Department of Science and Humanities		
BTech 2019 - Scheme		
Semester I		
Course Code & Course Name	**CO No**	**CO Description**
MAT 10 1 LINEAR ALGEBRA AND CALCULUS	CO1	Solve systems of linear equations, diagonalize matrices and characterise quadratic forms
	CO2	Compute the partial and total derivatives and maxima and minima of multivariable functions
	CO3	Compute multiple integrals and apply them to find areas and volumes of geometrical shapes, mass and centre of gravity of plane laminas
	CO4	Perform various tests to determine whether a given series is convergent, absolutely convergent or conditionally convergent
	CO5	Determine the Taylor and Fourier series expansion of functions and learn their applications.
PHT 100 ENGINEERING PHYSICS	CO1	Compute the quantitative aspects of waves and oscillations in engineering systems.
	CO2	Apply the interaction of light with matter through interference, and diffraction and identify these phenomena in different natural optical processes and optical instruments.
	CO3	Analyze the behaviour of matter in the atomic and subatomic level through the principles of quantum mechanics to perceive the microscopic processes in electronic devices.
	CO4	Classify the properties of magnetic materials and apply vector calculus to static magnetic fields and use Maxwell's equations to diverse engineering problems
	CO5	Analyze the principles behind various superconducting applications, explain the working of solid state lighting devices and fibre optic communication system
	CO4	Choose appropriate theorems, principles or formulae to solve problems of mechanics.
	CO5	Solve problems involving rigid bodies, applying the properties of distributed areas and masses
PHL120 ENGINEERING PHYSICS LAB	CO1	Develop analytical/experimental skills and impart prerequisite hands on experience for engineering laboratories
	CO2	Understand the need for precise measurement practices for data recording
	CO3	Understand the principle, concept, working and applications of relevant technologies and comparison of results with theoretical calculations

	CO4	Analyze the techniques and skills associated with modern scientific tools such as lasers and fiber optics
	CO5	Develop basic communication skills through working in groups in performing the laboratory experiments and by interpreting the results

Semester II		
Course Code & Course Name	**CO No**	**CO Description**
MAT 102 VECTOR CALCULUS, DIFFERENTIAL EQUATIONS AND TRANSFORMS	CO1	Apply the concept of vector functions and learn to work with conservative vector field
	CO2	Apply computing integrals of scalar and vector field over surfaces in three-dimensional space.
	CO3	Solve homogeneous and non-homogeneous linear differential equation with constant coefficients
	CO4	Apply Laplace transforms to solve physical problems arising in engineering
	CO5	Apply Fourier transforms to solve physical problems arising in engineering
CYT 100 ENGINEERING CHEMISTRY	CO1	Apply the basic concepts of electrochemistry and corrosion to explore its possible applications in various engineering fields.
	CO2	Understand various spectroscopic techniques like UV-visible, IR, NMR and its applications.
	CO3	Apply the knowledge of analytical method for characterizing a chemical mixture or a compound. Understand the basic concept of SEM for surface characterisation of nanomaterials.
	CO4	Learn about the basics of stereochemistry and its application. Apply the knowledge of conducting polymers and advanced polymers in engineering
	CO5	Study various types of water treatment methods to develop skills for treating wastewater.
HUN 102 PROFESSIONAL COMMUNICATION	CO1	Develop vocabulary and language skills relevant to engineering as a profession
	CO2	Analyze, interpret and effectively summarize a variety of textual content
	CO3	Create effective technical presentations
	CO4	Discuss a given technical/non-technical topic in a group setting and arrive at generalizations/consensus.
	CO5	Identify drawbacks in listening patterns and apply listening techniques for specific needs.
	CO6	Create professional and technical documents that are clear and adhering to all the necessary conventions.

