

Madhav Institute of Technology & Science, Gwalior
(A Govt. Aided UGC Autonomous & NAAC accredited Institute Affiliated to RGPV, Bhopal)

Chemical Engineering

Course Outcome Attainment of Mid Semester Examinations (Jan - June 2020)

Semester	S. No.	Name of the Course & Code	Course Outcomes		CO Attainment (%)					Corrective Actions	
					Mid Sem Test 1	Mid Sem Test 2	Mid Sem Test 3	Overall	Target		Gap
Semester IV	1	Heat Transfer (170402)	CO1	Explain the mechanism of heat transfer by conduction, convection and radiation	83	64.67	63.33	70.3333	70	-0.333333	-
			CO2	Interpret the dimensionless Numbers applicable in heat transfer and their physical significance	75	69.67	61.67	68.78	70	1.22	More questions to be given based on CO2
			CO3	Apply the concept of the individual and overall heat transfer coefficient	83	65.25	59.25	69.1667	70	0.833333	Assignment based on CO3 to be given
			CO4	Analyze the design & operation of Heat Exchangers	-	65.25	61.75	63.5	65	1.5	More practice numerical problems to be given
			CO5	Calculate the temperature profile of the various types Heat exchangers	-	74	70.67	72.335	70	-2.335	-
			CO6	Solve the problems of Evaporators and condensers	-	70	72	71	70	-1	-
	2	Mass Transfer - I (170403)	CO1	Apply the basics of absorption, humidification, drying, crystallization & the principle of diffusion underlying them.	83	86	65.67	78.2233	75	-3.223333	-
			CO2	Choose the necessary information useful in design of mass transfer equipment.	-	85	67.25	76.125	75	-1.125	-
			CO3	Analyze the different cases of diffusion phenomena.	75	80.67	74.12	76.5967	75	-1.596667	-
			CO4	Apply the theoretical concepts for solving practical problems.	75	76.25	70.57	73.94	75	1.06	More practice numerical problems to be given
			CO5	Interpret psychometric charts & equilibrium data.	-	75	68	71.5	75	3.5	Tutorial to be given along with practice problems
			CO6	Propose favorable conditions for a separation to be carried out.	-	68	71.91	69.955	75	5.045	More lectures to be engaged along with mini project
	3	Instrumentation & Process Control (170404)	CO1	Explain the basic principles & importance of process control in industrial process plants.	75	86	80.5	80.5	75	-5.5	-
			CO2	Explain the use of block diagrams & the mathematical basis for the design of control systems.	75	76.5	80.5	77.3333	75	-2.333333	-
			CO3	Identify controller that can be used for specific problems in chemical industry.	83	75	82	80	75	-5	-
			CO4	Analyze the Dynamic behavior of first and second order control system.	67	72	82.67	73.89	75	1.11	More questions to be given based on CO4
			CO5	Compare the Linear open loop and Closed loop system.	-	54.5	79.67	67.085	70	2.915	More practice numerical problems to be given
			CO6	Test the stability of a given system & Analyze the transient and frequency response of systems.	-	47.5	82.67	65.085	65	-0.085	-

