



SILVER OAK UNIVERSITY

Engineering and Technology (B.Tech.)

All Departments

Subject Name: Engineering Workshop Practice

Semester: 1st Year

Prerequisite: Zeal to learn the subject

Objective: Workshop Technology is the backbone of the real industrial environment which helps to develop and enhance relevant technical hand skills required by the technician working in the various engineering industries and workshops.

Teaching and Examination Scheme:

Teaching Scheme			Credits C	Evaluation Scheme				Total Marks
L	T	P		Internal		External		
				Th	Pr	Th	Pr	
0	0	04	02	--	100	--	--	100

Content:

Unit No.	Course Contents	Teaching Hours	Weightage %
1	Introduction and Demonstration: - Introduction to various shops / sections and workshop layouts. Safety norms to be followed in a workshop should be conveyed to students.	2	2
2	Carpentry Shop:- Introduction of Tools & operations, Types of woods & their applications, Types of Carpentry hardware and their uses, Carpentry Joints, carpentry operations such as marking ,sawing, planing, chiseling, grooving, boring, joining, types of woods and carpentry hardware.	10	10
3	Fitting Shop:- Introduction of Tools & operations, Types of Marking tools & their uses, Types of fitting cutting tool & their uses, fitting operations such as chipping, filing, scraping, grinding, sawing, marking, drilling, tapping	10	10
4	Smithy Shop:- <u>Tin Smithy:</u> - Introduction of Tools like hammers, stakes, scissors etc, & operations like shearing , bending ,joining.	10	10

	Types of Sheet metal joints and applications. <u>Black Smithy</u> : Introduction of forging tools and its operations.		
5	Metal Joining Shop : - Introduction of Tools, Types of welding Joint, Arc welding, Gas welding. Gas Cutting, Soldering, Brazing.	8	5
6	Machine Shop :- Introduction of machine tools and operations, Demonstrations of basic machine tools like Lathe, Shaper, drilling, Milling machine and CNC with basic operations and uses.	3	5
7	Foundry Shop :- Introduction of tools & operations. Demonstration of: Pattern Making, Mould Making, Core Making, various casting processes.	2	3
8	Masonry :- Different types of Bricks, Different size and part of Bricks, Different types of Bonds, Types of tools used for various masonry works	1	5
9	IOT :- An Arduino or Raspberry, Jumper wires, Resistors, Breadboard, LEDs, Buttons	4	20
10	Electrical :- Measure voltage, current, frequency, phase difference, power, power factor for single and three phase supply, Wire fan, tube light, two-way control, Wire MCB, ELCB for a given load circuit.	5	15
11	Electronics :- Introduction to basic electronics components and its testing: Resistors, Inductors, Capacitor, Diode, BJT, Introduction to testing and Measurement Instruments: Power Supply, Function Generator, Oscilloscope	5	15

Course Outcome:

Sr. No.	CO statement	Unit No
CO-1	Comprehend the safety measures required to be taken while using the tools	01
CO-2	Understand the operations of machine tools.	06
CO-3	Select the appropriate tools required for specific operation.	02,03,04
CO-4	Understand applications of hand tools and power tools	02,03,05,06
CO-5	To provides the knowledge of job materials in various shops.	02,03,04,05,06,08,09,10,11

Teaching & Learning Methodology:-

The course curriculum is heavily engineered to line up with the present and future industrial needs. The syllabus of Workshop Technology course in the curriculum is designed to provide in-depth practical knowledge with their application in real-life situation with practical teaching-learning approach covering conventional technologies, advanced technologies, manufacturing tool, hardware & computer applications in the course.

List of Experiments/Tutorials(Any 10):

1. Hands on Practice and job making in Carpentry.
2. Hands on Practice and job making in Fitting.
3. Hands on Practice and job making in Welding.
4. Hands on Practice and job making in Smithy.
5. Demonstrate the operations of machine shop.
6. To understand the process of foundry shop.
7. To understand the different types of bricks and it's relevant tool.
8. To study symbols, approximation cost, specification for different electrical and electronics device.
9. Measurement of voltage and current by multimeter and perform testing of various component.
10. To study function generator and power supply & perform measurement.
11. To study cathode ray oscilloscope and perform measurement for different signal.
12. To study
 - 1) Safety precaution.
 - 2) Electrical safety device & protection like MCB, ELCB and Fuse.
13. To preparation of wiring diagram
 - 1) Ceiling fan and Tube light
 - 2) Two way control switch.
14. To study the breadboard and PCB connection for Electronics circuit
15. To study soldering and de-soldering techniques for Electronics circuit.
16. To study different case study using Arduino.
17. To identify value of resistance.

Major Equipment: Lathe machine, drilling machine, grinding machine, Resistance and Arc Welding machine, Hacksaw machine, Fitting, Carpentry and Plumbing vice, various types of files for

fitting shop, hand hacksaw, monkey spanner, die, chisels, jack plane, furnace, anvil, different types of hammers for various shops, tongs, scissors, hand shear machine, sheet cutter, welding goggles, welding gloves, Soldering iron, Molding box, different wooden/ metal patterns.

Books Recommended:-

1. Mechanical Workshop Practice by K C John, PHI Learning
1. Workshop Technology Vol. 1 and 2 by Raghuvanshi B.S. Dhanpat Rai & Sons, 1998,
2. Workshop Technology by Chapman W.A. J and Arnold E. Viva low priced, student edition, 1998
3. Workshop Practices, H S Bawa, Tata McGraw-Hill, 2009
4. Workshop Practices and Materials, B J Black, CRC Press.
5. Hajra Choudhury S.K., Hajra Choudhury A.K. and Nirjhar Roy S.K., "Elements of Workshop Technology", Vol. I 2008 and Vol. II 2010, Media promoters and publishers private limited, Mumbai.
6. Workshop/Manufacturing Practices, Virender Narula: Publisher : Bhavya Books

List of Open Source Software/learning website: <http://fab-coep.vlabs.ac.in/>