Lesson Plan

Name of the Faculty : AMIT PHOGAT

Discipline :Mechanical Engg.

Semester :4th

Subject :WT II

Lesson plan duration :16 weeks (from 06 March, 2023 to 23 JUNE, 2023)

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| Week | Theory | |
| Lecture Day | Topic (including assignments /tests) |
| 1st Week | 1st | **Unit 1:** Cutting Tools - Various types of single point cutting tools and their uses |
| 2nd | Single point cutting tool geometry, tool signature and its effect, Heat  produced during cutting and its effect |
| 3rd | Cutting speed, feed and depth of cut and their effect |
| Week 2 | 1st | Cutting Tool Materials - Properties of cutting tool material, Study of various cutting tool materials |
| 2nd | High-speed steel, tungsten carbide, cobalt steel cemented carbides |
| 3rd | StelliteS, ceramics and diamond |
| Week 3 | 1st | **Unit 2: LATHE;** Principle of turning, Function of various parts of a lathe |
| 2nd | Classification and specification of various types of lathe, Work holding devices |
| 3rd | Lathe tools and operations :- Plain and step turning, facing, parting off, taper turning, eccentric turning, drilling, reaming, boring, threading and  knurling, form turning, spinning. |
| Week 4 | 1st | Cutting parameters – Speed, feed and depth of cut for various materials and for various operations, machining time. |
| 2nd | Speed ratio, preferred numbers of speed selection. |
| 3rd | Lathe accessories:- Centers, dogs, different types of chucks, collets, face plate, angle plate, mandrel, steady rest, follower rest, taper turning attachment, tool post grinder, milling attachment, Quick change device for  tools. |
| Week 5 | 1st | Introduction to capstan and turret lathe |
| 2nd | **Unit 3: Drilling;** Principle of drilling. Classification of drilling machines and their description |
| 3rd | Various operation performed on drilling machine – drilling, spot facing,  reaming, boring, counter boring, counter sinking, hole milling, tapping |
| Week 6 | 1st | Speeds and feeds during drilling, impact of these parameters on drilling, machining time. |
| 2nd | Types of drills and their features, nomenclature of a drill |
| 3rd | Drill holding devices. |
| Week 7 | 1st | **Unit 4: Boring;** Principle of boring |
| 2nd | Classification of boring machines and their brief description. |
| 3rd | Boring tools, boring bars and boring heads |

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| Week 8 | 1st | **Unit 5: Shaping, Planing and Slotting;** Working principle of shaper, |
| 2nd | Working principle of Planer &Slotter |
| 3rd | Type of shapers, Type of Planers |
| Week 9 | 1st | Types of tools used and their geometry, Speeds and feeds in above processes |
| 2nd | **Unit 6: Broaching;** Introduction |
| 3rd | Types of broaching machines – Single ram and duplex ram horizontal type, |
| Week 10 | 1st | vertical type pull up, pull down, push down |
| 2nd | Elements of broach tool, broach tooth details – nomenclature, types, and tool material. |
| 3rd | Assignment |
| Week 11 | 1st | Test |
| 2nd | **Unit 7: Jigs & Fixtures;** Importance and use of jigs and fixture |
| 3rd | Principle of location |
| Week 12 | 1st | Locating devices |
| 2nd | Clamping devices |
| 3rd | Advantages of jigs and fixtures |
| Week 13 | 1st | Assignment |
| 2nd | Revision |
| 3rd | **Unit 8: Cutting Fluids & Lubricants;** Introduction |
| Week 14 | 1st | Function of cutting fluid |
| 2nd | Types of cutting fluids |
| 3rd | Difference between cutting fluid and lubricant |
| Week 15 | 1st | Selection of cutting fluids for different materials and operations |
| 2nd | Common methods of lubrication of machine tools. |
| 3rd | Revision |
| Week 16 | 1st | Revision |
|  | 2nd | Revision |
|  | 3rd | Previous years question papers |