



SILVER OAK UNIVERSITY

College of Technology (01)

Bachelor of Technology in

AE/CH/CE/CE(ML,CC)/CSE(CS)/IT/EC/CL/EE/ME/CSBS

Subject Name: Engineering Workshop Practice

Subject Code: 1010043112

Semester: I

Prerequisite:

1. Zeal to learn the subject

Objective:

1. Students will be acquainted with the IT ecosystem including Multimedia and Emerging Technologies. Along with concept understanding, students will be well versed with the applicability of the concepts after proper evaluation in real-world situations.
2. This course 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.
3. This course deals with basic introduction of system components of electrical and electronic systems, and provides hands-on practice in assembling, interconnecting, testing, and repairing systems by making use of various tools used in electrical and electronic workshops.

Teaching and Examination Scheme:

Teaching Scheme					Evaluation Scheme				Total Marks
L	T	P	Credit Hours	Credits	Theory		Practical		
					CIE (TH)	ESE (TH)	CIE (PR)	ESE (PR)	
0	0	04	04	02	--	--	100	--	100

Content:

Sr No.	Contents	Teaching Hours	Weightage %
Part A: Computer Engineering / Information Technology Workshop			
1	Computer hardware and Sensors: Types of a computer system, Input and Output devices, Primary and secondary Storage options	2	3%
2	Transmission Media: Guided Transmission Media: Twisted pair, Coaxial cable, Optical Fiber, Unguided Transmission Media Wireless Transmission	2	4%
3	Networking devices: Intro to LAN, MAN, WAN, Basics of OSI Model, Hub, Amplifier, Repeater, Bridge, Switch, Router, Gateway, Intro to TCP/IP and Lower-Level Protocols	2	4%
4	Introducing spreadsheet: Understanding and working with the spreadsheet interface, Understanding Different Formats, Formulas, and Logics.	2	5%
5	Working with Word Processor and Presentation: Word Processor: Word Basics, Working with Text, Format Documents, Working with different layouts, Watermarks and Borders, Insert headers and footers, Insert and edit tables, Insert clip art and pictures to documents, Perform a mail merge. Presentation: Getting acquainted with PowerPoint Interface, Creating Basic Presentations, Applying Animations, Inserting Charts, Tables, Objects, Video, and Sound, Setting Up the Presentation.	4	7%
6	Introduction to Operating Systems: What is OS, Types of OS.	1	2%
7	Types of Programming Languages & Basic of C Language: Brief history of Programming Languages, Program, Algorithm, Interpreter, Compiler, Low-Middle-Higher level Languages, Structure of C Language.	2	4%
8	Basics of C Language Part II: Input & Output Functions, Writing, Compiling and Executing the program in C, Implementation of Tower of Hanoi in C, Graphical concept in C, Making Rainbow in C.	2	4%
9	HTML Basic Tags and Basic CSS: Basic Tags, Formatting, Forms and Inputs, Basic Table Tags, Basic CSS tags.	3	5%
10	Introduction to Web Technologies: Basic Web page creation, Introduction to Validations	3	4%

11	Multimedia: Introduction to Visual Effects, Animation, Graphics, Brief overview of different software and its functionalities.	2	3%
12	Emerging Technologies: Brief overview of Artificial Intelligence, Cloud Computing, Information Retrieval, Blockchain, Cyber Security, Ethical Hacking	3	5%
Part B : Mechanical Workshop			
13	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	4%
14	<p>Carpentry Shop / Fitting Shop / Smithy Shop</p> <p>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</p> <p>Fitting Shop:- Introduction of Tools & operations, Types of Marking tools & their uses, Types of fitting and cutting tools & their uses, fitting operations such as chipping, filing, scraping, grinding, sawing, marking, drilling, tapping</p> <p>Smithy Shop:-</p> <p><u>Tin Smithy:</u> - Introduction of Tools like hammers, stakes, scissors, etc. & operations like shearing, bending, joining. Types of Sheet metal joints and applications.</p> <p><u>Black Smithy:-</u> Introduction of forging tools and it's operations.</p>	12	21%
Part C : Electrical & Electronics Workshop			
15	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	10%
16	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	10%
17	IoT:- An Arduino or Raspberry Pi, Jumper wires, Breadboard, Electronics Components, LEDs, Buttons, Switches ,Sensors, Connectors, etc.	4	5%

