

Swami Keshvanand Institute of Technology, Management & Gramothan, Jaipur
(An Autonomous Institute Affiliated to Rajasthan Technical University, Kota)

Teaching and Examination Scheme-2024-25

B.Tech. I Year (Semester I & II)

Sr. No.	SEM.	Course Code	Course Name	Category	Teaching Scheme			Exam Hrs.	Marks			Credit
					L	T	P		CIE	SEE	Total	
1	I	MAUL101	Engineering Mathematics-I	BSC	3	1	0	3	40	60	100	4
2	I	PHUL101/CHUL101	Engineering Physics/Engineering Chemistry	BSC	3	1	0	3	40	60	100	4
3	I	HSUL101/HSUL102	Communication Skills/Universal Human Values	HSMC	2	0	0	3	40	60	100	2
4	I	CSUL101	Computational Thinking and Programming	ESC	2	0	0	3	40	60	100	2
5	I	EEUL101	Basic Electrical & Electronics Engineering (CSE/IT/CSE(DS)/CSE(AI)/CSE(IOT)/ME/CE)	ESC	2	0	0	3	40	60	100	2
		CEUL101	Basic Civil Engineering (EE/ECE/ME)	ESC	2	0	0	3	40	60	100	
		MEUL101	Basic Mechanical Engineering (CSE/IT/CSE(DS)/CSE(AI)/CSE(IOT)/EE/ECE/CE)	ESC	2	0	0	3	40	60	100	
6	I	PHUP120/CHUP120	Engineering Physics Lab/ Engineering Chemistry Lab	BSC	0	0	2	3	60	40	100	1
7	I	HSUP120/HSUP121	Language Lab/ Universal Human Values Lab	HSMC	0	0	2	3	60	40	100	1
8	I	CSUP120	C Programming Lab	ESC	0	0	2	3	60	40	100	1
9	I	EEUP120	Basic Electrical & Electronics Engineering Lab (CSE/IT/CSE(DS)/CSE(AI)/CSE(IOT)/ME/CE)	ESC	0	0	2	3	60	40	100	1
		CEUP120	Basic Civil Engineering Lab (EE/ECE/ME)	ESC	0	0	2	3	60	40	100	
		MEUP120	Manufacturing Practice Workshop (CSE/IT/CSE(DS)/CSE(AI)/CSE(IOT)/EE/ECE/CE)	ESC	0	0	2	3	60	40	100	
10	I	MEUP121/ MEUP122	Computer Aided Engineering Graphics/Computer Aided Machine Drawing	ESC	0	0	3	3	60	40	100	1.5
11	I	XXUA100	Social Outreach, Discipline and Extra-Curricular Activities (SODECA)	SODECA	-	-	0.5	-	-	-	-	0.5
12	I	NU99.X	Audit Course	NC	-	-	-	3	40	60	100	0
									Total Credit			20

Swami Keshvanand Institute of Technology, Management & Gramothan, Jaipur
(An Autonomous Institute Affiliated to Rajasthan Technical University, Kota)

Teaching and Examination Scheme-2024-25

B.Tech. I Year (Semester I & II)

Sr. No.	SEM.	Course Code	Course Name	Category	Teaching Scheme			Exam Hrs.	Marks			Credit
					L	T	P		CIE	SEE	Total	
1	II	MAUL201	Engineering Mathematics-II	BSC	3	1	0	3	40	60	100	4
2	II	PHUL201/CHUL201	Engineering Physics/Engineering Chemistry	BSC	3	1	0	3	40	60	100	4
3	II	HSUL201/HSUL202	Communication Skills/Universal Human Values	HSMC	2	0	0	3	40	60	100	2
4	II	HSUL203	Innovation & Entrepreneurship	HSMC	1	0	0	3	40	60	100	1
5	II	CSUL201	Problem Solving using Object Oriented Paradigm	ESC	2	0	0	3	40	60	100	2
6	II	EEUL201	Basic Electrical & Electronics Engineering (CSE/IT/CSE(DS)/CSE(AI)/CSE(IOT)/ME/CE)	ESC	2	0	0	3	40	60	100	2
		CEUL201	Basic Civil Engineering (EE/ECE/ME)	ESC	2	0	0	3	40	60	100	
		MEUL201	Basic Mechanical Engineering (CSE/IT/CSE(DS)/CSE(AI)/CSE(IOT)/EE/ECE/CE)	ESC	2	0	0	3	40	60	100	
7	II	PHUP220/CHUP220	Engineering Physics Lab/ Engineering Chemistry Lab	BSC	0	0	2	3	60	40	100	1
8	II	HSUP220/HSUP221	Language Lab/ Universal Human Values Lab	HSMC	0	0	2	3	60	40	100	1
9	II	CSUP220	Object Oriented Programming Lab	ESC	0	0	2	3	60	40	100	1
10	II	EEUP220	Basic Electrical & Electronics Engineering Lab (CSE/IT/CSE(DS)/CSE(AI)/CSE(IOT)/ME/CE)	ESC	0	0	2	3	60	40	100	1
		CEUP220	Basic Civil Engineering Lab (EE/ECE/ME)	ESC	0	0	2	3	60	40	100	
		MEUP220	Manufacturing Practice Workshop (CSE/IT/CSE(DS)/CSE(AI)/CSE(IOT)/EE/ECE/CE)	ESC	0	0	2	3	60	40	100	
11	II	MEUP221/ MEUP222	Computer Aided Engineering Graphics/Computer Aided Machine Drawing	ESC	0	0	3	3	60	40	100	1.5
12	II	XXUA200	Social Outreach, Discipline and Extra-Curricular Activities (SODECA)	SODECA	-	-	0.5	-	-	-	-	0.5
13	I	NU99.X	Audit Course		-	-	-	3	40	60	100	0
									Total Credit			21



