SAI RAM INSTITUTE OF TECHNOLOGY

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SEMESTER - I

20BSMA101 SDG NO. 4 & 9	ENGINEERING MATHEMATICS-I	L	T	P	C
		3	1	0	4

OUTCOMES:
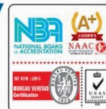**Upon completion of the course, the student should be able to**
1. Understand the concepts of symmetric, skew symmetric, orthogonal matrices, properties of Eigen values and eigen vectors, the nature of a quadratic form, sequences and series, power series representation of functions, series representation of exponential, trigonometric logarithmic and hyperbolic functions. (K2)
2. Compute the eigen values, eigen vectors of a matrix, diagonalize the quadratic form using orthogonal transformation and find the inverse and higher powers of a matrix using Cayley Hamilton theorem. (K3)
3. Calculate the limit, derivative, partial derivatives, Jacobians of simple functions and evaluate integrals of single variable using the rules of integration. (K3)
4. Determine the Taylor series representation of functions of one variable and two variables and evaluate maxima and minima of functions of one variable, two variables and several variables. (K3)
5. Evaluate double integrals using change of order technique, double and triple integrals using change of variables technique and calculate surface areas and volume of solids of revolution. (K3)
6. Compute the Fourier series, Sine and Cosine series representation of functions defined in a period and use Fourier series and Parseval's theorem to find the value of infinite series. (K3)

20HSEN101 SDG NO. 4	TECHNICAL ENGLISH - I	L	T	P	C
		3	0	0	3

OUTCOMES:
Upon completion of the course, the student should be able to
1. Comprehend conversations and talks presented in English (K2)
2. Speak fluently in informal and formal contexts (K1)
3. Read articles of any kind and be able to comprehend (K2)
4. Write technical concepts in simple and lucid style (K2)
5. Prepare informal letters and e-mails efficiently (K3)
6. Present technical concepts and summaries in correct grammar and

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vocabulary (K1)

20BSPH101 SDG NO. 4	ENGINEERING PHYSICS	L	T	P	C
		3	0	0	3

OUTCOMES :

Upon completion of the course, the student should be able to

1. Understand the basics of crystals, structures and crystal growth techniques (K3)
2. Select a right choice of materials based on their properties for potential applications / acquire fundamental knowledge on elasticity and its applications relevant to the field of engineering (K3)
3. Apply the advanced physics concepts of quantum theory to characterize the matter (K4)
4. Understand the basic concepts in laser and its types and fiber optics (K3)
5. Acquire adequate knowledge on the fundamental concepts of thermal properties of materials (K2)
6. Evaluate the applications of powder diffraction method, optical fibers in sensors, quantum mechanical tunneling and thermal materials in expansion joints and heat exchangers (K4)

20BSCY101 SDG NO. 4,6&7	ENGINEERING CHEMISTRY	L	T	P	C
		3	0	0	3

OUTCOMES

Upon completion of the course, the student should be able to

1. Identify the origin of water resources and develop innovative methods to produce soft water for industrial use and potable water at cheaper cost. (K2)
2. Recognize the basic design of adsorption systems and its industrial applications and the basics concepts of electrochemistry to understand battery technology. (K2)
3. Apply the principles of electrochemistry to corrosion process and the applications of protective coatings to overcome the corrosion. (K3)
4. Disseminating the knowledge about the chemistry of fuels and combustion and its application in various levels. (K2)
5. Acquire the basics of non-conventional sources of energy and understand the principles and the reaction mechanism of batteries and fuel cells.. (K3)

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6. Illustrate the synthesis and applications of polymers, composites and nano-materials. (K2)

20ESCS101	PROBLEM SOLVING	L	T	P	C
SDG NO. 4&9	AND PROGRAMMING IN C	3	0	0	3

OUTCOMES:

Upon completion of the course, the student should be able to

1. Develop efficient algorithms for solving a problem. (K2)
2. Use the various constructs in C to develop simple applications. (K3)
3. Design and Implement applications using Array & Strings. (K3)
4. Develop applications using Functions and Pointers. (K6)
5. Design and Develop applications using Structures. (K3)
6. Design and Develop applications using Files. (K4)

20ESGE101 SDG NO. 4,6,7,9, 12,14 &15	ENGINEERING GRAPHICS	L	T	P	C
		1	2	0	3

OUTCOMES:

Upon completion of the course, the student should be able to

1. Relate thoughts and ideas graphically in a neat fashion and ability to perform sketching of engineering curves used in engineering practices, multiple views of objects. (K1)
2. Understand the concepts of orthographic projections for basic geometrical constructions. (K2)
3. Acquire the knowledge of orthographic projection in three dimensional object. (K2)
4. Develop knowledge about Sectioning and apply interior shapes of solids. (K3)
5. Analyze the concepts of design in developing various 3 dimensional projections. (K4)
6. Build a strong foundation to analyze the design in various dimensions. (K4)

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20BSPL101 SDG NO. 4	PHYSICS AND CHEMISTRY LABORATORY	L	T	P	C
		0	0	3	1.5

OUTCOMES:
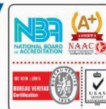**Upon completion of the course, the student should be able to**

1. Apply the principles of thermal physics and properties of matter to evaluate the properties of materials and to determine the physical properties of liquid using ultrasonic interferometer. (K1)