Semester VI	4	Mechanical Design of Process Equipment (170405)	CO1	Recall basics of Mechanical Design in the industrial problems	75	84.5	64.25	74.5833	70	-4.583333	-
			CO2	Experiment with different heads, closures and other accessories involved during design.	67	88.5	68.5	74.6667	70	-4.666667	-
			CO3	Decide on general design considerations	-	82	79.33	80.665	80	-0.665	-
			CO4	Make use of IS Codes in design of Pressure vessel	-	64	78	71	70	-1	-
			CO5	Distinguish between design procedures for Tall Vertical & Horizontal Vessels	-	71.33	56	63.665	65	1.335	More practice numerical problems to be given
			CO6	Outline the design of bolted flanges for determining suitable material of construction for specific service.	-	83.33	57.33	70.33	70	-0.33	-
	1	Process Modeling & Simulation (170602)	CO1	Explain the basic concepts involved in process analysis & simulation.	92	61.67	66.67	73.4467	70	-3.446667	-
			CO2	Formulate a chemical engineering problem as a mathematical model from basic engineering principles.	67	57.33	72	65.4433	65	-0.443333	-
			CO3	Apply the conservation equations in various physio – chemical systems.	83	62	54.33	66.4433	65	-1.443333	-
			CO4	Examine the experimental data for further processing.	-	87.2	68	77.6	75	-2.6	-
			CO5	Compare various iterative convergence methods and numerical solution of ODEs.	-	71.33	69.67	70.5	70	-0.5	-
			CO6	Analyze different approaches involved in dynamic modelling of process systems.	-	69	70	69.5	70	0.5	Explanation should be given with illustration
	2	DE 1: Fluidization Engineering (170612)	CO1	Explain the basics of fluidization	67	62.42	60.5	63.3067	60	-3.306667	-
			CO2	Describe the various industrial application of fluidization	67	55.15	66.5	62.8833	60	-2.883333	-
			CO3	Explain the various fluidization regimes, classification of particles	83	53.94	60.33	65.7567	65	-0.756667	-
			CO4	Analyze Heat and Mass Transfer between fluid and solid	83	71.51	69.67	74.7267	75	0.273333	Tutorial to be given along with practice problems
			CO5	Estimate Voidage, TDH, size distribution with height, viscosity, fluidity	83	61.21	65	69.7367	70	0.263333	Tutorial to be given along with practice problems
			CO6	Evaluate Heat transfer coefficients in fluidized beds	-	79.39	57.33	68.36	70	1.64	Tutorial to be given along with practice problems
	3	DE 1: Polymer Technology (170614)	CO1	Check processing technique for the given	92	56	68.5	72.1667	70	-2.166667	-
			CO2	Describe different types of processing techniques of polymers	83	53	52.25	62.75	60	-2.75	-
			CO3	Explain the structure and properties of polymers	-	52	64	58	60	2	More lectures to be engaged
CO4			Explain the forming techniques for plastics (compression molding, injection molding....)	-	63.14	63.67	63.405	60	-3.405	-	
CO5			Test the synthesis of polymers and their commercial applications.	-	52.33	61	56.665	60	3.335	More questions to be given based on CO5	
CO6			Explain the properties that these materials posses, including their molecular, physical, chemical, thermal, mechanical and electrical properties.	-	55.83	61	58.415	60	1.585	More lectures to be engaged	
		CO1	Explain the origin of fossil fuels	80	79.5	73	77.5	75	-2.5	-	