Course Outcome:

Sr. No.	CO statement	Unit No
CO-1	Understanding the computer components and networking concepts.	1,2,3
CO-2	To provide the knowledge of word processor, spreadsheet and presentation with multimedia..	4,5,11
CO-3	Understanding the concept of operating systems, programming languages and emerging technologies.	6,7,8,9,10,12
CO-4	Comprehend the safety measures required to be taken while using the tools	13,15,16,17
CO-5	Understand the operations of tools,measuring instruments and components.	14,15,16,17

Teaching & Learning Methodology: -**Part A: Computer Engineering / Information Technology Workshop**

The course curriculum has been meticulously designed to meet current and future industrial needs. Computers are essential for communication and the focal point of Information Technology. The syllabus of the Engineering Workshop Practice course in the curriculum is designed to provide in-depth practical knowledge using Brainstorming, Problem-based learning, Quiz, and Computer-assisted learning(CAI).

Part B & C : Mechanical, Electrical & Electronics Workshop

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

List of Experiments:**Part A : Computer Engineering / Information Technology Workshop**

1. Study different types of Networking devices.
2. Working with a spreadsheet.
3. Study various functionalities of Word application.
4. Study various functionalities of PowerPoint applications.

5. Basics of C Language. Part-1
6. Basics of C Language. Part-2
7. Working with basic html and css tags.
8. Study of different applications of Artificial Intelligence.
9. Study of different cybercrime laws.
10. Working with animations.

Part B : Mechanical Workshop

11. Hands on Practice and job making in Carpentry.
12. Hands on Practice and job making in Fitting.
13. Hands on Practice and job making in Smithy.

(Any 1 experiment out of Experiment No. 11,12&13)

Part C: Electrical & Electronics Workshop

14. To study symbols, approximation cost, specification for different electrical and electronics devices.
15. Measurement of voltage and current by multimeter and perform testing of various components.
16. To study function generator and power supply & perform measurement.
17. To study to preparation of wiring diagram for
 - 1) Ceiling fan and Tube light
 - 2) Two way control switch.
18. To study soldering and desoldering techniques for Electronics circuits.
19. To study the breadboard and PCB connection for Electronics circuits.
20. To explain the basics of Arduino and its applications.

Books Recommended:

1. Microsoft Word, Excel, and PowerPoint: Just for Beginners, by Dorothy House, Outskirts Press
2. Data Communications And Networking 4th Edition Behrouz A Forouzan, TMH
3. Head First HTML and CSS, 2nd Edition [Book], O'Reilly Media
4. Programming in ANSI C, 8th Edition [Book] by E Balagurusamy [Author], TMH
5. Mechanical Workshop Practice by K C John, PHI Learning
6. Workshop Technology Vol. 1 and 2 by Raghuvanshi B.S. Dhanpat Rai & Sons, 1998
7. A Textbook of Electrical Workshop Practices, by Dr. Umesh Rathore, Naresh Kumar Sharma, S.K. Kataria & Sons, 2019
8. Electrical Workshop: Safety, Commissioning, Maintenance & Testing of Electrical Equipment, 3 Edition, by R P Singh, IK Publishing House, 2012

Sources for relevant Software/learning website:

1. https://edu.google.com/intl/ALL_in/teacher-center/products/sheets/?modal_active=none
2. <https://csfirst.withgoogle.com/c/cs-first/en/interactive-presentation/overview.html>
3. <https://docs.microsoft.com/en-us/learn/certifications/browse/>
4. <https://support.google.com/a/users/answer/9282959?hl=en>
5. https://support.google.com/a/users/answer/9282664?visit_id=637699616155003154-2408578175&rd=1
6. <https://www.edureka.co/blog/excel-tutorial/>
7. <https://nptel.ac.in/courses/106/105/106105214/>
8. <https://nptel.ac.in/courses/106/101/106101209/>
9. <https://nptel.ac.in/courses/106/105/106105183/>
10. <https://nptel.ac.in/courses/106/102/106102067/>
11. <https://nptel.ac.in/courses/106/104/106104128/>
12. <https://nptel.ac.in/courses/106/105/106105171/>