of casting and its assessment	CT


S.No	Mode of Assessment	Week / Duration	% of Weightage
1	Cycle Test One	I- V, (1 h)	20
2	Cycle Test Two	VI-X (1 h)	20
3	Assignments		10
4	End semester exam based on class room teaching	XII (3h)	50



Signature of the Teacher



Signature of the Class Committee Chairman



Signature of the HoD