

PCMF4302 TOOL DESIGN

(3-0-0)

Module-I

(12 hours)

INTRODUCTION: Tool design objectives - types of tools, Principles of design and construction of jigs and fixtures, principles of location and clamping, locating and clamping devices, Analysis of clamping force-Tolerance and error analysis.

JIGS: Different types of jigs-plate latch, channel, box, post, angle plate, angular post, turnover, pot jigs-Automatic drill jigs-Rack and pinion operated. Air operated Jigs components. Drill bushes Design and development of Jigs for given components.

FIXTURES: General principles of boring, lathe, milling and broaching fixtures- Grinding, planning and shaping fixtures, assembly, Inspection and welding fixtures- Modular fixtures. Design and development of fixtures for given components.

MODULE- II

(12 hours)

PRESS WORKING:

Terminologies and elements of dies and strip layout. Press working terminology-Presses and press accessories-Computation of capacities and tonnage requirements. Elements of progressive, combination and compound dies: Die block-die shoe. Bolster plate-punch plate-punch holder-guide pins and bushes – strippers –knockouts-stops – pilots-Selection of standard die sets strip lay out-strip lay out calculations.

MODULE –III

(11 hours)

DESIGN AND DEVELOPMENT OF DIES:

Design and development of progressive and compound dies for Blanking and piercing operations. Bending dies – development of bending dies-forming and drawing dies-Development of drawing dies. Design of tools for production of holes, surfaces of revolution, and flat surfaces like single point cutting tools, drills, form tools and milling cutters. Economics of toolings.

(Use of approved design data book is permitted)

TEXT BOOKS

1. Edward G Hoffman, Jigs & Fixture Design, Thomson – Delmar Learning, Singapore 2004
2. Donaldson. C, Tool Design, Tata McGraw-Hill, 1986

REFERENCES

1. Kempster, "Jigs & Fixtures Design, The English Language Book Society", 1978
2. Joshi, P.H., "Jigs & Fixtures, Second Edition", TMH Publishing, New Delhi 2004
3. Hiram E Grant, "Jigs and Fixture" Tata McGraw-Hill, New Delhi, 2003
3. "Fundamentals of Tool Design", CEEE Edition, ASTME, 1983
4. PSG College of Technology, Coimbatore - Design Data Handbook