



MARATHA VIDYA PRASARAK SAMAJ'S
Karmaveer Adv. Baburao Ganpatrao Thakare
College of Engineering (An Autonomous Institute)



Permanently Affiliated to Savitribai Phule Pune University Vide Letter No. : CA/1542 & Approved by AICTE New Delhi - Vide Letter No. : 740-89-32 (E) ET/98 AISHE Code - C-41622

DEPARTMENT OF APPLIED SCIENCE & HUMANITIES

Course Outcomes

Vision- Mission

Institute Vision

To be internationally accredited, Multidisciplinary, and Multi-collaborative institute working on technology enabled platform fostering innovations and patents through state-of-art academic system designed by highly qualified faculty for the development of common masses at large

Institute Mission

To educate and train common masses through undergraduate, post graduate, research programs by inculcating the values for discipline, quality, transparency and foster career and professional development for employment thereby contributing to the development of society

Department Vision

Applied Science & Humanities Department of MVPS's KBT College of Engineering determines to become a centre of learning in the field of "sciences-in-engineering" and the development of human values to develop engineers those can apply basic knowledge in engineering field to serve society.

Department Mission

- To produce graduates with strong knowledge of engineering sciences who are anchored on the principles of hard work and integrity.
- To cultivate scientific culture with mathematical approach.
- To solve the problems in engineering and improve it.



Program Outcome

PO1	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO2	Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO3	Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO4	Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO5	Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.
PO6	The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO7	Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO9	Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO10	Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO11	Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO12	Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.



APPLIED SCIENCE & HUMANITIES DEPARTMENT

COURSE OUTCOMES

First Year B.Tech.

100101	Engineering Mathematics-I
100101.1	Apply tools from linear algebra to solve system of linear equations.
100101.2	Determine eigen values & eigen vectors. Use them to diagonalize matrices and reduce quadratic form to their canonical form.
100101.3	Apply knowledge of linear algebra to solve simple real life problems.
100101.4	Evaluate derivative functions of several variables which are essential for solving various engineering problems.
100101.5	Apply partial derivatives in estimating errors and finding extreme values of the function.

100102	Engineering Physics
100102.1	Develop the understanding of the mechanism of lasers, optical fibers and extend it to its engineering applications.
100102.2	Develop understanding of Fermi level and Fermi energy in semiconductors and relate them with the working of semiconducting devices. Explain the phenomenon of Superconductivity and estimate its engineering applications.
100102.3	Deduce Schrödinger's wave equations and apply it to problems on the bound states by summarizing fundamentals of quantum physics.
100102.4	Utilize phenomena of light (interference and Polarization) to Engineering applications in Anti-Reflection Coating, optical flatness and LCD.
100102.5	Extend the understanding of Ultrasonic to thickness measurement, flaw detection. Develop understanding of crystal structure and extend it to explain X-ray Diffraction.

100103	Fundamentals of Electronics Engineering
100103.1	Understand and Analyze PN Junction Diodes and Rectifiers. To enable learners to understand the construction and operation of PN junction diodes and analyze their performance in rectifier circuits through numerical analysis.
100103.2	Understand and Apply BJTs. To facilitate understanding of Bipolar Junction Transistors (BJTs) and apply knowledge of the voltage divider biasing technique, while analyzing the VI characteristics of npn BJTs as switches and amplifiers
100103.3	Understand and Apply Operational Amplifier Principles. To equip students with the ability to understand operational amplifier principles and apply them in practical circuits, along with analyzing related numerical problems.

100103.4	Understand and Analyze Logic Circuits. To provide learners with the knowledge of various number systems and basic arithmetic operations for conversions, and to analyze the functionality of basic and universal logic gates.
100103.5	Classify and Analyze Sensors in IoT. To enable students to classify different types of sensors, apply selection criteria for their use, and analyze their applications in Internet of Things (IoT) and microprocessor systems.

100104	Engineering Graphics
100104.1	Explain the fundamentals of Engineering Graphics and basic principles of geometric construction and projections and apply the concepts of projection to draw several 2D views for visualizing the physical state of the object.
100104.2	Apply the visualization skill to draw an isometric projection from given orthographic views.
100104.3	Apply the types of projections and methods to prepare the drawings for lines and planes.
100104.4	Construct the various engineering curves and illustrate the application of various engineering curves.
100104.5	Draw the development of the lateral surfaces of solid.

100105	Fundamentals of Programming
100105.1	Apply foundational elements of C programming.
100105.2	Apply control flow structures for making decisions.
100105.3	Develop solution using arrays and strings.
100105.4	Apply pointers and functions to achieve code reusability.
100105.5	Design solution using structure, union and file.