Swami Keshvanand Institute of Technology, Management & Gramothan, Jaipur

Syllabus

Name of the Programme: B.Tech.	Year: I	Semester: I / II
Course Name: Engineering Chemistry	Course Code: CHUL101 /CHUL201	Credit: 4
Max Marks: 100	CIE: 40	SEE: 60
End Term Exam Time: 3 Hrs	Teaching Scheme: 3L+1T	

Module no.	Contents	Hours
1	Introduction: Objective, Scope, Outcome of the Course and Prerequisite	1
2	Corrosion and its control: Basic idea about Electrode Potentials and Cells, Galvanic and Electrolytic Cell, Nernst Equation, Battery, Fuel Cells. Definition and significance of corrosion, Mechanism of chemical (dry) and electrochemical (wet) corrosion, galvanic corrosion, concentration cell corrosion. Protection from corrosion; protective coatings- galvanization and tinning, cathodic protection, sacrificial anode and modification in design.	6
3	Engineering Materials: Lubricants: Introduction and significance, classification of lubricants. Properties; Viscosity and viscosity index, flash and fire point, cloud and pour point. Emulsification and steam emulsion number. Cement: Manufacturing of Portland cement by Rotary Kiln technology, Chemistry of Setting and hardening of cement. Nanomaterials: Classification and applications of Nanomaterials. Polymers: Conducting and Biodegradable polymer.	8
4	Green Practices: Twelve principals of green chemistry, Harmful effects of use of insecticides, pesticides and fertilizers in agriculture and substitute to mitigate this problem, Food adulterants and impact on health, Organic farming, Ethical practices in food industry.	6
5	Water Chemistry: Hardness of Water: Hard & Soft Water, Degree of hardness, Units of hardness, determination of hardness by complexometric EDTA method, Boiler troubles: Scale and Sludge formation, and Boiler corrosion. Water softening methods; Lime - Soda method, Zeolite (Permutit) process, Demineralization by Ion Exchange method. Numerical problems based on Hardness, EDTA, Zeolite and Lime Soda method. Municipal water supply: Requisites of drinking water, Purification of water; sedimentation, filtration, disinfection, break point chlorination. BIS& WHO standards of potable water. Reverse Osmosis & desalination.	12
6	Energy: Fuels and Combustion: Classification of fuel, Gross and Net Calorific value, Determination of Calorific value of coal by Bomb Calorimeter. Analysis of Solid fuel: Proximate analysis of coal and its significance. Numerical problems based on the determination of calorific value (bomb calorimeter, Dulong's formula) proximate analysis and combustion of fuel. Gasoline; Knocking, Octane number, Anti-knocking agents, Diesel; Cetane number, LPG and CNG, Alternate Energy Resources: Renewable energy sources; Solar energy, Wind energy, Geo-thermal energy, Hydro power and Ocean energy. Power alcohol, Biodiesel, Hydrogen as a source of energy Fuel Cells: Principle, advantages & types.	12
	Total	45



Swami Keshvanand Institute of Technology, Management & Gramothan, Jaipur

Text Books:

- Engineering Chemistry by S. K. Jain and K. D. Gupta; JPH Jaipur
- A text book of Engineering Chemistry by S. S. Dara; S. Chand & Co. Ltd.
- Chemistry of Engineering Materials by C. V. Agarwal, C. P. Murthy, A. Naidu; Wiley India
- Engineering Chemistry by B. Shiva Shankar, Tata McGraw Hill Publishing Ltd.
- Engineering Chemistry: P.C. Jain and Monica Jain(16thedition), Dhanpat Rai Publishing Company, New Delhi
- AText Book of engineering Chemistry: O.G. Palanna (4threprint2012),McGraw Hill,New Delhi.

Reference Books:

- EDTA Titrations: An Introduction to Theory and Practice by H. A. Flaschka; Elsevier Ltd.
- Chemistry of water treatment, Samuel Faust & Osman M Aly; CRC Press
- Boiler water treatment, Principles and Practice, Colin Frayne; CRC Press
- Corrosion Understanding the Basic by Joseph R Davis; ASM International
- The Chemistry and Technology of Petroleum by J. G. Speigh; CRC Press
- Handbook of Conjugated Polymers by Tejre A. Skotheim and J. R. Reynolds; CRC Press
- Lubricants and Lubrication by Theo Mang; Wilfeied, Wiley-VHC

Prerequisite:

- Electrochemistry
- Redox Reactions
- Methods of water purification
- Basics of green chemistry
- Basics of hardness of Water
- Basics of Fuels