BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE PILANI,
HYDERABAD CAMPUS
INSTRUCTION DIVISION
FIRST SEMESTER 2016-2017
Course Handout Part II

Date: 01/08/2016

In addition to part -I (General Handout for all courses appended to the time table) this portion gives further specific details regarding the course.

Course No. : **MF F312**
Course Title : **Tool and Fixture Design**
Instructor-in-charge : **SRINIVASA PRAKASH REGALLA**

1. Course Description: Tool-design methods, tool making practices, tooling materials and heat treatment, design of cutting tools, gages and gage design, locating and clamping methods, design of drill jigs, design of fixtures, design of sheet metal blanking and piercing dies, design of sheet metal bending, forming and drawing dies, using plastics as tooling materials, tool design for numerically controlled machine tools and automatic screw machines.

2. Scope and Objective of the Course: Lecture class and other interaction modes will enable discussion and practice of design of various cutting and forming tools and fixtures for machining, forming, casting and other processes.

3. **Text book:**

TB: Donaldson C., LeCain G. H., Goold V. C. and Ghose J., "Tool Design", 4th Edition (SIE), Tata McGraw Hill Education Private Ltd., New Delhi, 2012.

Reference Book:

RB: Venkataraman, K., "Design of Jigs, Fixtures and Press Tools", 2nd Edition, 2016, Wiley/Ane Books, New Delhi.

Course Plan:

Module	*Number of lectures*	*Learning Objectives*	*Chap/Sec.*
M1: Gages and Gage Design	4	RL1.1: Fixed gages, their tolerances and materials RL2.1: Indicating gages and automatic gages	TB: CH5
M2: Locating and clamping methods	6	Locating and clamping methods	TB: CH6 & RB-Part I: CH2&3
M3: Design of drill jigs	5	Design of drill jigs	TB: CH7 & RB-Part I: CH4
M4: Design of fixtures	5	Design of fixtures	TB: CH8 & RB-Part I: CH5&6
4. M5: Design of sheet metal	6	Design of sheet metal blanking and piercing dies	TB: CH9 & RB-Part II: CH1 to

Module	*Number of lectures*	*Learning Objectives*	*Chap/Sec.*
blanking and piercing dies			CH4
M6: Design of sheet metal bending, forming and drawing dies	5	Design of sheet metal bending, forming and drawing dies	TB: CH10 & RB-Part II: CH5
M7: Using plastics as tooling materials	2	Using plastics as tooling materials	TB: CH11
M8: Tool design for numerically controlled machine tools	3	Tool design for numerically controlled machine tools	TB: CH12
M9: Automatic screw machines	2	Automatic screw machines	TB: CH13
M10: Design of single point and multi-point cutting tools for machining processes	4	Design of single point and multi-point cutting tools for machining processes	
Total	42		

Evaluation Scheme:

EC No	Evaluation Component	Duration	% weightage	Date & Time	Nature of component
1	Test - 1	1 hour	20%	8/9, 8.30-9.30 AM	Closed Book
2	Test - 2	1 hour	20%	25/10, 8.30-9.30 AM	Closed Book
3	Tutorial Assignment	-	10%	Every Th-1 G104	Open book
4	Design Assignment	-	10%	-	Open book
5	Comprehensive Exam	3 hours	40%	12/12 AN	CB+OB

Chamber Consultation Hour: To be announced.
Notices: If any, will be displayed in Mechanical Engineering notice board and/or CMS only.
Make-up policy: Makeup for tests needs prior permission and strictly meant only for serious hospitalization cases. No makeup is allowed for Tutorials and assignments.

NOTE: The border cases in final grading will be decided based on mainly class room attendance and classroom participation.

Instructor-in-charge
MF F312