Contribution of Course outcomes toward attainment of Program Outcomes in Diploma Chemical Engineering

Course Code	Course Title	Course Outcomes (COs)	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
1ST SEMESTER GTU (New)												
3300001	Basic Mathematics	Apply the concepts and principles of mathematics to solve simple engineering problems	A	A		B		B				
3300002	English	Able to communicate verbally and in writing in English with peers, superiors, subordinates and clients in his professional life.					A				B	A
3300011	Basic Chemistry	Apply the basic concepts and principles of Chemistry in various engineering applications. Develops the ability in the students for scientific inquiry and to establish the cause and effect relationship.	A	A	A	A		B	B			
3310501	Physical & Inorganic chemistry	He will be able to know the properties of different inorganic chemicals and its application. Uses the theoretical principles and experimental techniques to investigate the Chemical transformations and Physical changes and instrumental analysis.	A	A	A	A		B	B			
3310502	Chemical Engineering Drawing	Prepare and interpret symbols, sketches, and drawings of various equipment, valves, devices and flow diagrams for chemical engineering applications			A	A						
3300012	Computer Application	Student will be able to write, Draw, Tabulate, Report, Store and Retrieve and also print on Computer using Various hardware and software. Use MS word software for word processing applications. Use relevant software for drafting and editing 2D entities.	B	C	C			C		B	C	

Contribution of Course outcomes toward attainment of Program Outcomes in Diploma Chemical Engineering

2ND SEMESTER GTU (New)											
Course Code	**Course Title**	**Course Outcomes (COs)**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**
1990001	Contributor Personality Development	Develop right mindsets inside students for becoming effective contributors and positive about challenges in life. Students should be able to judge what is to be done and what not.			**B**		**A**		**B**			**A**
3320002	Advanced Mathematics (Group-1)	Use proper Mathematical tool to understand engineering principles and concepts. Apply concepts of calculus or suitable mathematical tool to solve given engineering problems.	A	A		B		B				
3300003	Environmental Conservation and Hazard Management	Take care of issues related to environment conservation and disaster management while working as diploma engineer.			**A**				**B**			
3300004	Applied Physics	Apply principles and concepts of Physics for solving various Engineering Problems.	**A**	**B**	**B**	**C**						
3300007	Basic Engineering Drawing	Prepare engineering drawings manually with given geometrical dimensions using prevailing drawing standards and drafting instruments and Visualize the shape of simple object from orthographic views and vice versa.	**A**		**C**							
3320501	Organic Chemistry	He will be able to know the properties of different organic chemicals and its application and their chemical transformations.	A	A	A	A		B	B			

Contribution of Course outcomes toward attainment of Program Outcomes in Diploma Chemical Engineering

Contribution of Course outcomes toward attainment of Program Outcomes in Diploma Chemical Engineering

3rd SEMESTER GTU(New)											
Course Code	**Course Title**	**Course Outcomes (COs)**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**
3330501	Chemical engineering materials	Select and use different materials for chemical plant equipments, piping, insulation and lining.	C	C	B	A						
3330502	Mechanical operation	He will be able to Operate and supervise mechanical operation equipments like crushers, grinders, screens, thickeners, cyclones, agitators, mixers etc.	A	C	A	A		A		B	C	
3330503	Fluid flow operation	He will be able to measure pressure, flow and operate pumps, blowers, compressors, decanters, conveyors and valves.	A	C	A	A		A		B	C	
3330504	Industrial Stoichiometry	He will be able to Perform basic calculations of chemical engineering including material and energy balances.	A	C	A	A		B				
3330505	Chemical Process Technology-I	Synthesise reactions and unit operations steps to develop and operate a chemical plant to manufacture important chemicals. Arrange treatment, reaction and separation steps in a flow diagram for variety of chemicals including acids, chloro-alkalies, cement, lime, coal, coal chemicals, plastics, dyes and intermediates, pharmaceutical products, soap and detergents and many other products.	A	C	A	A		A		B	C	

Contribution of Course outcomes toward attainment of Program Outcomes in Diploma Chemical Engineering

