



Department of General Science and Humanities

Articulation Matrix of CO - PO (2022-23)

Course Code	Name of Course	CO's	CO Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
BTBS101	Engineering Mathematics-1	CO 1	Apply the matrix technique (Linear algebra) to find solutions of system of linear equations arising in many engineering problem.	3	---	---	---	---	---	---	---	---	---	---	1	---	---	---	
		CO 2	Demonstrate the concept and use of partial differentiation in various problems.	3	2	---	---	---	---	---	---	---	---	---	---	1	---	---	---
		CO 3	Compute Jacobian of functions of several variables and their applications to engineering problems	3	2	---	---	---	---	---	---	---	---	---	---	1	---	---	---
		CO 4	Identify and sketch of curves in various coordinate system	3	1	---	---	---	---	---	---	---	---	---	---	1	---	---	---
		CO 5	Evaluate multiple integrals and their applications to area and volume.	3	2	---	---	---	---	---	---	---	---	---	---	1	---	---	---
BTBS102/202	Engineering Physics	CO 1	Apply the concept of types of Oscillation & ultrasonic	2	1	1	---	1	---	---	---	---	---	---	---	---	---	---	
		CO 2	Implement the knowledge Interference, Polarization of light, working Principle of Lasers & Fiber optics	2	1	1	---	1	---	---	---	---	---	---	---	---	---	---	---
		CO 3	Apply the principle of motion of charged particles in EF&MF, Bainbridge Mass spectrograph, G M counter and quantum Mechanics	2	2	---	---	1	---	---	---	---	---	---	---	---	---	---	---
		CO 4	Identify Types of crystals & crystal planes using Miller indices, Experimental approach for crystal determination	2	1	1	---	1	---	---	---	---	---	---	---	---	---	---	---
		CO 5	Incorporate the concepts of types of magnetic, semiconducting and superconducting materials.	2	1	1	---	1	---	---	---	---	---	---	---	---	---	---	---
BTES103/203	Engineering Graphics	CO 1	Use the drawing instruments & drawing standards effectively for drawing and dimensioning and to draw basic geometrical constructions.	1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		CO 2	Construct orthographic views of given objects, project points on different planes.	3	---	---	---	3	---	---	---	---	---	---	---	---	---	---	---
		CO 3	Apply concept of projections of lines, planes	3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		CO 4	Apply concept of projections of solids	3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		CO 5	Construct section of solids and isometric views of given objects	3	---	---	---	3	---	---	---	---	---	---	---	---	---	---	---
BTHEM104/204	Communication Skills	CO 1	Apply speaking and writing skills in professional as well as social situations	---	---	---	---	---	---	---	---	---	---	---	3	---	---	---	
		CO 2	Overcome Mother Tongue Influence and demonstrate neutral accent while exercising English	---	---	---	---	---	---	---	---	---	---	---	---	3	---	---	2
		CO 3	Apply communication skills for Presentations, Group Discussion and interpersonal interactions	---	---	---	---	---	---	---	---	---	---	---	---	2	3	1	---
		CO 4	Apply grammar correctly during Speaking and Writing situations especially in context with Presentations, Public Speaking, Report writing and Business Correspondence	---	---	---	---	---	---	---	---	---	---	---	---	1	3	---	---
BTES106/205	Energy and Environment Engineering	CO 1	Identify conventional, non-conventional energy sources.	3	1	---	---	---	1	---	---	---	---	---	---	---	---	---	
		CO 2	Know and discuss power consuming and power developing devices for effective utilization and power consumption.	2	3	---	---	---	1	1	---	---	---	---	---	---	---	---	---
		CO 3	Identify various sources of air, water pollution and its effects.	---	1	---	---	---	1	2	---	---	---	---	---	---	---	---	---
		CO 4	Know and discuss noise, soil, thermal pollution and Identify solid, biomedical and hazardous waste.	---	1	---	---	---	1	2	---	---	---	---	---	---	---	---	---





