



**ANJUMAN-I-ISLAM'S
KALSEKAR TECHNICAL CAMPUS, NEW PANVEL**

Approved by : All India Council for Technical Education, Council of Architecture, Pharmacy Council of India New Delhi,
Recognised by : Directorate of Technical Education, Govt. of Maharashtra, Affiliated to : University of Mumbai.

- SCHOOL OF ENGINEERING & TECHNOLOGY
 SCHOOL OF PHARMACY
 SCHOOL OF ARCHITECTURE

DEPARTMENT OF MECHANICAL ENGINEERING

Course outcomes list for all the courses for academic year 2022-23

Sr. No.	Sem	Course Full Name	Course Abbreviation	CO number	Course Outcomes
1	III	Engineering Maths-III	EM III	CO1	Apply the concept of Laplace transform to solve the real integrals.
				CO2	Apply the concepts of Inverse Laplace transform for various functions and to solve IVP.
				CO3	Apply knowledge of Fourier series to expand periodic functions into infinite series.
				CO4	Identify analytic functions & its use to find orthogonal trajectories and apply it to bilinear transformation & conformal mapping.
				CO5	Apply Matrix algebra to solve the engineering problems.
				CO6	Solve Partial differential equations by applying numerical solution and analytical methods for one dimensional heat and wave equations
2	III	Strength of Materials	SOM	CO1	Demonstrate fundamental knowledge about various types of loading and stresses induced.
				CO2	Draw the SFD and BMD for different types of loads and support conditions.
				CO3	Analyse the bending and shear stresses induced in beam.
				CO4	Analyse the deflection in beams and stresses in shaft.
				CO5	Analyse the stresses and deflection in beams and Estimate the strain energy in mechanical elements.
				CO6	Analyse buckling phenomenon in columns.
3	III	Production Processes	PP	CO 01	Demonstrate an understanding of casting process
				CO 02	Illustrate principles of forming processes.
				CO 03	Demonstrate applications of various types of joining processes.
				CO 04	Differentiate chip forming processes such as turning, milling, drilling, etc.
				CO 05	Illustrate principles and working of non-traditional manufacturing


Program Owner

Innovative Teaching - Exuberant Learning

Vision : To be the most sought after academic, research and practice based department of Mechanical Engineering that others would wish to emulate.






ANJUMAN-I-ISLAM'S

KALSEKAR TECHNICAL CAMPUS, NEW PANVEL

Approved by : All India Council for Technical Education, Council of Architecture, Pharmacy Council of India New Delhi,
Recognised by : Directorate of Technical Education, Govt. of Maharashtra, Affiliated to : University of Mumbai.

- SCHOOL OF ENGINEERING & TECHNOLOGY
- SCHOOL OF PHARMACY
- SCHOOL OF ARCHITECTURE

				CO 06	Illustrate the concept of producing polymer components and ceramic components. And Understand the manufacturing technologies enabling Industry 4.0
4	III	Materials and Metallurgy	M&M	CO1	Classify various imperfections in materials and comprehend the effect of these imperfections on deformation
				CO2	Locate a phase with the help of "major alloying element and temperature" on Fe-Fe ₃ C equilibrium diagram and with the help of "temperature and time" on TTT diagram.
				CO3	Select appropriate heat treatment process and process parameters for developing specific properties
				CO4	Express the fatigue and creep failures of material and explain the methods to find fatigue and creep properties of a given material.
				CO5	Discuss about new materials such as composite materials, nano materials and smart materials for improved performance.
				CO6	Select an appropriate Non Destructive Testing Method to identify and locate various defects in materials.
5	III	Thermodynamics	THD	CO 01	Demonstrate application of the laws of thermodynamics to wide range of systems
				CO 02	Compute heat and work interactions in thermodynamics systems
				CO 03	Demonstrate the interrelations between thermodynamic functions to solve practical problems.
				CO 04	Use steam table and mollier chart to compute thermodynamics interactions
				CO 05	Compute efficiencies of heat engines, power cycles etc.
				CO 06	Apply fundamentals of compressible fluid flow to the relevant systems
6	III	Materials Testing	MT	CO 01	Demonstrate the steps for metallographic sample preparation of hardened, annealed, normalized and tempered workpieces and study their microstructure using optical metallurgical microscope (L1,L2)
				CO 02	Identify effects of heat treatment on microstructure of medium carbon steel and hardenability of steel using Jominy end Quench test .


