	Dr. Vasantraodada Patil Shetkari Shikshan Mandal's Padmabhooshan Vasantraodada Patil Institute of Technology, Budhgaon Department of Chemical Engineering Mapping of Course Outcomes(COs) with Programme Outcomes (POs)														
	Class: TY Chemical														
Sem V															
Sr. No.	Course Outcomes														
Subject	: BTCHC 501 Mass Transfer Operations -I Credits: 4	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Ability to define, describe, and apply terminology for diffusive and convective modes of mass transfer	3	3	2										3	3
CO2	Ability to apply fundamental concepts to design gas-liquid absorbtion and gas-solid adsorption towers	3	3	3	3	2		3						3	3
CO3	Ability to apply fundamental concepts to design extraction and leaching operations	3	3	3	3	2		3						3	3
CO4	Analyze differernt industrial equipment for gas-liquid operations	3	3	3	3	3		2						3	3
Subject	: BTCHC 502 Chemical Reaction Engineering -I Credits: 4	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	To perform mole balance calculations for different types of reactors and find size of a reactor or multiple reactor arrangements to get the expected conversion.	3	2	2										3	3
CO2	To design isothermal reactor using concepts of rate law and performance equations for different types of reactor.	3	3	3	3									3	3
CO3	To analyze kinetic data for determining the order of reaction and reaction rate constant.	3	3	3	3	3								3	3
CO4	To calculate conversion of catalytic reactions and determine the quantity of catalyst required in a catalytic reactor.	3	3	3	3	3								3	3

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Subject	: BTCHC 503 Chemical Technology Credits: 3	P01	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	To conceptually describe the role of Chemical engineering in Manufacturing	2				3	2	2						2	3
CO2	To Sketch and practice the block diagram in Chemical Product Manufacturing	2				3	2	2						2	3
CO3	To analyze the technical problems involved in running processing industries, to overcome them	2				3	2	2						2	3
CO4	To differentiate the significance & correlation of different process for the same product	2				3	2	2						2	3
Subject	: BTCHO 504B Open Elective II Pollution Control in Process Industries Credits: 3	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	To relate meteorological aspects of air pollution	2	2			2		3					2		2
CO2	To develop treatment technologies for water/wastewater/solid waste	2	2			2		3					2		2
CO3	To design unit operations for pollution control	2	2	3		2		3					2		2
CO4	To analyze the effects of pollutants on the environment	2	2			2		3					2		2
Subject	: BTCHC 505C Elective II Petroleum Refining and Petrochemicals Credits: 3	PO1	PO2	РОЗ	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	To identify the steps involve in the formation on petroleum	2													
CO2	To identify unit operations and processes in petroleum refinery				2									3	3
CO3	To identify different technologies for conversion of petroleum refining products to different Petrochemicals				2									3	3
CO4	To identify process involved in the production of different Petrochemicals and their application				2									3	3

	Class: TY Chemical														
Subject	: BTCHL 506 Chemical Reaction Engineering Laboratory Credits: 2	P01	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Calculate activation energy and rate constant for given reaction	3	2	2										3	3
CO2	Determine rate of reaction and parameter affecting the rate.	3	3	3	3									3	3
CO3	Evaluate kinetics of different reactions	3	3	3	3	3								3	3
CO4	Determine performance of batch reactors and continuous reactor	3	3	3	3	3								3	3
Subject	: BTCHM 507 Mini Project 1 Credits: 2	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	To do the Iterture survey for industry, environment, pollution control related problems	3	3	2	2	2	2	3	2	2		2	2	2	2
CO2	To apply basic chemical engineering knowledge to solve the problems	2	3	3	3	2	2	3	2	2		2	2	2	2
CO3	To prepare technical report in team work	2	3	3	2	2	2	3	2	2	3	2	2	3	2
CO4	To deliver the seminar based on project using PPT	2				2			2	2	3	2		3	
Subject	: BTCHI 508 Internship - 2 (Audit)	P01	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	To Acquire knowledge on topics outside the scope of curriculum on the field/industry	3	3	3		2	2	2						3	3
CO2	To Communicate with industry personnel on different technical topics	3	3	3		2	2	2		3	3	3		3	3
CO3	To Review different process equipment operated in an industry	3	3			3								3	3
CO4	To Collect and consolidate required information and prepare a seminar report on summer training	3	3									3		3	3

