## 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: SY Chemical** 

## Sem III

	Sem III														
Sr. No.	Course Outcomes														
Subjec	t: BTBSC 301 Engineering Mathematics -III Credits: 4	PO1	PO2	РО3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	To apply the properties of Laplace Transform and Fourier Transform.	3	2												
CO2	To solve linear differential equation by using Laplace Transform	3	2												
CO3	Formulate partial differential equation and solve it for real world problem.	3	2												
CO4	Analyse and map different complex functions and Solve integration of complex function by using Cauchy's integral formula.	3	2												
Subjec	t: BTCHC 302 Fluid Flow Operations Credits: 3	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Interprete basic concepts of fluid statics and fluid dynamics flow and solve laminar and turbulent flow problems	3	3	2										2	
CO2	Solve problems involving friction losses in fittings of channels and pipes, fluid – solid operations in packed and fluidized beds.	3	3	3	2									3	3
CO3	Demonstrate machinery for transportation of liquids and gases and calculate power requirements.	3	3	3	2									3	3
CO4	Interpret and analyze flow measuring devices and analyze concept of agitation and calculate power.	3	3	2	3									3	3

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Subjec	t: BTCHC 303 Process Calculations Credits: 4	PO1	PO2	РОЗ	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Interpreate and analyse the ideal and real behavior of gases, vapors and liquids	3	3	2										2	
CO2	Perform calculations for problems involving mass and energy balances.	3	2	2	2									3	3
CO3	Apply material and energy balances on chemical processes and related equipments	3	2	3	2									3	3
CO4	Perform calculations for involving recycle ,bypass and purge calculations related to industrial application	3	3	2	2									3	3
Subjec	t: BTCHC 304 Mechanical Operations Credits: 3	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	To relate mechanical unit operations and their role in chemical engineering	3				2		2							2
CO2	To relate the performance of unit operation as per different industries	3				3		2							2
CO3	To design solid-fluid separation equipment	3				3		2							2
CO4	To identify appropriate solid storage and conveying system for use Chemical industries	2				3									2
Subjec	t: Professional Elective-I BTCHE 305A Green Technology Credits: 3	PO1	PO2	РОЗ	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Interpret 12 principles of green chemistry and discuss the need of green technology	3		2				3						3	3
CO2	Review and analyze the severity of different types of pollution	3		2				3						3	3
CO3	Discuss different aspects of green technology	3		2				3						3	3
CO4	Explain the role of catalysis, greener solvent and process intensification in green technology	3		2				3						3	3

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Subjec	t: Professional Elective-I BTCHE 305D Reliable Energy Sources Credits: 3	PO1	PO2	РОЗ	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Analyze the need of energy conversion and the various methods of energy storage	3						3						3	3
CO2	Illustrate the concepts of direct energy conversion systems & their applications.	3						3						3	3
CO3	Explain the field applications of solar energy	3						3						3	3
CO4	Explain the field applications of bio-energy	3						3						3	3
Subjec	t: BTCHL 306 Fluid Flow Operations + Mechanical Operations Lab Credits: 2	PO1	PO2	РОЗ	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Determine pressure drop in flow through pipes, pipe fittings, packed and fluidized bed.	3	3	3						2				3	
CO2	To relate the performance of mechanical unit operation as per different industries	3	3	3						2				3	
CO3	Determine efficiency of given pump or blower.	3	3	3						2				3	
CO4	Determine flow rates using different flow meters.	3	3	3						2				3	
Subjec	t: BTCHS 307 Seminar I Credits: 2	PO1	PO2	РОЗ	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	To acquire knowledge on topics outside the scope of curriculum	2				2	2			3	2		2		2
CO2	To communicate with group of people on different topic					2	2			3	2		2		2
CO3	To collect and consolidate required information on a topic					2	2			3	2		2		2
CO4	To deliver an oral presentation and prepare Technical report					2	2			3	2		2		2

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	Sem IV														
Sr. No.	Course Outcomes														
Subjec	t: BTCHC 401 Chemical Engineering Thermodynamics I Credits: 5	PO1	PO2	РО3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	To apply the first and second laws of thermodynamics to chemical processes. Compute the properties of ideal and real mixtures.	3	3	2	2									3	3
CO2	To estimate heat and work requirements for industrial processes	3	3	3	3									3	3
CO3	To calculate vapor-liquid equilibrium (VLE) composition for ideal and non-ideal systems	3	2	3	3	2								3	3
CO4	To determine equilibrium constant and composition of product mixture at given temperature and pressure.	3	3	3	3	2								3	3
Subjec	t: BTCHC 402 Heat Transfer Operations Credits: 4	PO1	PO2	РО3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	Perform heat flux calculations for steady state and transient heat flow and estimate optimum insulation thickness.	3	3	3										3	
CO2	Analyze natural and forced convection and Develop correlations for heat transfer coefficient without phase change and with phase change.	3	3	3	2									3	2
CO3	Comprehend the laws governing radiation mode and develop correlation for various systems.	3	3	2	2									3	2
CO4	Analyze the heat exchanger performance and design the heat exchangers & evaporators.	3	3	3	3									3	3

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Subjec	t: BTHM403 Basic Human Rights Credits: 3	PO1	PO2	РОЗ	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	To realize the philosophical, cultural basis and historical perspective of human rights.								3						
CO2	Strengthen respect for socio-cultural diversity in respect of caste, religion, region and culture.						2		3						
CO3	To excercise their rights as a responsible Indian citizen.								2						
CO4	Ascertain the importance of group and individual freedom in a society.						2		3						
Subjec	t: BTCHO404 Open Elective-I NSS-I Credits: 3	PO1	PO2	РО3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	To demonstrate understanding of NSS.						1	1	1	1	1		1	1	1
CO2	To developing community engagement skills.						2	2	1	3	2	1	2	2	2
CO3	To cultivate leadership qualities.						1	1	2	3	2	2	2	1	1
CO4	To enhancing life competencies and foster social responsibility.						3	2	2	2	2	1	3	2	2
Subjec	t: Professional Elective-II BTCHE 405A Numerical Methods in Chemical Engineering Credits: 4	PO1	PO2	РО3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	To demonstrate understanding of common numerical methods.	3	3											2	3
CO2	To obtain approximate solutions to mathematical problems.	3	3											2	3
CO3	To derive numerical methods for various mathematical operations such as interpolation, differentiation, integration and find solutions for differential equations, linear and nonlinear equations.	3	3											2	3
CO4	To apply numerical methods to obtain approximate solutions to Chemical Engineering problems	3	3											2	3

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Subjec	t: BTCHL 406 Heat Transfer Operations Lab Credits: 2	PO1	PO2	РОЗ	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	To perform heat flux calculations to interpret heat transfer rate.	3	3	2										3	
CO2	To estimate heat transfer coefficient in natural and forced convection.	3	3	2	2									3	2
CO3	To solve process design engg problems of heat transfer equipment like heat exchangers & evaporators	3	3	3	2									3	3
CO4	To demonstrate basic laws of radiation and estimate emissivity.	3	3	2										3	
Subjec	t: BTCHS 407 Seminar II Credits: 2	PO1	PO2	РОЗ	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	To acquire knowledge on topics outside the scope of curriculum	2				2	2			3	2		2		2
CO2	To communicate with group of people on different topic					2	2			3	2		2		2
CO3	To collect and consolidate required information on a topic					2	2			3	2		2		2
CO4	To deliver an oral presentation and prepare Technical report					2	2			3	2		2		2