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BTES106/206	Basic Civil and Mechanical Engineering	CO 1	Identify various Civil Engineering materials and choose suitable material among various options.	3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
		CO 2	Apply principles of surveying to solve engineering problem	1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		CO 3	Identify various Civil Engineering structural components and select appropriate structural system among various options	2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		CO 4	Explain and define various properties of basic thermodynamics, materials and manufacturing processes.	2	1	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		CO 5	Know and discuss the working principle of various power consuming and power developing devices	2	---	---	---	---	---	---	1	---	---	---	---	---	---	---	---
BTBS107L/207L	Engineering Physics Lab	CO 1	Understanding the fundamental principles of optics, Laser and fiber optics based on phenomenon like interference, polarization and diffraction	3	2	1	---	---	---	---	---	---	---	---	---	---	---	---	
		CO 2	Demonstrating the experiments based on electricity, magnetism and material science.	3	2	1	---	---	---	---	---	---	---	---	---	---	---	---	
		CO 3	Analyse experimental data from graphical representations and to represent effectively in Laboratory reports including innovative experiments.	1	2	1	---	---	---	---	---	---	---	---	---	---	---	---	
BTES108L/208L	Engineering Graphics Lab	CO 1	Apply the fundamental principles of engineering Graphics to create engineering drawings of various geometric constructions, engineering scales adhering to BIS standards.	1	---	---	---	---	---	---	---	---	---	---	2	---	---	---	
		CO 2	Generate orthographic projections, Front view, Top view, side views of points, lines, planes and solids in both 1st angle projection method	3	---	---	---	3	---	---	---	---	---	---	---	---	---	---	
		CO 3	Generate the sections of solids.	3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
		CO 4	Develop isometric projection, convert orthographic views to isometric views and vice versa for practical engineering problems.	3	---	---	---	3	---	---	---	---	---	---	---	---	---	---	
BTBM109L/209L	Communication Skills Lab.	CO 1	Develop the ability to plan and deliver the well-argued presentation GD & interviews etc.	---	---	---	---	---	---	---	---	---	3	---	---	---	---	---	
		CO 2	Overcome language barriers & use correct grammar for effective communication	---	---	---	---	---	---	---	---	---	---	3	---	---	---	---	---
		CO 3	Understand appropriate corporate manners & etiquettes	---	---	---	---	---	---	---	---	---	---	2	3	---	---	---	---
		CO 4	Identify and control behavioural aspects in organisation	---	---	---	---	---	---	---	---	---	---	2	3	---	---	---	---
BTBS201	Engineering Mathematics-II	CO 1	Discuss the need and use of complex variables to find roots, to separate complex quantities and to establish relation between circular and hyperbolic functions.	3	1	---	---	---	---	---	---	---	---	---	1	---	---	---	
		CO 2	Solve first and higher order differential equations and apply them as a mathematical modeling in electric and mechanical systems.	3	1	---	---	---	---	---	---	---	---	---	---	1	---	---	
		CO 3	Solve linear differential equations and apply them as a mathematical modeling in electric and mechanical systems.	3	2	---	---	---	---	---	---	---	---	---	---	1	---	---	
		CO 4	Determine Fourier series representation of periodic functions over different intervals	3	2	---	---	---	---	---	---	---	---	---	---	1	---	---	
CO 5			Demonstrate the concept of vector differentiation and interpret the physical and geometrical meaning of gradient, divergence & curl in various engineering streams and also use the principles of vector integration to transform line integral to surface integral, surface to volume integral & vice versa using Green's, Stoke's and Gauss divergence theorems.	3	2	---	---	---	---	---	---	---	---	---	1	---	---	---	
			Differentiate hard & soft water, understand different softening method, solve the related numerical problems	2	2	---	---	---	---	---	---	---	---	---	---	---	---	---	---
CO 2		Implement Phase rule in one & two component system	3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	