Program Owner



Innovative Teaching - Exuberant Learning
Vision : To be the most sought after Technical campus that others would wish to emulate.



**ANJUMAN-I-ISLAM'S
KALSEKAR TECHNICAL CAMPUS, NEW PANVEL**

Approved by : All India Council for Technical Education, Council of Architecture, Pharmacy Council of India New Delhi,
Recognised by : Directorate of Technical Education, Govt. of Maharashtra, Affiliated to : University of Mumbai.

- SCHOOL OF ENGINEERING & TECHNOLOGY
- SCHOOL OF PHARMACY
- SCHOOL OF ARCHITECTURE

				CO 03	Perform Fatigue test at a given load and locate the number of cycles to failure at that load using rotating bending fatigue tester.
				CO 04	Perform Tension test to Analyze the stress - strain behaviour of materials
				CO 05	Measure Torsional Strength, Hardness, and Impact strength of the material
				CO 06	Analyze a given system under torsion, bending and any other type of loading using appropriate tools and techniques
7	III	Machine Shop Practice	MSP	CO 01	Know the specifications, controls and safety measures related to machines and machining operations.
				CO 02	Use the machines for making various engineering jobs.
				CO 03	Perform various machining operations
				CO 04	Perform Tool Grinding
				CO 05	Perform Welding operations
8	III	CAD –Modeling	CADM	CO 01	Understand different types of CAD model creation
				CO 02	Create 2D geometry of a given object using modelling software.
				CO 03	Build solid model of a given object using 3D modelling software.
				CO 04	Develop surface model of a given object using modelling software.
				CO 05	Construct assembly models of given objects using assembly tools of a modelling software.
				CO 06	Make use of product data exchange among CAD systems.
9	IV	Engineering Maths-VI	EM IV	CO1	Apply the concept of Vector calculus to evaluate line integrals, surface integrals using Green's theorem, Stoke's theorem & Gauss Divergence theorem.
				CO2	Use the concepts of Complex Integration for evaluating integrals, computing residues & evaluate various contour integrals.
				CO3	Apply the concept of Correlation, Regression and curve fitting to the engineering problems in data science.


Program Owner



Innovative Teaching - Exuberant Learning
Vision : To be the most sought after Technical campus that others would wish to emulate.



**ANJUMAN-I-ISLAM'S
KALSEKAR TECHNICAL CAMPUS, NEW PANVEL**

Approved by : All India Council for Technical Education, Council of Architecture, Pharmacy Council of India New Delhi,
Recognised by : Directorate of Technical Education, Govt. of Maharashtra, Affiliated to : University of Mumbai.

- SCHOOL OF ENGINEERING & TECHNOLOGY
- SCHOOL OF PHARMACY
- SCHOOL OF ARCHITECTURE

				CO4	Illustrate understanding of the concepts of probability and expectation for getting the spread of the data and distribution of probabilities.
				CO5	Apply the concept of probability distribution to engineering problems & testing hypothesis of small samples using sampling theory.
				CO6	Apply the concepts of parametric and nonparametric tests for analyzing practical problems.
10	IV	Fluid Mechanics	FM	CO1	Define properties of fluids, classify fluids and evaluate hydrostatic forces on various surfaces.
				CO2	Illustrate understanding of dimensional analysis of Thermal and Fluid systems.
				CO3	Differentiate velocity potential function and stream function and solve for velocity and acceleration of a fluid at a given location in a fluid flow.
				CO4	Formulate and solve equations of the control volume for fluid flow systems and Apply Bernauli's equation to various flow measuring devices.
				CO5	Calculate pressure drop in laminar and turbulent flow, evaluate major and minor losses in pipes.
				CO6	Calculate resistance to flow of incompressible fluids through closed conduits and over surfaces.
11	IV	Kinematics of Machinery	KOM	CO 01	Define various components of mechanism
				CO 02	Construct/Compose mechanism to provide specific motion
				CO 03	Draw velocity and acceleration diagram of various mechanism.
				CO 04	Construct CAM profile for the specific follower motion.
				CO 05	Select appropriate power transmission and control mechanism
12	IV	CAD/CAM	CAD/CAM	CO1	Identify suitable computer graphics techniques for 3D modelling
				CO2	UNDERSTAND AND APPLY 2D AND 3D TRANSFORMATION AND DATA STORAGE TECHNIQUES
				CO3	Develop 3D model using various types of available biomedical data


Program Owner



Innovative Teaching - Exuberant Learning
Vision : To be the most sought after Technical campus that others would wish to emulate.



