SARVAJANIK UNIVERSITY

Sarvajanik College of Engineering and Technology

Bachelor of Technology

Mechanical Engineering Department

B. Tech. Semester VII

Course Name : **Valuation of Plants and Machinery** **Course Code: BTME14719**

Type of course : **Professional Elective Course**

Prerequisite : Basic knowledge of industrial engineering

Rationale of course : This course is designed to acquaint and motivate the student with different plant layout and machinery with their valuation process so that they can get balanced coverage of relevant fundamentals and real-world problems.

Teaching and Examination Scheme:

TEACHING SCHEME				Theory Marks			Practical Marks		Total
L	T	P	C	TEE	CA1	CA2	TEP	CA3	
3	0	0	3	60	25	15	0	0	100

CA1: Continuous Assessment (assignments/projects/open book tests/closed book tests). **CA2**: Sincerity in attending classes/class tests/ timely submissions of assignments/self-learning attitude/solving advanced problems. **TEE**: Term End Examination. **TEP**: Term End Practical Exam (Performance and viva on practical skills learned in course). **CA3**: Regular submission of Lab work/Quality of work submitted/Active participation in lab sessions/viva on practical skills learned in course.

Contents:

Sr. No.	Content	Total Hrs	Module Weightage
1	**Introduction:** Factors affecting plant location, factors in planning layouts, principles of plant layout, unit plot plan, vertical and horizontal lay out, role, functions and responsibilities of a plant and machinery valuer, cost, price, value and valuation, types of market, demand and supply curve, capitalization, rate of capitalization, recessionary value, construction and use of valuation tables, investment property, marketable non-investment property, non-marketable non-investment property with their characteristics and approaches to value.	9	20%
2	**Principles of Machine Tools and Factory Equipment:** The evolution, nature and function of machine tools and their control systems, machine tools - for milling, turning, cutting,	9	20%

	drilling and threading, grinding, shaping, casting, plastic deforming, powder forming, sheet metal, welding, fabrication, factory equipment - material handling and fire protection, utility equipment – for energy generation, energy consuming devices, for energy utilization, electrical installations		
3	**Identification and Verification of Plant and Machinery:** Inventory (listing of machinery) and data to be collected while taking inventory, importance of technical specifications of plant and machinery in valuation exercise, assessment of condition of plant, machinery and equipment based on visual inspection, comparing inventory with plant and machinery records maintained by the company, ascertaining discrepancy, identification of productive, non-productive, surplus and off balance sheet assets, age, effective age, factors affecting life, both in terms of years or hours of use, depending on type of assets and maintenance.	**9**	**20%**
4	**Approaches to Valuation:** Types of value; various purposes of valuation, factors affecting value, value in use and value in exchange, sinking fund, redemption, of capital, reproduction cost new, replacement cost new, depreciated reproduction cost/depreciated replacement cost (DRC), difference and similarity in DRC and market value**,** difference between reproduction cost new and replacement cost new, methods of computation of reproduction cost new, meaning of the term depreciation for wear and tear, factors influencing depreciation -its measurements and application by valuers of plant and machinery, the concept of income approach**,** gross income-outgoings, net income and year's purchase**,** actual income vs potential income. **Process of Valuation:** Check list for valuation of plant and machinery, documents to be studied prior to plant visit/inspection, ABC analysis, the items to be treated as plant and machinery, data collection and valuation analysis under replacement cost new method (cost approach), valuation of a machine for which current cost of identical brand-new machine is available.	**11**	**25%**

5	**Elements of Laws:** Sale of goods and agreements to sell, seller's obligations as to delivery time, title, description, fitness, quality and quantity; exclusion of obligations, sales by sample, passing of property in goods, transfer of title by non-owner, remedies for breach of contract, rights of unpaid seller against goods, licensing of industries and regulation of industrial activities under various laws; viz. industrial licensing laws etc., salient features of various acts such as the factory act, 1948, the electricity act, 2003, labour laws with regards to regulatory measures for industrial undertakings.	**7**	**15%**

Percentage Distribution of Marks as per Revised Bloom's Taxonomy (Theory/Practical):

Percentage Distribution of Marks					
R Level	**U Level**	**A Level**	**N Level**	**E Level**	**C Level**
25	**25**	**20**	**15**	**10**	**05**

Legends: R: Remembrance, **U:** Understanding; **A:** Application, **N:** Analyse, **E:** Evaluate, **C:** Create and above Levels

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Reference/Text Books:

Sr. No.	**Title of book /article**	**Author(s)**	**Publisher**	**Publication year**	**Publication Edition**
1	Valuation of Plant & Machinery (Theory & Practice)	Kirit Budhbhatti	Budhbhatti & Associates	2002	2nd
2	Valuation Principles and Procedures	Ashok Nain	Dewpoint Publication	--	--
3	J.A. Parks Principles & Practice of Valuation	D.N. Banerjee	Eastern Law House, Calcutta	2015	6th
4	Production Management	K. G. Lockyer	Pitman Publishing	1983	4th

5	Jurisprudence	M. J. Sethna	Lakhani Book Depot	1973	3rd
6	Modern Law of Insurance in India	K. S. N. Murthy & Dr. K. V. S. Sarma	Lexis Nexis Butterworth India	2019	6th

Course Outcomes (CO's):

CO No.	CO Statement After learning this subject, students will be able to	Marks % Weightage
CO-1	Recognize the different plant layout and valuation terms	15
CO-2	Classify the various machinery used in plant	10
CO-3	Examine the parts and machinery available in plant	15
CO-4	Describe and estimate the valuation process of plant and machinery	30
CO-5	Explain various laws regarding regulation of valuation	15

Mapping of (CO's) with Program Outcomes (PO's) and Program Specific Outcomes (PSO's):

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO-1	1	1	1	2	1	1	0	1	1	0	1	1	1	0	0
CO-2	2	2	2	2	2	1	1	2	1	1	2	1	2	0	1
CO-3	1	2	1	2	2	2	1	2	1	1	2	1	2	1	1
CO-4	1	2	1	2	2	1	1	2	1	0	2	1	2	1	1
CO-5	1	1	0	1	1	0	0	1	1	0	0	0	1	0	0
Rationale*	6	8	5	9	8	5	3	8	5	2	7	4	8	2	3

Rationale - Mapping of CO's with PO's and PSO's: This course highly maps with PO and PSO.

It will help to develop the skill of problem analysis and solution related to valuation of plant and machinery which is sustainable to environment. Students will able to apply the knowledge in energy systems with quality and safety measures related to valuation of plant and machinery.

It states that the course will develop. This Course also focuses on Engineering knowledge, Problem analysis, Design / development of solutions, Conduct investigations of complex problems, Modern tool usage, The engineer and society, Environment and sustainability, Ethics, Individual and teamwork, Communication, Project management and finance, Life-long learning.

Assignments to be given as per the requirement of the course.

List of Open learning website:

1. https://valustrat.com/

List of Open Source Software: Nil