4th SEMESTER GTU (New)											
Course Code	**Course Title**	**Course Outcomes (COs)**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**
3340501	Process Heat Transfer	1. Calculate heat transfer rate at steady state conduction and critical thickness for insulation. 2. Predict overall heat transfer co-efficient. 3. Compute heat transfer area for heat exchanger. 4. Use concept of heat transfer with phase change in boiling and condensation. 5. Calculate rate of thermal radiation. 6. Use the concept of evaporation in operating various evaporators and calculate capacity and economy.	A	C	A	A		A		B	C	
3340502	Mass Transfer-I	1. Use mass transfer concepts in mass transfer equipment. 2. Calculate the diffusivity of fluids for mass transfer operation. 3. Use concept of mass transfer at fluid interface in equilibrium operation. 4. Use the concept of gas absorption, extraction and leaching in operating equipments. 5. Distinguish various membrane types and membrane modules.	A	C	A	A		A		B	C	
3340503	Chemical process industry-II	1. Apply reactions and unit operations steps to manufacture various natural products, rubbers, pharmaceuticals, pulp-paper, pesticides, fuels and Industrial gases 2. Apply fermentation techniques to produce important chemical products	A	C	A	A		A		B	C	
3340504	Pollution Control & Effluent Treatment	1. Distinguish different sources of pollution in chemical industries 2. Use control methods for gaseous air pollutants; for characterization, sampling and			A	B			A	B		

4th SEMESTER GTU (New)												
		treatment of Waste water; for solid Waste Disposal 3. Assist in preparing Environmental Audit and assessment process for ISO 14001										
3340505	Safety and Hazard Management in Chemical Industry	1. Use safety concepts and standards for the prevention and control different hazards like fire, chemical hazards, mechanical hazards, electrical hazards and diseases in chemical industry. 2. Handle hazardous chemicals and use fire using extinguishers 3. Assess the risk in Chemical Process plant	B	B	A	A			A			

Contribution of Course outcomes toward attainment of Program Outcomes in Diploma Chemical Engineering

5th SEMESTER GTU(New)												
Course Code	**Course Title**	**Course Outcomes (COs)**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**
3350501	Industrial management	1. Apply material management to control inventory 2. Apply management techniques in planning and control of production and in project planning and implementation 3. Use value analysis to reduce cost of product.			A		A		B			C
3350502	Mass transfer-II	1. Operate equipments for gas-liquid operations like distillation, drying, adsorption, ion exchange, crystallization etc. 2. Calculate the product rate and number of trays for binary distillation. 3.Calculate various terms associated with humidity.	A	C	A	A		A		B	C	
3350503	Petroleum Refining & Petrochemical Technology	1. Characterize crude petroleum and petroleum refinery. 2. Fractionate crude petroleum into useful fractions and apply refinery processes to maximize desired petro products. 3. Measure important physical properties of petroleum products. 4. Use treatment techniques to purify petro products. 5. Manufacture widely used petrochemicals.	B	C	A	C				C		
3350504	Utilities and Instrumentation in Chemical Plant	1. Use various methods for water softening and purification 2. Operate different types of steam generators, compressors, blowers for handling air and inert gases and operate control valves and control	B	C	A			B		C		

		systems 3. Use Refrigeration for Various applications. 4. Measure temperature, pressure, flow, level and viscosity.										
3350505	Chemical Engineering Thermodynamics	1. Apply the concept of first law and second law of thermodynamics in heat and work requirements for physical and chemical changes in reactor, process equipment, power generation and refrigeration. 2. Access the PVT behaviour of the fluids. 3. Calculate the effects of heat changes during chemical reaction.	A	C	B	C		C				

Contribution of Course outcomes toward attainment of Program Outcomes in Diploma Chemical Engineering

6th SEMESTER GTU (Old)											
Course Code	**Course Title**	**Course Outcomes (COs)**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**
360501	Project	Prepare a report covering many important aspects of a chemical plant for a important chemical product which includes details of properties, manufacturing processes, plant layout, location, major equipments, instrumentation and control and economical analysis	A	C	B	A	B	C		C		C
360502	Fertilizer technology	1. Synthesize reactions and unit operations steps to develop and operate a chemical plant to manufacture important synthetic fertilizers. 2. Arrange treatment, reaction and separation steps in a flow diagram for variety of chemicals.	B	C	A	C				C		
360503	Chemical engineering plant economics	1. Assist in designing of chemical plants. 2. Estimate cost of property, depreciation and profitability. 3. Optimise physical parameters.			B	B	A		C			C
360504	Chemical process equipment design	1. Interpret stresses on vessels and consider factors affecting material selection and mechanical design. 2. Assist in design of pressure vessels, reaction vessels, heat exchangers, distillation and absorption column, agitators, vessel supports.	B	C	B	B		C		C		
360507	Polymer Technology	1. Synthesise reactions and unit operations steps to develop and operate a chemical plant to manufacture important polymers. 2. Arrange treatment, reaction and separation steps in a flow diagram for variety of chemicals.	B	C	A	C				C		