**ANJUMAN-I-ISLAM'S
KALSEKAR TECHNICAL CAMPUS, NEW PANVEL**

Approved by : All India Council for Technical Education, Council of Architecture, Pharmacy Council of India New Delhi,
Recognised by : Directorate of Technical Education, Govt. of Maharashtra, Affiliated to : University of Mumbai.

- SCHOOL OF ENGINEERING & TECHNOLOGY
- SCHOOL OF PHARMACY
- SCHOOL OF ARCHITECTURE

				CO4	CALCULATE AND PLAN THE MACNINING OF JOBS ON VARIOUS CNC MACHINES USING VARIOUS PART PROGRAMING LANGUAGES
				CO5	EXPLAIN THE USE OF RAPID PROTOTYPING AND TOOLING CONCEPTS IN ANY REAL LIFE APPLICATION
				CO6	Illustrate understanding of various cost effective alternatives for manufacturing products
13	IV	Industrial Electronics	IE	CO 01	Illustrate construction, working principles and applications of power electronic switches.
				CO 02	Identify rectifiers and inverters for dc and ac motor speed control.
				CO 03	Develop circuits using OPAMP and Timer IC 555.
				CO 04	Identify digital circuits for industrial applications.
				CO 05	Demonstrate the knowledge of basic functioning of microcontrollers.
				CO 06	Analyze speed-torque characteristics of electrical machines for speed control.
14	IV	Industrial Electronics Lab	IEL	CO 01	Illustrate construction, working principles and applicaton of power electronic switches.
				CO 02	identify rectifiers and invertors for dc and ac motor speed control.
				CO 03	develope circuits using OP-AMP and Timer IC555.
				CO 04	identify digital circuits for industrial applications.
				CO 05	demonstrate the knowledge of basic functioning of microcontrollers.
				CO 06	analyze speed torque characteristics of elctrical machines for speed control.
15	IV	Kinematics of Machinery Lab	KOML	CO 01	Draw velocity and acceleration diagram of various mechanism.
				CO 02	Construct CAM profile for the specific follower motion.
				CO 03	Select appropriate power transmission and control mechanism
16	IV	Python Programming	PP	CO 01	Demonstrate understand of basic concepts of python programming.
				CO 02	Identify, install and utilize python packages


Program Owner



Innovative Teaching - Exuberant Learning
Vision : To be the most sought after Technical campus that others would wish to emulate.



**ANJUMAN-I-ISLAM'S
KALSEKAR TECHNICAL CAMPUS, NEW PANVEL**

Approved by : All India Council for Technical Education, Council of Architecture, Pharmacy Council of India New Delhi,
Recognised by : Directorate of Technical Education, Govt. of Maharashtra, Affiliated to : University of Mumbai.

