SARVAJANIK UNIVERSITY

SARVAJANIK COLLEGE OF ENGINEERING AND TECHNOLOGY

BACHELOR OF TECHNOLOGY

B.Tech	1	Semester	1/2	Teaching Scheme				Evaluation Scheme	
Subject Name	Chemical Engineering Workshop			**L**	**T**	**P**	**Credits**	**CCE**	**SEE**
Subject Code	BTCH22103			-	-	2	1	25	25
Type of course	Engineering Science			CCE : Continuous and Comprehensive Evaluation SEE : Semester End Evaluation					
Prerequisite	No Prerequisite								
Rationale	This course is designed to help engineering students learn the necessary practical skills related to various chemical engineering laboratories.								

Course Outcomes (COs): At the end of the course, students will be able to		Marks % Weightage
CO – 1	Identify the specific glass wares, basic instruments and their appropriate use.	20
CO – 2	Formulate solutions of required concentrations and dilute solutions from available concentrations.	30
CO – 3	Determine basic metric conversions for computations in chemical engineering.	20
CO – 4	Interpret the versatile role of a Chemical Engineer.	10
CO – 5	Comprehend basic principles for formation and extraction of chemical materials.	20

Sr.No.	List of Laboratory Practical	Tentative Teaching Hours	Tentative Unit % Weightage
1	**Basics of laboratory I:** A. Glassware used in laboratory. B. Hands on use of basic instruments such as weigh balance, pH meter, vernier callipers, micro screw gauge, hydrometer, specific gravity bottle.	04	13
2	**Basics of laboratory II:** Simple volumetric analysis experiments, basics of measurement of liquids, appropriate glassware use.	04	13
3	**Conversion exercises:** Concept of Unit: Fundamental & Derived Dimensional Consistency, Different ways of expressing units of quantities & physical constant Unit conversion & its significance. Metric unit conversions required in	06	20

	Basic Calculations in Chemical Engineering, Fluid Flow Operations, Heat Transfer Operations and Mass Transfer Operations laboratories.		
4	Study of Pipes, valves and fittings/Joints which includes types, Material of Construction, Working, Applications.	02	7
5	A. Types of chemical Industries, processes/operations/equipment involved in the manufacturing process B. Roles and responsibilities of Chemical Engineer in different chemical industries C. Effect of parameters such as temperature, pressure, concentration on the properties of material like density, viscosity, thermal conductivity, specific heat.	04	13
6	Basic Chemical Calculations: Mole concept, Calculation of mole, molecular weight, equivalent weight etc. Composition relationship and Stoichiometry.	04	13
7	Extraction of oil, manufacturing of soap, lip balms and natural herbs, aroma and color extraction from natural sources.	04	13
8	Safe handling practices.	02	7

Suggested Specification table with Marks

% Distribution of Marks					
R Level	U Level	A Level	N Level	E Level	C Level
20	30	40	10	-	-

Recommended Reference Books

1. R.H. Perry, D.W. Green, and J.O. Maloney, Eds. *Perry's Chemical Engineers' Handbook*, 10th ed., McGraw-Hill, New York, 2018.
2. Rodrigues, F., and Oliveira, M. B. *Plant Extracts in Skin Care Products*. MDPI. https://doi.org/10.3390/books978-3-03897-161-0, 1st ed., 2018
3. Valerie Ann Worwood, *Complete Book of Essential Oils and Aromatherapy*, New World Novato, California, 2016.
4. J.F. Richardson, J.H. Harker and J.R. Backhurst, *Coulson & Richardson's Chemical Engineering*, Volume-1, 6th ed. Elsevier, New Delhi,2004
5. E. M. Pearce, Encyclopaedia of Chemical Technology Kirk and Othmer, 3rd Edition, Wiley-Interscience, New York, 1978.
6. F. Ullmann , Ullmann's Encyclopedia of Industrial Chemistry, 5th Edition, VCH, Wiley 1996.

CO-PO-Mapping

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO – 1	3	1	1	1	1	1	1	1	1	1	1	1
CO – 2	1	1	3	1	2	1	1	1	2	1	1	1
CO – 3	1	2	3	1	1	1	1	2	1	1	1	1
CO – 4	1	1	1	1	1	3	1	3	1	3	1	3
CO – 5	1	3	1	3	3	1	1	1	1	1	1	1

List of Open Source/learning website/Other Details if any:

1. Chemical laboratory glassware and chemicals.