Department of Applied science and mathematics
K. K. Wagh Institute of Engineering Education and Research
Hirabai Haridas Vidyanagari, Amrut Dham, Panchavati, Nashik-422003

VISION

Strengthening Engineering Practices through Applied Scientific Principles

MISSION

1. Build a Strong Foundation and Inculcate Core Knowledge of Basic Sciences and Mathematics In Various Disciplines of Engineering
2. Strengthening Students Skill and Talents to Develop Scientific Attitude .
3. Strengthen the Foundation of Engineering Education Through Core Knowledge of Basic Sciences and Mathematics.

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COURSE OUTCOME
F.E.(2015 Pattern)

Subject Name : Engineering Mathematics I **Subject Code: 107001**

SEM I

Course Outcome	After successful completion of the course, students should be able to
CO1	Analyze the given system of linear equations for consistency and determine eigenvalues and eigenvectors.
CO2	Interpret complex number graphically, Euler's formula, De Moivre's theorem and their applications.
CO3	Testing the convergence of Infinite series and evaluate n^{th} derivative of functions.
CO4	Express function as a Series & apply the fundamental concepts of differential calculus to solve problems in Engineering.
CO5	Evaluate partial differentiation of multivariable functions.
CO6	Apply concepts of partial differentiation to find Jacobians, Extreme values and error analysis of functions.

. **Subject Name: Engineering Physics** **Subject Code: 107002**

SEM I / II

Course Outcome	After successful completion of course, a student should be able to
CO1	Apply interference, diffraction phenomena in obtaining solutions of various technical problems.
CO2	Interpret principles of sound in Acoustics and Ultrasonic in medical and technical problems.
CO3	Organise the knowledge of polarization phenomena and LASER concepts for developing optical devices.
CO4	Analyse the materials on the basis of energy gap and conductivity and its applications in research and industry.
CO5	Understand basic quantum mechanics principles, construction of Schrodinger's wave equations and its applications in tunnel diode and STM.
CO6	Describe the origin and properties of superconducting materials and nonmaterial, and identification of it in various research and industrial applications.

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Subject Name : Engineering Chemistry **Subject Code: 107009**

SEM I / II

Course Outcome	After successful completion of course student will be able to
CO1	Understand technology and analyze the quality of water for its applications.
CO2	Analyze the given sample by different Instrumentation techniques.
CO3	Understand mechanism, preparation, characteristic and application of synthetic polymer.
CO4	Estimate oxygen requirement for combustion of a fuel and its calorific value.
CO5	Understand nano and composite materials of Carbon & Hydrogen with applications.
CO6	Understand mechanism of corrosion and apply proper method for prevention of metal from corrosion.

Subject Name: Engineering Graphics-I **Subject Code: 110003**

SEM I

Course Outcome	After successful completion of course, a student should be able to
CO1	Apply basics of Engineering drawing, projections, lettering, dimensioning and various drawing conventions.
CO2	Analyse the engineering drawing problems (like projection of lines, planes and solids) and construct the accurate solutions by applying the basic drawing fundamentals and drawing instruments.
CO3	Analyse and construct the accurate solutions of development of lateral surfaces and various engineering curves.
CO4	Apply the knowledge of orthographic and isometric projections for solving the engineering drawing problems.

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Subject Name: Basic Electrical Engineering **Subject Code: 103004**

SEM I / II

Course Outcome	**After successful completion of course, a student should be able to**
CO1	Explain relationship between voltage, current and resistance with effect of temperature and differentiate work, power and energy in different domain.
CO2	Formulate different laws of electromagnetism and calculate inductance, statically and dynamically induced emf in magnetic circuit.
CO3	Evaluate the concept of single phase transformer and apply different formulas of electrostatics in charging and discharging of capacitor and its energy storage.
CO4	Categorize instantaneous, r.m.s and average values of different electrical quantities and response of pure R, L, C with sinusoidal supply and draw associated phasor diagrams.
CO5	Calculate response in series and parallel RLC in single and three phase circuit with sinusoidal supply and draw associated phasor diagrams.
CO6	Became familiar with different electrical theorems in DC network.

Subject Name : Basic Electronics Engineering **Subject Code: 104012**

SEM I / II

Course Outcome	**After successful completion of course student will be able to**
CO1	Describe the working of different types of Diodes, Transistors and their applications.
CO2	Analyze the basic circuits of op-amp, timer IC 555 and IC voltage regulator.
CO3	Simplify logical equations and Realize combinational and sequential circuits.
CO4	Explain basics of transducers.
CO5	Explain basic concepts of communication system.

