

Course Number and Name	
BGE010 – RAPID PROTOTYPING	
Credits and Contact Hours	
3&45	
Course Coordinator's Name	
Mr.Durai Raj	
Text Books and References	
<p>TEXTBOOKS:</p> <p>1. Ibrahim Zeid, CAD/CAM theory and practice, Tata Mc Graw hill, 2005</p> <p>REFERENCES :</p> <p>1. Paul F. Jacobs, RapidPrototyping and Manufacture. Fundamentals of Stereolithography,1995</p> <p>2. RapidPrototyping reports, CAD/CAM publishing ,1991</p> <p>3. Rapid News, University of Warwick. UK 1995</p> <p>4. Rapid tools for Injection Moulding (www.vmreg.com/raptia/reports/CRIF.pdf)Applications of RP techniques for sheet metal forming (www.raptia.org) Medical RP applications (http://home.att.net/~rppat/museum/mus-5.htm)</p> <p>5.</p>	
Course Description	
To provide knowledge on different types of Rapid Prototyping systems and its applications in various fields.	
Prerequisites	Co-requisites
MANUFACTURING TECHNOLOGY	Nil
required, elective, or selected elective (as per Table 5-1)	
Non Major Elective	
Course Outcomes (COs)	
CO1	Generating a good understanding of RP history, its development and applications. Expose the students to different types of Rapid prototyping processes, materials used in RP systems and reverse engineering.
CO2	Students will be exposed to different types of Rapid prototyping processes, materials used in RP systems and reverse engineering.
CO3	Students will understand steriolithography methods
CO4	Students learn processes of CAD
CO5	Students gain knowledge to develop prototypes
CO6	Students learn the concepts of rapid tool processing

Student Outcomes (SOs) from Criterion 3 covered by this Course

COs/SOs	a	b	c	d	e	f	g	h	i	j	k	l
CO1	H											
CO2	H		H	M					H			H
CO3			H			M						H
CO4	H		H					M			L	L
CO5	H											L
CO6												

List of Topics Covered

UNIT I INTRODUCTION

10

Basic operation –impact of rapid proto typing and tooling on product development- benefits-applications.

UNIT I RAPIDPROTOTYPINGPROCESSES

10

Introduction –Classification-laminated object manufacturing-fused deposition modeling-stereolithography-solid ground curing –selective laser sintering-3D printing

UNIT III CADPROCESSES

10

Introduction –data requirements-solid modeling –surface modeling .geometric processing –interface formats-model preparation-slicing, support structures and machine instructions

UNITIV MATERIALS FOR RAPID PROTOTYPING

5

Plastics- resins -metals-ceramics selection of materials for suitable processes – advantages-limitations

UNIT V RAPID TOOLING PROCESSES

10

Introduction - Classification in direct rapid tooling-silicon rubber Moulding-epoxy Moulding-electro forming-vacuum casting-vacuum forming-rapid tools for injection Moulding – direct rapid cooling processes –SLS rapid tool- shape deposition manufacturing- laser deposition lamination-rapid tooling roots