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**FIRST SEMESTER 2019 2020**

# Course Handout Part II

Date: 01-08-2019

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 : Prof. SRINIVASA PRAKASH REGALLA***

**Scope and Objective of the Course:**

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.

**Textbooks:**

1. 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 books**

1. Krulikowski Alex, “Fundamentals of Geometric Dimensioning and Tolerancing”, Delmar Thomson Learning, 1998, NY, USA.
2. Meadows James D., “GD & T”, ASME Press, 2009, NY, USA.

**Course Plan:**

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| --- | --- | --- | --- |
| **Lecture No.** | **Learning objectives** | **Topics to be covered** | **Chapter in the Text Book** |
| 4 | M1: Gages and Gage Design | Fixed gages, their tolerances and materials, Indicating gages and automatic gages, | TB: CH5 |
| 4 | M2: Geometric Dimensioning and Tolerancing (GD & T) | GD & T symbols, terms, concepts & rules, different GD & T controls | RB1 & RB2  (CH1-12) |
| 3 | M3: Locating and clamping methods | Locating and clamping methods | TB: CH6 &  RB-Part I: CH2&3 |
| 4 | M4: Design of drill jigs | Design of drill jigs | TB: CH7 &  RB-Part I: CH4 |
| 4 | M5: Design of fixtures | Design of fixtures | TB: CH8 &  RB-Part I: CH5&6 |
| SYLLABUS FOR MID-SEMESTER EXAMINATION IS THE FIRST 5 MODULES | | | |
| 6 | M6: Design of sheet metal blanking and piercing dies | Design of sheet metal blanking and piercing dies | TB: CH9 &  RB-Part II: CH1 to CH4 |
| 6 | M7: Design of sheet metal bending, forming and drawing dies | Design of sheet metal bending, forming and drawing dies | TB: CH10 &  RB-Part II: CH5 |
| 2 | M8: Using plastics as tooling materials | Using plastics as tooling materials | TB: CH11 |
| 6 | M9: Design of single point and multi-point cutting tools for machining processes | Design of single point and multi-point cutting tools for machining processes | TB: CH4 |
| 3 | M10: Introduction to tool design for CNC and automatic machine tools | Get an overview of the general methods applying to them | TB: CH12  TB: CH13 |
| SYLLABUS FOR COMPREHENSIVE EXAMINATION IS ALL 10 MODULES | | | |

**Evaluation Scheme:**

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| **Component** | **Duration** | **Weightage (%)** | **Date & Time** | **Nature of Component** |
| Mid-semester Examination | 90 min | 40 (20%) | 3/10: 1.30 – 3 PM | CB |
| Experiential Learning Component-1: Tutorials | 50 min | 40 (20%) | Every week | OB |
| Experiential Learning Component -2: Project | 6 weeks | 20 (10%) | After Midsem | Batch Mode |
| Comprehensive Exam | 3 hours | 80 (40%) | 10/12 FN | CB |
| Classroom Interaction Test (CIT) | 10 min | 20 (10%) | In the last lecture class of every week | Batch Mode |

**Chamber Consultation Hour:** To be declared in the first lecture class.

**Notices:** On CMS.

**Make-up Policy: Only for genuine cases of hospitalization due to illness, on production of medical certificate and with prior email intimation.**

**Academic Honesty and Integrity Policy: *Academic honesty and integrity are to be maintained by all the students throughout the semester and no type of academic dishonesty is acceptable.***

**INSTRUCTOR-IN-CHARGE**