Subject Name : Basic Civil and Environmental Engineering

Subject Code: 101005 SEM I

Course Outcome	After successful completion of course student will be able to
CO1	Know various disciplines of civil engineering and their importance in social life and development of the nation.
CO2	Understand basic materials and their properties use in construction, types of substructure & superstructure & need of automation in construction projects.
CO3	Get acquainted with the applications of modern instruments in surveying and leveling operations.
CO4	Acquire knowledge of various components of ecosystem, their types and need of environmental impact assessment and solid waste management.
CO5	Develop an understanding of basic principles of building planning and importance of building by laws.
CO6	Understand different sources of energy, types of pollution and their ill effects on men and materials.

Subject Name : Fundamentals of Programming Language I

Subject Code: 102006 SEM I

Course Outcome	After successful completion of course student will be able to
CO1	Explain features of system software
CO2	Model given problem using flowchart and algorithm
CO3	Make use of features of C to develop simple application
CO4	Choose appropriate control structure to develop an application
CO5	Relate and demonstrate the concepts of arrays, functions and strings in C

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Subject Name : Workshop Practices **Subject Code: 111007**

SEM I

Course Outcome	After successful completion of course student will be able to
CO1	Acquire knowledge of different engineering material from manufacturing point of view.
CO2	Construct useful wooden part of required shape and size by using necessary carpentry tools.
CO3	Construct useful sheet metal parts of required shape and size by using necessary tin smithy tools.
CO4	Construct useful components of required shape and size by using Fitting and/or welding tools and machines.
CO5	Learn and acquire safety rule to work in engineering workshop.

Subject Name : Engineering Mathematics II **Subject Code: 107008**

SEM II

Course Outcome	After successful completion of the course, students should be able to:
CO1	Obtain solution of the ordinary D.E. of first order first degree using various methods.
CO2	Apply the theory of First Order Differential Equations in mathematical modelling of Physical systems & solve them.
CO3	Define and evaluate Fourier series of periodic functions and analyze harmonically.
CO4	Apply advanced techniques to evaluate integrals, also trace approximate shape of the curve & measure arc length of various curves.
CO5	Identify three coordinate system and solve examples on Sphere, cone and cylinder.
CO6	Evaluate double & Triple integration and apply them to find area, mass, volume, C.G., M.I. of plane and solid regions.

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Subject Name : Basic Mechanical Engineering **Subject Code: 102013**

SEM II

Course Outcome	After successful completion of course student will be able to
CO1	Understand the basic knowledge of mechanical engineering and its applications.
CO2	Analyze different mechanical elements, simple mechanical system with their functions, materials and applications.
CO3	Explain construction, working and application of various manufacturing processes and machine tools.
CO4	Remember basics of thermodynamics and its application, various power producing devices, power absorbing devices and various power plants.

Subject Name : Engineering Mechanics **Subject Code: 101011**

SEM II

Course Outcome	After successful completion of course, a student should be able to
CO1	Understand basic engineering mechanics concepts required for analyzing static structures.
CO2	Determine resultant of a force system in 2D and 3D acting on a rigid body, its effect on the body and to determine centroid of plane lamina and wire bends.
CO3	Learn to draw free body diagram showing active and reactive forces acting on a rigid body in equilibrium and apply equations of motion and Newton's second Law for a particle for rectilinear and curvilinear motion
CO4	Acquire knowledge about the concept of work, power, energy and principle of conservation of energy and impulse-momentum.
CO5	Develop capacity for visualizing physical configurations of trusses, frames, machines, and beams to analyze relevant external and internal forces.

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Subject Name : Fundamentals of Programming Language II

Subject Code: 110010 **SEM II**

Course Outcome	After successful completion of course, a student should be able to
CO1	Choose and make use of structures and unions in C.
CO2	Apply object oriented programming concepts.
CO3	Build a webpage.
CO4	Make use of built in android SDK wizard.
CO5	Illustrate the concepts of embedded system in C.

Subject Name : Engineering Graphics-II **Subject Code: 102014**

SEM II

Course Outcome	After successful completion of course Student should be able to
CO1	Identify the various toolbars and commands in the drafting software.
CO2	Use the various drafting toolbars and commands for constructing the objects.
CO3	Prepare the engineering drawings with appropriate projection method for various problems.