Lesson Plan

Name of the Faculty : Sh. Sandeep Karwasra

Discipline : Mechanical Engineering

Semester : 4th

Subject : **WORKSHOP TECHNOLOGY-II**

Lesson Plan duration : 15 weeks (from 22nd March, 2021 to 2nd July, 2021)

Work load per week : Lecture – 04, Practical – 00

Week	Theory	
	Lecture Day	Topic (Including assessment/test)
1st	1st	**1. Cutting Tools and Cutting Materials:** Cutting Tools - Various types of single point cutting tools and their uses
	2nd	Single point cutting tool geometry, tool signature and its effect
	3rd	Heat produced during cutting and its effect, Cutting speed, feed and depth of cut and their effect
	4th	Cutting Tool Materials - Properties of cutting tool material,
2nd	5th	Study of various cutting tool materials viz. High-speed steel, tungsten carbide
	6th	Study of various cutting tool materials viz. cobalt steel cemented carbides, stellite, ceramics and diamond.
	7th	**2. Drilling:** Principle of drilling, Classification of drilling machines and their description
	8th	Various operation performed on drilling machine – drilling, spot facing, reaming, boring, counter boring, counter sinking, hole milling, tapping
3rd	9th	Speeds and feeds during drilling, impact of these parameters on drilling, machining time
	10th	Types of drills and their features, nomenclature of a drill, Drill holding devices, Types of reamers
	11th	**3. Lathe:** Principle of turning, Description and function of various parts of a lathe
	12th	Classification and specification of various types of lathe
4th	13th	Drives and transmission, Work holding devices, Lathe tools: parameter/nomenclature and applications
	14th	Lathe operations :- Plain and step turning, facing, parting off, taper turning, eccentric turning, drilling, reaming, boring, threading and knurling, form turning, spinning.
	15th	Cutting parameters – Speed, feed and depth of cut for various materials and for various operations, machining time, Speed ratio, preferred numbers of

		speed selection
	16th	Lathe accessories:- Centers, dogs, different types of chucks, collets, face plate, angle plate, mandrel, steady rest, follower rest,
5th	17th	taper turning attachment, tool post grinder, milling attachment, Quick change device for tools.
	18th	Brief description of capstan and turret lathe, Comparison of capstan/turret lathe, work holding and tool guiding devices in capstan and turret lathe
	19th	**4. Boring:** Principle of boring
	20th	Classification of boring machines and their brief description,
6th	21st	Specification of boring machine
	22nd	Boring tools, boring bars and boring heads,
	23rd	**1st sessional test (Tentative)**
	24th	**Assessment**
7th	25th	Description of jig boring machine
	26th	**5. Shaping and Planing:** Working principle of shaper and planer,
	27th	Type of shapers,
	28th	Type of planers
8th	29th	Quick return mechanism applied to shaper and planer machine
	30th	Work holding devices used on shaper and planer
	31st	Types of tools used and their geometry
	32nd	Specification of shaper and planer, Speeds and feeds in above processes
9th	33rd	**6. Broaching:** Introduction, Types of broaching machines – Single ram horizontal type
	34th	Types of broaching machines – Duplex ram horizontal type
	35th	Vertical type pull up, pull down, push down.
	36th	Elements of broach tool,
10th	37th	Broach tooth details – nomenclature
	38th	Types of broach tool, and tool material.
	39th	**2nd sessional test (Tentative)**
	40th	**Assessment**

11th	41st	**7. Jigs and Fixtures:** Importance and use of jigs and fixture
	42nd	Principle of location,
	43rd	Locating devices
	44th	Locating devices
12th	45th	Clamping devices
	46th	Clamping devices
	47th	Types of jigs – Drilling jigs, bushes, template jig
	48th	Plate jig, channel jig, leaf jig,
13th	49th	Fixture for milling, turning
	50th	Fixture for welding, grinding
	51st	Advantages of jigs and fixtures
	52nd	**8. Cutting Fluids and Lubricants:** Function of cutting fluid, Types of cutting fluids
14th	53rd	Difference between cutting fluid and lubricant
	54th	Selection of cutting fluids for different materials and operations
	55th	Common methods of lubrication of machine tools.
	56th	**3rd sessional test (Tentative)**
15th	57th	**Assessment**
	58th	Revision
	59th	Revision
	60th	Revision