

5077 – TOOL ENGINEERING-II (PRESS TOOLS)										
Teaching Schedule Per Week			Progressive Assessment	Examination Schedule (Marks)						
Lectures	Practical	Credit		Theory			Practical Ex.		Total	
3	3	6	75	3Hrs	100		25/or		200	
Pre-requisite		Source	Semester	Theory	Test	Total	TW	PR	Gr Total	
4060		PRD		75	25	100	25	50	175	4

RATIONALE: - Manufacturing involves turning raw material to finish products, to be used for the various purposes, a detailed understanding of the manufacturing processes help to appreciate the capabilities, advantages and the limitations of the process. A tool designer must know manufacturing procedures and must understand how tools perform their function. The enclosed syllabus covers the sheet metal cutting and forming operations done on a press and the design of the tools and dies required to perform those operations.

COURSE CONTENTS		Hrs	Mks
1. SHEARING		14	30
Theory of shear action in metal cutting. Clearances, cutting forces, stripping force and energy requirements with and without shear. Strip layout for blanking. Die block and punch block design. Selection and design of die sets. Design of stripper. Methods of fixing punch. Different types of shear operations. Study of following dies-piercing, blanking, shearing, performing, trimming and compound.			
2. DRAWING		10	20
Metal forming operations. Metal flow in drawing, reduction factors and redrawing limits. Drawing, ironing and blank holding pressures. Clearances. Punch and die ratios. Wall thickening and ironing. Defects in deep drawn parts. Press design for drawing and combination die.			
3. BENDING AND FORMING		8	18
Metal movement in bending and forming, bend radii, development of blanks and bend allowances, sparing back, study of bending forces, design of bending and forming press dies.			
4. PROGRESSIVE DIE		8	16
Selection of progressive dies. Stock, lifters, strippers and pilots. Strip development for progressive dies. Rules for strip design development. Study on manufacture dies block. Design of various types of progressive dies.			
5. MISCELLANEOUS DIES		8	16
Horn type dies, Rubber dies, Bulging dies, Hydro forming and Stretch forming.			
Total		48	100

TERM WORK - Designation and drawing any one of the following dies: -Blanking die, punching die, compound die, progressive die. Designing and drawing of a progressive die for bending operations or drawing operations.

REFERENCE BOOKS

Tool design by Donalson, Jecain and Goold.