- SCHOOL OF ENGINEERING & TECHNOLOGY
- SCHOOL OF PHARMACY
- SCHOOL OF ARCHITECTURE

				CO 03	Develop and execute python programs for specific applications.
				CO 04	Develop and build python program to solve real-world engineering problems
				CO 05	Prepare a report on case studies selected.
17	IV	CNC and 3-D Printing	CNC	CO 01	Develop and execute part programming for any given specific operation.
				CO 02	Build any given object using various CNC operations.
				CO 03	Demonstrate CAM Tool path and prepare NC- G code.
				CO 04	Develop 3D model using available biomedical data
				CO 05	Build any given real life object using 3D printing process.
				CO 06	Convert 2D images into 3D model
18	V	Mechanical Measurements and Controls	MMC	CO1	Express the process of measurement and design Go and No Go gauges for different types of fits for part of an assembly as per the applicable standards.
				CO2	Interpret the geometrical tolerances and surface roughness values, express the methods for measurement of flatness, gear thread parameters and screw thread parameters of a machine component.
				CO3	Discuss the static characteristics of measuring instruments for any measurement process and express a given measurement system in the form of elements of a generalised measurement system.
				CO4	Classify and select appropriate measuring instrument for displacement, pressure, flow and temperature measurements.
				CO5	Choose appropriate system elements to modify the physical system to its mathematical model. Analyse the behaviour of different types of system like type 0, first order and second order for different types of inputs like step, ramp and parabolic.
				CO6	Compute the parameters that describe the stability of a system so as to comment on the stability of the system using available methods such as root locus and Routh criteria.
19	V	Thermal Engineering	TE	CO1	Analyze the three mode of heat transfer in engg. Application

Program Owner



Innovative Teaching - Exuberant Learning

Vision : To be the most sought after Technical campus that others would wish to emulate.



**ANJUMAN-I-ISLAM'S
KALSEKAR TECHNICAL CAMPUS, NEW PANVEL**

Approved by : All India Council for Technical Education, Council of Architecture, Pharmacy Council of India New Delhi,
Recognised by : Directorate of Technical Education, Govt. of Maharashtra, Affiliated to : University of Mumbai.

- SCHOOL OF ENGINEERING & TECHNOLOGY
- SCHOOL OF PHARMACY
- SCHOOL OF ARCHITECTURE

				CO2	Develop mathematical models for different mode of heat transfer
				CO3	Analyze performance parameters of different type of heat exchanger
				CO4	Identify and analyze the transient heat transfer in engineering application
				CO5	Explain construction and working of different components of internal combustion engine
				CO6	Evaluate engine performance and emission characteristics
20	V	Dynamics of Machinery	DOM	CO 01	Explain working Principles of different types of governors and Gyroscopic effects on the mechanical systems
				CO 02	Analyse static and dynamic forces in mechanical systems
				CO 03	Determine natural frequency of element/system
				CO 04	Determine vibration response of mechanical elements / systems
				CO 05	Calculate parameters of vibration isolation system for a specific application
				CO 06	Apply concepts of balancing of forces and couples and determine best firing order of an engine
21	V	Finite Element Analysis	FEA	CO1	Solve differential equations using weighted residual methods
				CO2	Develop the finite element equations to model engineering problems governed by second order differential equations
				CO3	Apply the basic finite element formulation techniques to solve engineering problems by using one dimensional elements
				CO4	Apply the basic finite element formulation techniques to solve engineering problems by using two dimensional elements
				CO5	Apply the basic finite element formulation techniques to find natural frequency of single degree of vibration system
				CO6	Use commercial FEA software, to solve problems related to mechanical engineering
22	V	Statistical Techniques	ST	CO 01	Apply the concepts of statistical distributions in engineering applications.
				CO 02	Use sampling theory for a given data set.
				CO 03	Fit curve for a given data set.
				CO 04	Demonstrate the understanding of correlation and regression analysis.

Program Owner



Innovative Teaching - Exuberant Learning
Vision : To be the most sought after Technical campus that others would wish to emulate.



**ANJUMAN-I-ISLAM'S
KALSEKAR TECHNICAL CAMPUS, NEW PANVEL**

Approved by : All India Council for Technical Education, Council of Architecture, Pharmacy Council of India New Delhi,
Recognised by : Directorate of Technical Education, Govt. of Maharashtra, Affiliated to : University of Mumbai.

