

DEPARTMENT OF SCIENCE AND HUMANITIES		
B.TECH 2024 SCHEME		
COUSE OUTCOMES S1 - S4		
S1		
Course code and Course name	CO no:	CO Description
GXCYT122 Chemistry for Information Science and Electrical Science	CO1	Explain the basic concepts of electrochemistry and corrosion to explore the possible applications in various engineering fields.
	CO2	Describe the use of various engineering materials in different industries.
	CO3	Apply appropriate analytical techniques for the synthesis and characterization of various engineering materials.
	CO4	Outline various water treatment and waste management methods
GCCYT122 Chemistry for Physical Science	CO1	Describe the use of various engineering materials in different industries
	CO2	Explain the basic concepts of electrochemistry and corrosion to explore the possible applications in various engineering fields
	CO3	Use appropriate analytical techniques for different engineering materials
	CO4	Outline various water treatment and waste management methods
GAPHT 121: Physics for Information Science	CO1	Explain electrical conductivity and Superconductivity.
	CO2	Explain the behaviour of matter in the atomic and subatomic level through the principles of quantum mechanics.
	CO3	Apply the fundamentals of Semiconductor Physics in engineering.
	CO4	Describe the behaviour of semiconductor materials in semiconductor devices.
	CO5	Apply basic knowledge of principles and theories in physics to conduct experiments.

GBPHT 121: Physics for Electrical Science	CO1	Explain the fundamentals of Semiconductor Physics.
	CO2	Describe the behaviour of semiconductor materials in semiconductor devices.
	CO3	Explain Superconductivity and basic theory of dielectrics
	CO4	Apply the comprehended knowledge about laser and fibre optics in various engineering applications
	CO5	Apply basic knowledge of principles and theories in physics to conduct experiments.
GZPHT 121: Physics for Physical Science and Life Science	CO1	Describe the basic principles and properties of laser and optic fibers.
	CO2	Describe the phenomena of interference and diffraction of light.
	CO3	Describe the behaviour of matter in the atomic and subatomic level through the principles of quantum mechanics.
	CO4	Apply the knowledge of waves and acoustics in non-destructive testing and in acoustic design of buildings.
	CO5	Apply basic knowledge of principles and theories in physics to conduct experiments
GAMAT 101 Mathematics for Information Science – 1 (Group A)	CO1	Apply various concepts in calculus to linearize functions and to analyze concavity.
	CO2	Calculate the limits for functions of two variables and partial derivatives of multivariable functions.
	CO3	Interpret directional derivative and solve maxima and minima of multivariable functions.
	CO4	Solve constrained maxima and minima, LPP and understand the method of Steepest Descent.
GYMAT 101 Mathematics for Electrical Science and Physical Science - 1 (Common to Groups B & C)	CO1	Solve systems of linear equations and diagonalize matrices.
	CO2	Solve homogeneous and non-homogeneous linear differential equation with constant coefficients.
	CO3	Compute Laplace transform and apply it to solve ODEs arising in engineering.
	CO4	Determine the Taylor series and evaluate Fourier series expansion for different periodic functions

S2		
GYMAT 201 Mathematics for Electrical Science and Physical Science - 2 (Common to Group B & C)	CO1	Compute the partial and total derivatives and maxima and minima of multivariable functions and to apply in engineering problems.
	CO2	Understand theoretical idea of multiple integrals and to apply
	CO3	Compute the derivatives and line integrals of vector functions and to learn their applications.
	CO4	Apply the concepts of surface and volume integrals and to learn their inter-relations and applications.
GAMAT 201 Mathematics for Information Science – 2 (Group A)	CO1	Solve system of linear equations, to evaluate eigen values and eigen vectors of matrices and to diagonalize matrices.
	CO2	Understand the concepts of vector spaces and subspaces and to apply their properties.
	CO3	Describe inner product spaces and their properties, to apply orthonormalization process and to solve least square problems.
	CO4	Understand the concept of linear transformation and to apply its properties, to find the rank and nullity of a linear transformation and to find the matrices of linear transformations
S3		
GAMAT 301 Mathematics for Computer and Information Science – 3 (Group A)	CO1	Understand the concept, properties and important models of discrete random variables and to apply in suitable random phenomena.
	CO2	Understand the concept, properties and important models of continuous random variables and to apply in suitable random phenomena.
	CO3	Familiarize and apply limit theorems and to understand the fundamental characteristics of stochastic processes.
	CO4	Solve problems involving Markov Chains, to understand their theoretical foundations and to apply them to model and predict the behaviour of various stochastic processes.
GYMAT 301 Mathematics for Electrical Science and Physical Science – 3 (Common to Group B & C)	CO1	Determine the Fourier transforms of functions and apply them to solve problems arising in engineering.
	CO2	Understand the analyticity of complex functions and apply it in conformal mapping.
	CO3	Compute complex integrals using Cauchy's integral theorem and Cauchy's integral formula.
	CO4	Understand the series expansion of complex function about a singularity and apply residue theorem to compute real integrals.

UCHUT346 Economics for Engineers	CO1	Understand the fundamentals of various economic issues using laws and learn the concepts of demand, supply, elasticity and production function.
	CO2	Develop decision making capability by applying concepts relating to costs and revenue, and acquire knowledge regarding the functioning of firms in different market situations
	CO3	Outline the macroeconomic principles of monetary and fiscal systems, national income and stock market.
	CO4	Make use of the possibilities of value analysis and engineering, and solve simple business problems using break even analysis, cost benefit analysis and capital budgeting techniques.
S4		
GAMAT 401 Mathematics for Computer and Information Science-4 (Group A)	CO1	Understand the fundamental concepts of graph theory such as types of graphs, degree of a vertex, graph isomorphism, connectedness.
	CO2	Understand the concepts of Euler graphs, Hamiltonian graphs and connectivity.
	CO3	Apply Prim's and Kruskal's algorithms for finding minimum cost spanning tree and Dijkstra's and Floyd-Warshall algorithms for finding shortest paths.
	CO4	Illustrate various representations of graphs using matrices and apply vertex coloring in real life problems.
GYMAT 401 Mathematics for Electrical Science – 4 (Group B)	CO1	Understand the concept, properties and important models of discrete random variables and to apply in suitable random phenomena.
	CO2	Understand the concept, properties and important models of continuous random variables and to apply in suitable random phenomena.
	CO3	Estimate population parameters, assess their certainty with confidence intervals, and test hypotheses about population means and proportions using z-tests and the one-sample t-test.
	CO4	Analyze random processes by classifying them, describing their properties, utilizing autocorrelation functions, and understanding their applications in areas like signal processing and communication systems.

GYMAT 401 Mathematics for Physical Science – 4 (Group C)	CO1	Understand the concept, properties and important models of discrete random variables and to apply in suitable random phenomena.
	CO2	Understand the concept, properties and important models of continuous random variables and to apply in suitable random phenomena.
	CO3	Estimate population parameters, assess their certainty with confidence intervals, and test hypotheses about population means and proportions using z-tests and the one-sample t-test.
	CO4	Apply numerical methods to find solutions of linear system of equations, ordinary differential equations and Laplace equations.