100106	Workshop Practice
100106.1	Illustrate various sections of a typical workshop and different types of tools and machinery commonly found in a workshop.
100106.2	Explain the importance of workshop safety and apply general workshop safety rules and guidelines.
100106.3	Apply the carpentry/ welding/ solid modeling techniques to develop a component
100106.4	Describe the applications, advantages and operation of advanced computerized machine tools in modern manufacturing.
100106.5	Demonstration of Electrical, Electronics, Plumbing etc. tools and components.

100107	Professional Communication Skills
100107.1	Recognize proficient oral and written communication skills tailored to engineering contexts, fostering effective technical exchanges and collaboration.
100107.2	Develop the writing skills in societal and professional life.
100107.3	Develop oratory skills through public speaking and elocution activities
100107.4	Apply the knowledge of professional attire in corporate environment.
100107.5	Apply the business etiquette and inculcate the etiquette for corporate field.

100108	Co-Curricular Course-I
100108.1	Develop self-motivation and self-discipline.
100108.2	Build communication and leadership skill.
100108.3	Develop skill beyond the knowledge of subject
100108.4	Apply time management skill effectively.
100108.5	Demonstrate strength, flexibility, balance and coordination.

100201	Engineering Mathematics-II
100201.1	Apply effective mathematical tools for solving first order ordinary differential equations.
100201.2	Use physical laws & ordinary differential equations to model and analyze physical systems.
100201.3	Apply integration techniques such as reduction formulae, beta functions, gamma functions, Differentiation under integral sign to evaluate integrals.
100201.4	Evaluate multiple integrals and their applications to find area bounded by curves, volume enclosed by surfaces.
100201.5	Apply statistical methods such as correlation & regression analysis to analyze experimental data.

100202	Engineering Chemistry
100202.1	Apply suitable methods for water analysis and various treatment methods.
100202.2	Apply different electro analytical techniques for chemical analysis
100202.3	Apply advanced concepts in polymer science, nanomaterial, and green chemistry to solve engineering challenges.
100202.4	Classify different kinds of fuels on the basis of calorific value and can define need for alternative energy sources
100202.5	Identify the factors that influence the rate of corrosion and Apply Corrosion Control Techniques

100203	Basic Electrical Engineering
100203.1	Analyze DC circuits using basic electrical laws, theorems and network simplification techniques.
100203.2	Compute the voltage, current and power for 1-phase and 3-phase AC circuits.
100203.3	Analyze the magnetic circuit parameters, self-Inductance and mutual Inductance.
100203.4	Demonstrate operation of single-phase transformer and calculate transformer efficiency, regulation at different loading conditions.
100203.5	Analyze the performance characteristics of electrical machines.

100204	Engineering Mechanics
100204.1	Analyze and resolve force systems into components, apply equilibrium conditions to static systems, and solve problems involving distributed loads, supports, and reactions.
100204.2	Determine the center of gravity and the moment of inertia for various shapes and composite bodies, and apply these concepts to solve composite problems.
100204.3	Apply methods of joints to analyze trusses, and solve problems related to frictional forces in different types of contact surfaces and conditions.
100204.4	Analyze the motion of particles using kinematic equations, vectors, and relative motion principles, and apply these to practical problems involving rectilinear and curvilinear motion.
100204.5	Apply Newton's laws and work-energy principles to solve problems involving particle dynamics, including force-mass-acceleration relationships.

100205	Programming and Problem Solving
100205.1	Use fundamental concepts for problem solving.
100205.2	Apply suitable decision control statement for problem solving.
100205.3	Demonstrate operations on data structures and strings.
100205.4	Implement modular programs using functions and modules.
100205.5	Apply object oriented programming concepts and Python libraries for data handling.

100206	Design Thinking and Idea Lab
100206.1	Empathize the problem and define the problem statement.
100206.2	Generate innovative ideas to solve the problems.
100206.3	Design and make prototype based on the idea generated.
100206.4	Test the prototype and analyze for refinement.
100206.5	Present and communicate ideas effectively.

100207	Indian Knowledge System
100207.1	Demonstrate knowledge of ancient Indian contributions to science, mathematics, and engineering, and their impact on modern practices.
100207.2	Analyze traditional Indian architectural and engineering methods and apply them in contemporary contexts.
100207.3	Apply Indian philosophical concepts to resolve ethical dilemmas in engineering.
100207.4	Design innovative solutions that integrate Indian Knowledge Systems with modern technology for sustainable development.

100208	Co-Curricular Course-II
100208.1	Understand the growth and evolution of NSS and its role in Nation building through community service..
100208.2	Achieve and maintain a physical and mental fitness for good health through sports.
100208.3	Develop self-defense training to improve self-confidence and self-esteem.
100208.4	Educate a set of practices and procedures to minimize the destruction caused by fire hazards.
100208.5	Mentor the students who are Struggling and underachieving in academics.