	Class: TY Chemical														
	Sem VI														
Sr. No.	Course Outcomes														
Subject	: BTCHC 601 Chemical Reaction Engineering - II Credits: 4	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Design a CSTR and PFR to maximize yield of desired product in multiple reactions	3	2	2										3	3
CO2	Develop mechanism for non elementary , enzymatic, biochemical reactions	3	3	3	3									3	3
СОЗ	Design fixed bed reactors involving chemical reactions with mass transfer	3	3	3	3	3								3	3
CO4	Analyze the performance of non-ideal reactors using segregation model, tanks-in series model and dispersion model	3	3	3	3	3								3	3
Subject	: BTCHC 602 Mass Transfer Operations -II Credits: 4	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Classify, Analyze and Design of simple distillation and fractional distillation column for binary system	3	3	3	3			2						3	3
CO2	Ability to apply fundamental concepts of humidification-dehumidification to design cooling tower	3	3	3	3			2						3	3
соз	Analyze the drying behaviour and review different types of dryers and its uses	3	3	3	3									3	3
CO4	Analyze the crystallization fundamentals and review different types of crystallizers	3	3	3	3									3	3

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Subject	: BTCHC 603 Process Instrumentation Credits: 5	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	To identify the static and dynamic characteristic of measuring instruments	3	2												2
CO2	To apply various measurement techniques for pressure, temperature, flow and level measurement	3	2			2									2
СОЗ	To select a suitable instrument for measurement of pressure, temperature, flow and level.	3	2	2		2									2
CO4	To utilize recording, indicating and signaling instruments	3		2	2	2									2
Subject	: BTCHC 604 Engineering Economics and Project Management Credits: 4	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	To analyze alternative processes and equipment for manufacturing a product	2		2		2						3			2
CO2	To design plant layout and engineering flow diagrams	2		2		2						3			2
СОЗ	To perform economic analysis related to process design	2		2		2						3			2
CO4	to evaluate project profitability	2		2		2						3			2
Subject	: BTCHO 605A Open Elective III Pharmaceuticals and fine Chemicals Credits: 3	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Describe the different grades and methods of preparation of reagents	3	2	2										3	3
CO2	Outlines the uses and testing of pharmaceuticals	3	3	3	3									3	3
CO3	Know the techniques for manufacture of pharmaceuticals	3	3	3	3	3								3	3
CO4	Study the tablet making and coating techniques	3	3	3	3	3								3	3

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Subjec	t: BTCHO 605B Open Elective III Heat Transfer Equipment Design Credits: 3	P01	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	To apply fundamental knowledge of unit operations and unit processesto solve process design engg problems	3	3	3	2									3	3
CO2	To apply process design aspects to the major chemical equipment like agitator, heat exchanger	3	3	3	2									3	3
CO3	To evaluate the process design of heat exchange equipment likes evaporators and heat exchangers.	3	2	3	2									3	3
CO4	To design heat exchangers, evaporators, reboilers	3	2	3	2									3	3
Subjec	t: BTCHC 605 Plant Utilities and Plant Safety Credits: 3	P01	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	To relate the types of water, water treatment methods, storage and distribution techniques	2	2				3	3					3		2
CO2	To apply the properties of Steam, type of refrigeration methods , type of power generation used in industry	2	2				3	3					3		2
CO3	To analyze the effects of release of toxic substance, methods of hazard identification and preventive measures	2	2				3	3	2				3		2
CO4	To prepare safety checklist for chemical plent w.r.t Construction Installation,Startup,Shutdown.	2	2				3	3	2				3		2
Subjec	t: BTCHL 606 Mass Transfer Laboratory Credits: 2	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Able to determine the diffusivity and the mass transfer coefficient for a given liquid chemical	3	3	3	2			2		2					
CO2	Able to perform experiments and determination of extraction extent (effciency) and adsorption extent (effciency) for given chemical system	3	3	3	2			2		2					
CO3	Able to perform experiments , study and determination of different distillation parameters for various systems	3	3	3	2			2		2					
CO4	Able to perfrom experiments and determine dryers and crystallizers effciency, and do thermal calculations.	3	3	3	2			2		2					

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Subject	:: BTCHM 607 Mini Project IV Credits: 2	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	To do the lterture survey for industry, environment, pollution control related problems	3	3	2	2	2	2	3	2	2		2	2	2	2
CO2	To apply basic chemical engineering knowledge to solve the problems	2	3	3	3	2	2	3	2	2		2	2	2	2
CO3	To prepare technical report in team work	2	3	3	2	2	2	3	2	2	3	2	2	3	2
CO4	To deliver the seminar based on project using PPT	2				2			2	2	3	2		3	