

18MTE55	ADDITIVE MANUFACTURING			L	T	P	C
			3	0	0	3	
<b>Course Objectives:</b>							
1.	To know about additive manufacturing and rapid prototyping technologies.						
<b>UNIT I INTRODUCTION</b>							
			9	+	0		
General overview, need of additive manufacturing (AM), reverse engineering (RE), and computer aided design (CAD), computer aided manufacturing (CAM) and AM, AM tooling and uses.							
<b>UNIT II ADDITIVE MANUFACTURING SYSTEMS</b>							
			9	+	0		
Principle, process, advantages and applications of (i) Stereo lithography (ii)3-D Printing (iii) Fused Deposition Modelling (FDM) (iv) Laminated Object Manufacturing (LOM) (v) Selective Laser Sintering (SLS) (vi) Laser Engineered Net Shaping (LENS) (vii) Direct Metal Deposition (DMD).							
<b>UNIT III MATERIALS AND MECHANISMS</b>							
			9	+	0		
Polymer, photo polymerization and SLS, ceramics for SLS and Laser chemical vapour deposition (LCVD), Metals used in DMD and SLS, effect of rapid solidification and non-equilibrium structure.							
<b>UNIT IV APPLICATIONS</b>							
			9	+	0		
Design and production of Customized implants and prosthesis using AM, Computer Aided Tissue Engineering (CATE).							
<b>UNIT V OTHER APPLICATIONS</b>							
			9	+	0		
Reactive and Lightweight, Wear and Corrosion resistant and improved thermal properties suitable for Aerospace, Automobile, Oil and Gas and Agriculture.							
<b>Total (L+T) = 45 Hours</b>							
<b>Course Outcomes:</b>							
Upon completion of this course, the students will be able to:							
CO1	:	Explain the need for Additive Manufacturing (AM) and Rapid Prototyping Technologies					
CO2	:	Describe the principles, process and advantages of different AM systems					
CO3	:	Design and apply AM for customized implants and industrial products					

<b>TEXT BOOKS</b>	
1.	A. Gebhardt, "Rapid prototyping", Hanser Gardener Publications, 2003.
2.	L.W. Liou and F.W. Liou, "Rapid Prototyping and Engineering applications: A tool box for prototype development", CRC Press, 2007.
<b>Reference Books:</b>	
1.	A.K. Kamrani and E.A. Nasr, "Rapid Prototyping: Theory and Practice", Springer, 2006.
2.	P.D. Hilton and P.F. Jacobs, "Rapid Tooling: Technologies and Industrial Applications", CRC press, 2000.