COURSE CODE	Additive Manufacturing	L	T	P	C
1153AE108		3	0	0	3

Course Content:

UNIT I-INTRODUCTION **L-9**

Introduction and Basic Principles of Additive Manufacturing (AM), Development of Additive Manufacturing Technology, Need-Classification-Additive Manufacturing Technology in product development, Pros and Cons of AM, Materials for Additive Manufacturing Technology

UNIT II-LIQUID BASED AND SOLID BASED ADDITIVE MANUFACTURING SYSTEMS **L-9**

Liquid Based AM-Classification, Stereo lithography Apparatus (SLA)-Principle, process and advantages,Solid basedAM-Classification, Fused Deposition Modeling (FDM)-Principle, process, advantages

UNIT III-POWDER BASED ADDITIVE MANUFACTURING SYSTEMS **L-9**

Powder based AM-Classification, Selective Laser Sintering (SLS)-Principle, Process, advantages, Three-Dimensional Printing – Principle, process, advantages, Laser Engineered Net Shaping (LENS), Electron beam melting (EBM)

UNIT IV- REVERSE ENGINEERING **L-9**

Introduction, reverse engineering process, reasons for reverse engineering,3D Scanning Digitization Techniques-Model Reconstruction-Data Processing for Additive Manufacturing Technology,model slicing –Tool path generation.

UNIT V- APPLICATIONS OF 3D PRINTING. **L-9**

Applications of 3D Printing in Aerospace, Automotive, Manufacturing and Architectural Engineering, Customized implants and prosthesis: Design and development, Bio-Additive Manufacturing, Future directions in AM-material selection, electronics

TOTAL: 45 PERIODS

Text Books:

1. Chua C.K., Leong K.F., and Lim C.S., “Rapid prototyping: Principles and applications”, Third Edition, World Scientific Publishers, 2010.
2. Gebhardt A., “Rapid prototyping”, Hanser Gardener Publications, 2003.

References:

1. Liou L.W. and Liou F.W., “Rapid Prototyping and Engineering applications: A tool box for prototype development”, CRC Press, 2007.
2. Kamrani A.K. and Nasr E.A., “Rapid Prototyping: Theory and practice”, Springer, 2006.
3. Hilton P.D. and Jacobs P.F., “Rapid Tooling: Technologies and Industrial Applications”, CRC press, 2000.
3. DouglesBryden, “CAD and Protyping for Product Design”, 2014