- SCHOOL OF ENGINEERING & TECHNOLOGY
- SCHOOL OF PHARMACY
- SCHOOL OF ARCHITECTURE

				CO 05	Perform Analysis of Variance from the available experimental data.
				CO 06	Demonstrate the understanding of Statistical Decision Making and Hypothesis Testing.
23	V	Thermal Engineering Lab	TEL	CO 01	Estimate thermal conductivity of engineering materials
				CO 02	Evaluate performance parameters of extended surfaces.
				CO 03	Analyze heat transfer parameters in various engineering applications
				CO 04	Analyze engine performance and emission parameters at different operating conditions.
24	V	Dynamics of Machinery Lab	DOML	CO 01	Calculate and draw performance characteristics of Governors
				CO 02	Analyze gyroscopic effect on laboratory model
				CO 03	Determine natural frequency of mechanical systems
				CO 04	Analyze vibration response of mechanical systems
				CO 05	Determine damping coefficient of a system
25	V	Finite Element Analysis Lab	FEAL	CO 01	Select appropriate element for given problem
				CO 02	Select suitable meshing and perform convergence test
				CO 03	Select appropriate solver for given problem
				CO 04	Interpret the result
				CO 05	Apply basic aspects of FEA to solve engineering problems
				CO 06	Validate FEA solution
26	V	Professional communication and ethics –II	PCE-II	CO1	Plan and prepare effective business/ technical documents which will in turn provide solid foundation for their future managerial roles.
				CO2	Strategize their personal and professional skills to build a professional image and meet the demands of the industry.
				CO3	Emerge successful in group discussions, meetings and result-oriented agreeable solutions in group communication situations.
				CO4	Deliver persuasive and professional presentations.


Program Owner



Innovative Teaching - Exuberant Learning
Vision : To be the most sought after Technical campus that others would wish to emulate.



**ANJUMAN-I-ISLAM'S
KALSEKAR TECHNICAL CAMPUS, NEW PANVEL**

Approved by : All India Council for Technical Education, Council of Architecture, Pharmacy Council of India New Delhi,
Recognised by : Directorate of Technical Education, Govt. of Maharashtra, Affiliated to : University of Mumbai.

- SCHOOL OF ENGINEERING & TECHNOLOGY
- SCHOOL OF PHARMACY
- SCHOOL OF ARCHITECTURE

				CO5	Develop creative thinking and interpersonal skills required for effective professional communication.
				CO6	Apply codes of ethical conduct, personal integrity and norms of organizational behaviour.
27	VI	Machine Design	MD	CO1	Use design data book/standard codes to standardise the designed dimensions.
				CO2	Design Knuckle Joint, Cotter joint, Bolted & Welded Joints and Screw Jack
				CO3	Design shaft under various conditions and couplings.
				CO4	Select bearings for a given applications from the manufacturers catalogue.
				CO5	Select and/or design belts and flywheel for given applications.
				CO6	Design springs, clutches and brakes.
28	VI	Turbo Machinery	TM	CO 01	Define various parameters associated with steam generators and turbo machines.
				CO 02	Identify various components and mountings of steam generators with their significance.
				CO 03	Identify various turbo machines and explain their significance.
				CO 04	Apply principles of thermodynamics and fluid mechanics to estimate various parameters like mass flow rate power, torque, efficiency, temperature, etc.
				CO 05	Evaluate performance of SG and Turbo machines and apply various techniques to enhance performance
					Evaluate various phenomena related to performance like cavitation, choking, surging.
29	VI	Heating, Ventilation, Air conditioning and Refrigeration	HVAC&R	CO1	Demonstrate fundamental principles of HVAC&R
				CO2	Identify & Locate various components of HVAC&R system
				CO3	Illustrate various refrigeration and air conditioning processes using psychometric chart
				CO4	Evaluate performance of various refrigeration system
				CO5	Calculate cooling and heating loads for an airconditioning system


Program Owner



Innovative Teaching - Exuberant Learning

Vision : To be the most sought after Technical campus that others would wish to emulate.



**ANJUMAN-I-ISLAM'S
KALSEKAR TECHNICAL CAMPUS, NEW PANVEL**

Approved by : All India Council for Technical Education, Council of Architecture, Pharmacy Council of India New Delhi,
Recognised by : Directorate of Technical Education, Govt. of Maharashtra, Affiliated to : University of Mumbai.