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BTBS102/202	Engineering Chemistry	CO 3	Understand the cause of corrosion, its consequences & methods to minimize corrosion to improve industrial design	2	2																
		CO 4	Explain the properties, separation techniques of crude oil along with potential application & role of petrochemical in national economy							2											
		CO 5	Demonstrate knowledge of different instruments in technical field	2																	
		CO 1	Apply fundamental Laws of Engineering Mechanics	2																	
		CO 2	Apply Conditions of static equilibrium to analyze given force system	1	2																
BTES103/203	Engineering Mechanics	CO 3	Compute centre of gravity and moment of inertia of plane surfaces		2																
		CO 4	Compute the motion characteristics of a body/particle for a rectilinear and curvilinear motion	1	2																
		CO 5	Know and discuss relation between force and motion characteristics	2	1																
		CO 1	Analyse broad perspective about the uses of computers in engineering industry and C Programming	3	1	1	1														
BTES104/204	Computer Programming in C	CO 2	Identify and develop the basic concept of algorithm, algorithmic thinking and flowchart	3	2	2	2														
		CO 3	Create variable, keywords and different types of operators	3	2	3	3														
		CO 4	Demonstrate programs using c programming concept like loops, control statements and array	3	2	2	2														
		CO 5	Verify tasks in which the pointers are applicable and apply them to write programs and hence use computers effectively to solve the task.	3	2	2	2														
		CO 1	Build thorough knowledge of various tools, machines, devices used in engineering practice	✓						✓						✓					
BTES105/205	Workshop Practices	CO 2	Summarize thorough knowledge of carrying out various operations in mechanical engineering workshop	✓																	
		CO 3	Utilize measuring skills and practical skills gained in the workshop practice	✓																	
		CO 4	Demonstrate "Hands on" training to use of various tools, devices and machines	✓																	
		CO 5	Acquire skills in basic engineering practice for creating objects from raw materials	✓																	
		CO 1	Apply basic ideas and principles of electrical engineering	3																	
BTES106/206	Basic Electrical and Electronics Engineering	CO 2	Identify protection equipment and energy storage devices.		2																
		CO 3	Differentiate electrical and electronics domains and explain the operation of diodes and transistors	2																	
		CO 4	Acquire knowledge of digital electronics.	3																	
		CO 5	Design simple combinational and sequential logic circuits.			2															
BTBS107/207L	Engineering Chemistry Lab	CO 1	Understand different techniques of quantitative chemical analysis to generate experimental skills	3	2		1					1									
		CO 2	Apply instrumental techniques for chemical analysis	3	2		1						1								
		CO 3	Evaluate accurate results from experiment procedure & represent effectively in laboratory reports including innovative experiments	2	3		1							1							
		CO 4	Analyse different properties of lubricant for selection of good lubricant	3	3		1							1							
		CO 1	Understand the laws of Engineering Mechanics	2																	
		CO 2	Apply the conditions of equilibrium for calculations of support reaction	2																	





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BTES108L/208L	Engineering Mechanics Lab	CO 3	Determine the coefficient of friction	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
		CO 4	Understand the simple pendulum and to find out acceleration due to gravity	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
		CO 5	Determine the mechanical advantage, velocity ratio and efficiency of a screw jack	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO 6	Understand the location of irregular shaped bodies	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO 7	Understand and verify Lami's theorem by finding the forces in the jib crane	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO 1	Establish motivation for any topic of interest and develop a thought process for technical presentation	1	1	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-
		CO 2	Organize a detailed literature survey and build a document with respect to technical publications	1	3	-	1	-	-	1	1	-	-	-	-	-	-	-	-	-
BTES110S/210S	Seminar	CO 3	Analysis and comprehension of proof-of-concept and related data	-	2	-	-	1	-	-	-	-	-	-	-	-	-	-		
		CO 4	Effective presentation and improving soft skills	-	-	-	-	-	-	-	1	1	3	-	-	-	-	-		
		CO 5	Make use of new and recent technology for creating technical reports	-	-	-	-	2	1	-	-	-	-	-	-	1	-	-		



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