4	OC 1: Fuels & Combustion (900109)	CO2	Classify fossil fuels	80	92.5	82.5	85	80	-5	-
		CO3	Analyze the various alternate energy options available in earth	60	57.5	65	60.8333	60	-0.833333	-
		CO4	Explain various fuel-processing techniques used in solid, liquid and gaseous fuels	70	75	72	72.3333	70	-2.333333	-
		CO5	Explain the characterization techniques of fuels	75	70.5	73.5	73	75	2	Group assignment cum presentation to be given
		CO6	Examine quality of fuels based on its properties and possible utilization	-	67	69	68	70	2	Group assignment cum presentation to be given
5	OC 1: Nanotechnology (900110)	CO1	Analyze the nanostructures and their properties	67	74.5	76	72.5	70	-2.5	-
		CO2	Examine the principles of processing, manufacturing of nanomaterials.	75	77	78.75	76.9167	75	-1.916667	-
		CO3	Examine the nanomaterials and nanostructures characterization techniques.	75	82	74	77	75	-2	-
		CO4	Examine the mechanical properties of bulk nanostructured metals, alloys, nanocomposites and carbon nanotubes.	75	60	77.67	70.89	70	-0.89	-
		CO5	Analyze the structure of materials down to the nanometer (atomic) level, with particular emphasis on crystal structure, nano-defects and their kinetics	-	61.33	74.33	67.83	70	2.17	Detailed study notes to be provided
		CO6	Analyze the application of nanomaterial and nanostructure.	-	51.33	81.33	66.33	70	3.67	Detailed study notes to be provided
1	Bio Process Technology (BCHL 801)	CO1	Describe basic concepts of thermodynamics, mass and energy balances, reaction kinetics and	-	70	62	66	65	-1	-
		CO2	Analyze bioreactors, upstream and downstream processes in production of bio-products	-	68.57	60.75	64.66	65	0.34	Detailed study notes to be provided
		CO3	Demonstrate the fermentation process and its products for the latest industrial revolution:	-	60.14	61.67	60.905	65	4.095	Detailed study notes to be provided
		CO4	Explain the different cells and their use in biochemical process:	-	63.57	61.33	62.45	60	-2.45	-
		CO5	Identify the role of enzymes in kinetic analysis of bio-reactions:	-	69	60.67	64.835	65	0.165	Doubt sessions to be conducted
		CO6	Design an experiment with step-by-step instructions to address a research problem:	-	66.15	61.67	63.91	60	-3.91	-
2	Membrane Separation Processes (BCHL 802)	CO1	Explain the membrane processes and transport mechanism in membranes	-	64	65.25	64.625	65	0.375	Doubt sessions to be conducted
		CO2	Explain the preparation methods for membranes and their characterization.	-	63.5	57.5	60.5	60	-0.5	-
		CO3	Explain various pressure driven membrane processes and membrane modules.	-	61.75	65	63.375	65	1.625	Detailed study notes to be provided
		CO4	Analyze the concentration polarizations, fouling phenomena in membrane.	-	71	60.67	65.835	65	-0.835	-
		CO5	Evaluate design calculations of reverse osmosis, nano-filtration, and ultra/microfiltration.	-	67.5	50.67	59.085	60	0.915	Detailed study notes to be provided & doubt sessions to be conducted
		CO6	Explain the membrane technology application in industry.	-	62	60	61	60	-1	-

Semester VII	3	Process Safety & Hazard Management (BCHL 803)	CO1	Analyze the origin of hazards and fundamental principles of safety	-	73.94	69.75	71.845	70	-1.845	-
			CO2	Analyze the issues related to toxicants and minimize the toxicants dose.	-	72.73	88.5	80.615	75	-5.615	-
			CO3	Explain the fire & explosion hazard and the controlling measurement techniques used in the chemical industries	-	87.27	90	88.635	80	-8.635	-
			CO4	Evaluate the professional obligations related to the plant management and maintains to reduce energy hazard.	-	92.12	96.67	94.395	85	-9.395	-
			CO5	Analyze the risk analysis and plant reliability to reduce the hazard	-	83.64	90.33	86.985	85	-1.985	-
			CO6	Formulate the HAZOP study, event tree analysis and faulty tree analysis	-	87.88	95.33	91.605	85	-6.605	-
	4	Environmental Engineering (BCHL 804)	CO1	Explain the water and air quality criteria, characteristics of Air and water pollutants,	-	96	72.5	84.25	80	-4.25	-
			CO2	Describe the measuring and sampling of gaseous and particulate pollutants, water pollutants, BOD, COD and other quality parameters	-	94	72	83	80	-3	-
			CO3	Examine the classification, selection of air pollution controlling techniques and design of equipments	-	96	77.67	86.835	85	-1.835	-
			CO4	Examine the classification, selection of water pollution controlling techniques and design of equipments	-	97.33	75.67	86.5	85	-1.5	-
			CO5	Explain the methods and various processing techniques used for solid waste management.	-	97.33	72.33	84.83	85	0.17	Detailed study notes to be provided
			CO6	Describe the Soil pollution, Marine pollution, Noise pollution, Thermal pollution and Nuclear hazards	-	96.67	73	84.835	85	0.165	Detailed study notes to be provided