CYL 120 ENGINEERING CHEMISTRY LAB	CO1	Understand and practice different techniques of quantitative chemical analysis to generate experimental skills and apply these skills to various analyses.
	CO2	Develop skills relevant to synthesize organic polymers and acquire the practical skill to use TLC for the identification of drugs
	CO3	Develop the ability to understand and explain the use of modern spectroscopic techniques for analysing and interpreting the IR spectra and NMR spectra of some organic compounds.
	CO4	Acquire the ability to understand, explain and use instrumental techniques for chemical analysis.
	CO5	Learn to design and carry out scientific experiments as well as accurately record and analyze the results of such experiments.
	CO6	Function as a member of a team, communicate effectively and engage in further learning. Also understand how chemistry addresses social, economical and environmental problems and why it is an integral part of curriculum

Semester III		
Course Code & Course Name	**CO No**	**CO Description**
MAT 201 PARTIAL DIFFERENTIAL EQUATIONS AND COMPLEX ANALYSIS	CO1	Understand the concept and the solution of partial differential equation.
	CO2	Analyse and solve one dimensional wave equation and heat equation
	CO3	Understand complex functions, its continuity differentiability with the use of Cauchy Riemann equations
	CO4	Evaluate complex integrals using Cauchy's integral theorem and Cauchy's integral formula, understand the series expansion of analytic function
	CO5	Understand the series expansion of complex function about a singularity and Apply
HUT 200 PROFESSIONAL ETHICS	CO1	Understand the core values that shape the ethical behaviour of a professional.
	CO2	Adopt a good character and follow an ethical life.
	CO3	Explain the role and responsibility in technological development by keeping personal ethics and legal ethics.
	CO4	Solve moral and ethical problems through exploration and assessment by established experiments.
	CO5	Apply the knowledge of human values and social values to contemporary ethical values and global issues.

Semester IV		
Course Code & Course Name	**CO No**	**CO Description**
MAT 202 PROBABILITY,STATISTICS AND NUMERICAL METHODS	CO1	Understand the concept, properties and important models of discrete random variables and,using them, analyse suitable random phenomena.
	CO2	Understand the concept, properties and important models of continuous random variables and,using them, analyse suitable random phenomena.
	CO3	Perform statistical inferences concerning characteristics of a population based on attributes of samples drawn from the population
	CO4	Compute roots of equations, evaluate definite integrals and perform interpolation on given numerical data using standard numerical techniques
	CO5	Apply standard numerical techniques for solving systems of equations, fitting curves on given numerical data and solving ordinary differential equations.
	CO6	Analyse the performance of transformers under various conditions
	CO4	Apply Maxwell Equations for the solution of time-varying fields
	CO5	Analyse electromagnetic wave propagation in different media
	CO3	Develop innovative, reliable, sustainable and economically viable designs incorporating knowledge in engineering.
MCN 202 CONSTITUTION OF INDIA	CO1	Explain the background of the present constitution of India and features.
	CO2	Utilize the fundamental rights and duties.
	CO3	Understand the working of the union executive, parliament and judiciary
	CO4	Understand the workings of the state executive, legislature, and judiciary
	CO5	Utilize the special provisions and statutory institutions
	CO6	Show national and patriotic spirit as responsible citizens of the country
	CO6	Examine the efficiency by performing Sumpner’s test on two similar transformers.

Semester VI		
Course Code & Course Name	**CO No**	**CO Description**
HUT 300 INDUSTRIAL ECONOMICS AND FOREIGN TRADE	CO 1	Explain the problem of scarcity of resources and consumer behavior, and to evaluate the impact of government policies on the general economic welfare. (Cognitive knowledge level: Understand)
	CO 2	Take appropriate decisions regarding the output volume and evaluate the social cost of production. (Cognitive knowledge level: Apply)
	CO 3	Determine the functional requirement of a firm under various competitive conditions. (Cognitive knowledge level: Analyse)
	CO 4	Examine the overall performance of the economy, and the regulation of economic fluctuations and its impact on various sections in the society. (Cognitive knowledge level: Analyse)
	CO 5	Determine the impact of changes in global economic policies on the business opportunities of a firm. (Cognitive knowledge level: Analyse)