- SCHOOL OF ENGINEERING & TECHNOLOGY
- SCHOOL OF PHARMACY
- SCHOOL OF ARCHITECTURE

				CO6	Select air handling unit & design air distribution system
30	VI	Automation and Artificial Intelligence	AAI	CO 01	Demonstrate understanding of fundamentals of industrial automation and AI. e learning technologies.
				CO 02	Design & develop pneumatic / hydraulic circuits.
				CO 03	Design and develop electropneumatic circuits and PLC ladder logics.
				CO 04	Demonstrate understanding of robotic control systems and their applications.
				CO 05	Demonstrate understanding of various AI and machine
31	VI	Metal Forming Technology	MFT	CO 01	relate the metallographic aspects of materials with the metallographic aspects of materials with the
				CO 02	classify, calculate loads and identify defects in Metal Rolling process
				CO 03	classify, calculate loads and identify defects in Metal Forging process.
				CO 04	classify and calculate loads in Metal Extrusion process.
				CO 05	classify and calculate loads in Metal Drawing process.
				CO 06	classify and Describe various sheet metal forming processes and their applications.
32	VI	Machine Design Lab	MDL	CO 01	Use design data book/standard codes to standardise the designed dimensions.
				CO 02	Design Knuckle Joint, Cotter joint, Bolted & Welded Joints and Screw Jack
				CO 03	Design shaft under various conditions and couplings.
				CO 04	Select bearings for a given applications from the manufacturers catalogue.
				CO 05	Select and/or design belts and flywheel for given applications.
				CO 06	Design springs, clutches and brakes.
				CO 07	Course Project: Design in a Group, a system of minimum 5 component & Convert design dimensions into working/manufacturing drawing and/or Analysis using software.
33	VI	Turbo Machinery	TML	CO 01	Differentiate boiler, boiler mountings and accessories
				CO 02	Conduct a trial on reciprocating compressor / centrifugal compressor.


Program Owner



Innovative Teaching - Exuberant Learning
Vision : To be the most sought after Technical campus that others would wish to emulate.



**ANJUMAN-I-ISLAM'S
KALSEKAR TECHNICAL CAMPUS, NEW PANVEL**

Approved by : All India Council for Technical Education, Council of Architecture, Pharmacy Council of India New Delhi,
Recognised by : Directorate of Technical Education, Govt. of Maharashtra, Affiliated to : University of Mumbai.

- SCHOOL OF ENGINEERING & TECHNOLOGY
- SCHOOL OF PHARMACY
- SCHOOL OF ARCHITECTURE

				CO 03	Conduct a trial on impulse turbine and analyze its performance
				CO 04	Conduct a trail on reaction turbine and analyze its performance
				CO 05	Conduct a trial on Centrifugal pump and analyze its performance
				CO 06	Conduct a trial on Reciprocating pump and analyze its performance
				CO 07	Conduct a trial on gear pump
34	VI	Heating, Ventilation, Air conditioning and Refrigeration	HVAC&RL	CO 01	Demonstrate fundamental principles of HVAC&R
				CO 02	Identify & Locate various components of HVAC&R system
				CO 03	Illustrate various refrigeration and air conditioning processes using psychometric chart
				CO 04	Evaluate performance of various refrigeration system
				CO 05	Operate and maintain refrigeration system
				CO 06	Operate and maintain air conditioning system
35	VI	Measurements and Automation	M & A	CO 01	Apply inspection gauge to check or measure surface parameters.
				CO 02	Measure surface parameters using precision measurement tools and equipment.
				CO 03	Measure different mechanical parameters by using sensors.
				CO 04	Analyse the response of a control systems.
				CO 05	Demonstrate use of automated controls using pneumatic and hydraulic systems.
				CO 06	Implement program on PLC system and demonstrate its application
36	VII	Design of Mechanical System	DMS	CO 01	Apply the concept of system design.
				CO 02	Select appropriate gears for power transmission on the basis of given load and speed.
				CO 03	Design of hoisting mechanism of EOT crane.
				CO 04	Design belt conveyor systems.
				CO 05	Design engine components such as cylinder, piston, connecting rod and crankshaft.
				CO 06	Design pump for the given application.

Program Owner



Innovative Teaching - Exuberant Learning

Vision : To be the most sought after Technical campus that others would wish to emulate.



**ANJUMAN-I-ISLAM'S
KALSEKAR TECHNICAL CAMPUS, NEW PANVEL**

Approved by : All India Council for Technical Education, Council of Architecture, Pharmacy Council of India New Delhi,
Recognised by : Directorate of Technical Education, Govt. of Maharashtra, Affiliated to : University of Mumbai.

