



**HKBK College of Engineering**  
**Department of Electronics & Communication Engineering**

**YEAR: 1 SEM: 1**

**Course Name: CALCULUS AND LINEAR ALGEBRA**

**Sub code: 18MAT11**

CO	Course Outcomes
1.	Apply the knowledge of calculus to solve the problems of polar curves and its applications in determining the benefits of bentness of the curve.
2.	Learn the notation of partial differentiation to find rate of change of multivariate functions and Jacobians
3.	Apply the concept of change of order of integration and evaluate the multiple integral and their application in finding area and volumes
4.	Solve the first order linear/nonlinear differential equations using standard methods
5.	Make use of matrix theory for solving system of linear equations and compute eigenvalues and eigenvectors for diagonalization

**Course Name: ENGINEERING PHYSICS**

**Sub code: 18EC12**

CO	Course Outcomes
1.	Understand various oscillations and their implications, the role of shock waves in various fields and recognize elastic properties of materials and their engineering applications
2.	Realize the interrelation between the time varying electric field and magnetic field, the transverse nature of EM waves and their role in optical fiber communication
3.	Compute Eigen values and Eigen function, and atomic and subatomic particles using time dependent 1-D Schrodinger wave equation.
4.	Apprehend the theoretical background of laser, construction and working of different types of laser and its applications in different fields
5.	Understand various thermal and electrical properties of materials like, conductors, semiconductors and dielectrics using standard models

**Course Name: BASIC ELECTRICAL ENGINEERING**

**Sub code: 18EC13**

CO	Course Outcomes
1.	Analyze dc and ac circuits
2.	Explain the principle of operation and construction of single phase transformers
3.	Explain the principle of operation and construction of dc machines and synchronous machines
4.	Explain the principle of operation and construction of three phase induction motor
5.	Explain the concept of electrical wiring, circuit protecting devices and earthing

**Course Name:** ELEMENTS OF CIVIL ENGINEERING AND MACHINES

**Sub code:** 18EC14

CO	Course Outcomes
1.	Mention the applications of various fields of civil engineering
2.	Compute the reactive forces and the effects that develop as a result of the various loads
3.	Comprehend the actions of forces, moments and loads on the system of rigid bodies and compare their reactive forces to reactive loads
4.	Locate the centroid and calculate moment of inertia for regular and built up sections
5	Express the relation between motion of bodies and analyze bodies in motion

**Course Name:** ENGINEERING GRAPHICS

**Sub code:** 18EC15

CO	Course Outcomes
1.	Prepare engineering drawing as per BIS conventions mentioned in the relevant codes
2.	Produce computer generated drawing with the usage of CAD software.
3.	Use the knowledge of Orthographic projections, Sections of solids and present the same in the form of drawings
4.	Develop Isometric drawings of objects reading the Orthographic projections of objects
5	Convert the pictorial and Isometric views of simple objects to Orthographic objects

**Course Name:** TECHNICAL ENGLISH

**Sub code:** 18EGH18

CO	Course Outcomes
1.	Use grammatical English and essentials of language skills language skills, nuances and flawless pronunciation
2.	Implement English vocabulary at command and language proficiency
3.	Identify common error in spoken and written communication
4.	Understand and improve nonverbal communication and kinesics
5	Perform well in campus recruitment and other competitive examination

## YEAR: 1 SEM: 2

**Course Name: ADVANCED CALCULUS AND NUMERICAL METHODS Sub code: 18EC21**

CO	Course Outcomes
1.	Illustrate the applications of multivariate calculus and understand the solenoid and irrational vectors and also illustrate the difference of line surface and volume integrals
2.	Demonstrate the various physical models through higher order differential equations and solve them
3.	Construct a variety of partial differential equation and solution by exact Methods/method of separation of variables
4.	Explain the applications of infinite series and obtain series solution of ordinary differential equations
5	Apply the knowledge of numerical methods in the modeling of various physical and engineering phenomena

**Course Name: ENGINEERING CHEMISTRY**

**Sub code: 18EC22**

CO	Course Outcomes
1.	Use of free energy in equilibrium, Rationalize bulk properties using thermodynamic considerations, electrochemical energy systems
2.	Cause and effects of corrosion of metals and control of corrosion. Modification of surface properties of metals to develop resistance to corrosion, wear, tear etc. by electroplating and electroless plating.
3.	Production & consumption of energy for industrialization of country and living standards of people. Electrochemical and concentration cells. Classical, modern battery and fuel cells. Utilization of solar energy for different useful forms of energy.
4.	Environmental pollution, Waste management and water chemistry.
5	Different techniques of instrumental methods of analysis. Fundamental principles of nono materials.

**Course Name: C PROGRAMMING FOR PROBLEM SOLVING**

**Sub code: 18EC23**

CO	Course Outcomes
1.	Illustrate simple algorithms from different domains Such as mathematics, physics etc.
2.	Construct a programming solution to the given problem using
3.	Identify and correct the syntax and logical errors in C programs
4.	Modularize the given problem using functions and structures.

**Course Name: BASIC ELECTRONICS**

**Sub code: 18ELN24**

CO	Course Outcomes
1.	Describe the operation of BJT, FET, diode and op-amp
2.	Explain the construction of regulators, oscillators , amplifiers and regulators
3.	Describe the general principles of SCRs and its applications
4.	Explain the working and design of fixed voltage IC regulators using 7805 IC and astable using 555 IC
5	Explain the different number system and their conversions. Construct simple combinational and sequential circuits using logic gates and f/f
6	Describe the basic principle of communication system and mobile phones

**Course Name: ELEMENTS OF MECHANICAL ENGINEERING**

**Sub code: 18EC25**

CO	Course Outcomes
1.	Identify Various Energy sources and their conversion system
2.	Explain the working principle of Boilers, Prime movers such as turbines and IC engines, refrigeration and air-conditioning systems
3.	Recognize the various metal joining processes and power transmission elements
4.	Understand the properties of common engineering materials and their applications in engineering industry
5	Discuss the conventional machine tools, machining process and tools and accessories.