18MTE6		4 MODELING AND SIMULATION IN MATERIAL PROCESSES	L	т	Р	с		
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Course Objectives:								
1. To study about thin flims, coatings and application techniques.								
UNIT	I	INTRODUCTION		9	+	0		
Introdu	ction	to modeling, simulation models, Casting process: modeling of heat transfer,	direct	heat	t	•		
transfer	r mo	del,	and i	ieat				
UNIT	II	CASTING MODELING		9	+	0		
thermo	dyna	amics of solidification, metal/mold interfacial heat transfer, deformation and		•		-		
stresse	s in	castings, thermo-mechanical modeling in casting, determination of heat trans	sfer co	effici	ent a	nd		
air gap	widt	h in permanent mould castings, continuous casting and DC casting process,						
UNIT	III	WELDING AND HEAT TREATMENT SIMULATION		9	+	0		
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Text Books:		
1.	Modeling in Welding, Hot Powder Forming and Casting (Eds. L. Koarlsson), ASM, MaterialsPark,OH,1997.	
2.	Szekely, J., Evans, J.E. and Brimacombe, J.K., The Mathematical and Physical Modelling of Primary Metal processing Operations, Wiley, 1988.	
Reference Books:		
1.	Numerical Recipes: The Art of Scientific Computing, Cambridge Univ. Press, N.Y., 1988.	
2.	D.R. Poirier and G.H. Geiger: Transport Phenomena in Materials Processing, TMS, warrendale 1994.	
3.	R.I. L. Guthrie: Engineering in Process Metallurgy, Oxford Science Publications (1989)	