- SCHOOL OF ENGINEERING & TECHNOLOGY
- SCHOOL OF PHARMACY
- SCHOOL OF ARCHITECTURE

37	VII	Logistics and Supply Chain Management	L& SCM	CO 01	Demonstrate a sound understanding of Logistics and Supply Chain Management concepts and their role in today's business environment.
				CO 02	Identify the drivers of Supply Chain Performance and risks in Supply Chain Management.
				CO 03	Apply various techniques of inventory management and rank the items using inventory management techniques.
				CO 04	Apply various strategies and techniques to minimise the overall logistics cost.
				CO 05	Understand the role of digitization in Supply Chain Management leading to sustainability.
				CO 06	Apply various mathematical models/tools to design the Supply Chain Network.
39	VII	Renewable Energy Systems	RES	CO 01	Describe the need for renewable energy and its potential
				CO 02	Analyze different solar collector using geometrical parameters photovoltaic for generation of solar energy
				CO 03	Identify and analyze various wind turbine energy harnessment techniques
				CO 04	Design biogas plant for harnessing energy from organic waste
				CO 05	Describe significance of hydrogen energy to fulfill present and future energy needs
				CO 06	Describe the operating principal of geothermal energy and ocean energy and their role in sustainable development
40	VII	Operation Research	OR	CO 01	Understand the application of OR and frame a LP Problem with solution
				CO 02	Solve Transportation and Assignment problems using appropriate method
				CO 03	Solve and take best course of action out of several alternative courses for the purpose of achieving objectives by applying game theory , Queuing Theory and Simulation Techniques
				CO 04	Solve decision making problems by using Dynamic Programming Method
				CO 05	Formulate a mathematical model describing the behavior of the inventory system and decide on optimum inventory policy
41	VII	Vibration Control	VC	CO 01	Apply basic concepts of Vibration Isolation and Damping.

Program Owner



Innovative Teaching - Exuberant Learning

Vision : To be the most sought after Technical campus that others would wish to emulate.



**ANJUMAN-I-ISLAM'S
KALSEKAR TECHNICAL CAMPUS, NEW PANVEL**

Approved by : All India Council for Technical Education, Council of Architecture, Pharmacy Council of India New Delhi,
Recognised by : Directorate of Technical Education, Govt. of Maharashtra, Affiliated to : University of Mumbai.

- SCHOOL OF ENGINEERING & TECHNOLOGY
- SCHOOL OF PHARMACY
- SCHOOL OF ARCHITECTURE

				CO 02	Identify suitable Vibration Absorber
				CO 03	Identify suitable Vibration Isolator
				CO 04	Apply suitable method to Control the vibrations to the acceptable level.
42	VII	DESIGN OF MECHANICAL SYSTEMS Lab	DMSL	CO 01	Apply the concept of system design.
				CO 02	Design of hoisting mechanism of EOT crane,
				CO 03	Design belt conveyor systems
				CO 04	Design pumps for the given applications
				CO 05	Design engine components such as cylinder, piston, connecting rod and crankshaft
43	VII	Maintenance Engineering	ME	CO 01	Identify different tools used for maintenance.
				CO 02	Apply different maintenance strategies.
				CO 03	Demonstrate the process of servicing a machine.
				CO 04	Identify common faults in Machinery using Vibration Spectrum.
				CO 05	Interpret the Vibration Signals for Monitoring and Prognosis.
44	VII	Industrial Skills	IS	CO 01	Skilfully prepare and edit documents and slides on MS Word and MS PowerPoint etc.
				CO 02	Execute functions on MS Excel.
				CO 03	Learn how to navigate tasks and execute functions in G-suite and Latex
				CO 04	Develop awareness about general workplace behavior and build interpersonal and team skills.
				CO 05	Understand and practice metacognitive skillsof creativity and problem solving.
				CO 06	Perform well in campus placement rounds by practising Aptitude, Logical reasoning, Group Discussion and Personal Interviews.
45	VIII	Operations Planning and Control	OPC	CO 01	Illustrate operations functions and manage operations in a better way.
				CO 02	Apply various strategies to develop aggregate production plans based on demand forecasting.
				CO 03	Apply various algorithms in scheduling and sequencing of manufacturing and service operations.

Program Owner



Innovative Teaching - Exuberant Learning

Vision : To be the most sought after Technical campus that others would wish to emulate.




**ANJUMAN-I-ISLAM'S
KALSEKAR TECHNICAL CAMPUS, NEW PANVEL**

Approved by : All India Council for Technical Education, Council of Architecture, Pharmacy Council of India New Delhi,
Recognised by : Directorate of Technical Education, Govt. of Maharashtra, Affiliated to : University of Mumbai.

- SCHOOL OF ENGINEERING & TECHNOLOGY
- SCHOOL OF PHARMACY
- SCHOOL OF ARCHITECTURE

				CO 04	Develop Material Requirement Plans (MRPs) to estimate the planned order releases.
				CO 05	Apply various techniques for facility layout planning and line balancing to optimize the resources.
				CO 06	Demonstrate the importance of implementation of JIT, Lean, Agile and Synchronous manufacturing in manufacturing and service organizations.
46	VIII	Smart Materials	SM	CO 01	Classify and select different types of smart materials
				CO 02	Comprehend Important Concepts and principles of Smart Materials
				CO 03	synthesis, sensing and actuation of Piezoelectric Materials, Magneto strictive Materials, Shape Memory Alloys, Electroactive Polymers
				CO 04	synthesis, sensing and actuation of Ferrofluids and Magneto rheological Fluids, Soft Matter, Carbon Nanotubes and Carbon nanostructures, Thermoelectric Materials
				CO 05	Classify and select Smart Materials for Energy Applications: Materials used for energy storage
				CO 06	Classify and select Composite Materials, Nano Composite Materials
47	VIII	Product Design and Development	PDD	CO 01	Describe the process of product design & development.
				CO 02	Employ engineering, scientific, and mathematical principles to develop and execute a design project from a concept to a finished product.
				CO 03	Create 3D solid models of mechanical components using CAD software.
				CO 04	Demonstrate individual skills using selected manufacturing techniques such as rapid prototyping.
				CO 05	Fabricate an electromechanical assembly of a product from engineering drawings.
				CO 06	Work collaboratively in a team to complete a design project.


Program Owner



Innovative Teaching - Exuberant Learning

Vision : To be the most sought after Technical campus that others would wish to emulate.



**ANJUMAN-I-ISLAM'S
KALSEKAR TECHNICAL CAMPUS, NEW PANVEL**

Approved by : All India Council for Technical Education, Council of Architecture, Pharmacy Council of India New Delhi,
Recognised by : Directorate of Technical Education, Govt. of Maharashtra, Affiliated to : University of Mumbai.

- SCHOOL OF ENGINEERING & TECHNOLOGY
- SCHOOL OF PHARMACY
- SCHOOL OF ARCHITECTURE

				CO7	Effectively communicate the results of projects and other assignments both in a written and oral format.
48	VIII	Project Management	PM	CO 01	Understanding the environment and its significance.
				CO 02	To understand ecosystem and interdependence, food chain, etc.
				CO 03	Understanding the concept of Ecology.
				CO 04	Understanding the concept of environmental management system.
				CO 05	Understanding the concept of Environmental Certifications
				CO 06	Understanding the Environmental Management Legislations
49	VIII	Product Design and Development	PDD	CO 01	Identify the need for developing products
				CO 02	Select suitable PD&D processes
				CO 03	Apply the creativity & industrial design methods to design & develop the chosen product
				CO 04	Work collaboratively in a team to complete a PD&D project.
				CO 05	Effectively communicate the results of projects and other assignments both in a written and oral format.
50	VIII	Laboratory based on IoT	IoT	CO 01	Develop simple applications using microcontrollers 8051 and Arduino
				CO 02	Interface simple peripheral devices to a Microcontroller
				CO 03	Use microcontroller based embedded platforms in IoT
				CO 04	Use wireless peripherals for exchange of data
				CO 05	Setup cloud platform and log sensor data

NBA Coordinator

Program Owner

Program Owner



Innovative Teaching - Exuberant Learning

Vision : To be the most sought after Technical campus that others would wish to emulate.