2. Understand measurement technique and usage of new instruments in optics for real time application in engineering. (K2)

3. Apply the knowledge of semiconductor materials to evaluate the band gap and Hall coefficient of materials and to study the characteristics of solar cell for engineering solutions. (K3)

4. Apply the different techniques of quantitative chemical analysis to generate experimental skills in building technical competence.(K2)

5. Apply basic techniques used in chemistry laboratories for water analyses/purification and estimates the ions/metal ions present in domestic/industry wastewater. (K2)

6. Utilize the fundamental laboratory techniques for analyses such as volumetric titrations, conductometric, potentiometric and spectroscopy. (K2)

20ESPL101 SDG NO. 4&9	PROGRAMMING IN C LABORATORY	L	T	P	C
		0	0	3	1.5

OUTCOMES:
Upon completion of the course, the student should be able to

1. Solve some simple problems leading to specific applications. (K3)

2. Demonstrate C programming development environment, compiling, debugging, linking and executing a program. (K3)

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3.   Develop C programs for simple applications making use of basic constructs, arrays and strings. (K4)
4.   Develop C programs involving functions and recursion. (K4)
5.   Develop C programs involving pointers, and structures. (K6)
6.   Design applications using sequential and random access file. (K4)

20TPHS101 SDG NO. 4&5	SKILL ENHANCEMENT	L	T	P	C
		0	0	2	1

OUTCOMES:
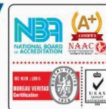**Upon completion of the course, the student should be able to**
1 . Learn and apply social network ethics. (K3)
2. Understand the browsing culture. (K2)
3. Analyze the networking concepts . (K4)
4. Develop self professionalism. (K3)
5. Gain hands-on experience in various digital identification procedures. (K2)
6. Analyse and apply the different digital payment gateway methods. (K4)

20HSMG101 SDG NO. 4&5	PERSONAL VALUES	L	T	P	C
		2	0	0	0

OUTCOMES:
Upon completion of the course, the student should be able to
1. Become an individual in knowing the self. (K4)
2. Acquire and express Personal Values, Spiritual values and fitness. (K4)
3. Practice simple physical exercise and breathing techniques. (K2)
4. Practice Yoga asana which will enhance the quality of life. (K1)
5. Practice Meditation and get benefitted. (K1)

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6. Understanding moral values and need of physical fitness. (K2)

SEMESTER - II

20BSMA201	ENGINEERING MATHEMATICS - II	L	T	P	C
SDG NO. 4		3	1	0	4

COURSE OUTCOMES:
Upon completion of the course, the student should be able to

1. Compute the derivatives of scalar point, vector point functions and evaluate line, surface and volume integrals of vector point functions using Stokes, Greens, and Gauss divergence theorems. (K3)
2. Solve Ordinary differential equations of second and higher order with constant coefficients, variable coefficients and simultaneous linear differential equations. (K3)
3. Construct an analytic function and find the harmonic conjugate, apply the properties of analytic functions to check for harmonic and orthogonal functions and find the images of regions, straight lines and points in the Z-plane under the mappings

    $w = z + a, w = az, w = \dfrac{1}{z}, w = z2$ and bilinear transformation. (K3)

4. Find the Taylor's series about a point and Laurent's series in an annular region of analytic functions and Evaluate integrals of analytic functions and real integrals over circular and semicircular contour using Cauchy Goursat theorem, Cauchy integral formula and Cauchy Residue theorem. (K3)
5. Find the Laplace transforms of simple and periodic functions by applying the definition and theorems on Laplace transforms. (K3)
6. Determine the Inverse Laplace transform using the theorems, the method of partial fractions, Convolution and solve linear second order ordinary differential equations with constant coefficients using Laplace transforms. (K3)

20HSEN201 SDG NO. 4	TECHNICAL ENGLISH - II	L	T	P	C
		3	0	0	3

OUTCOMES:

Upon completion of the course, the student should be able to

1. Acquire the ability to speak effectively in real life situations (K1)
2. Adapt group behaviour and execute the role as a contributing team member (K1)
3. Employ active and passive vocabulary in oral and written communication (K2)
4. Share opinions and suggestions effectively in conversations, debates and discussions (K2)
5. Prepare winning job applications (K3)
6. Write technical reports convincingly (K3)

20ESIT201 SDG NO. 4	PYTHON PROGRAMMING WITH LABORATORY	L	T	P	C
		3	0	2	4

OUTCOMES:

Upon completion of the course, the student should be able to

1. Describe the syntax, semantics and control flow statements of Python programming. (K2)

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2. Implement simple programs using control structures in Python. (K3)
3. Explain the methods to create and manipulate strings, lists, dictionaries, tuples and sets. (K2)
4. Articulate the concepts of functions, modules and packages in Python. (K2)
5. Implement simple programs using Python Data types and functions. (K3)
6. Apply the concepts of Exception handling, classes and objects. (K3)

20BSCY201 SDG NO. 1-17	ENVIRONMENTAL SCIENCE AND ENGINEERING	L	T	P	C
		3	0	0	3

OUTCOMES:

Upon successful completion of this course, student should be able to

1. Understand the relationship between the environment and human activities to maintain the ecological balance. (K1)
2. Identify societal issues and implement suitable technological solutions to eradicate. (K3)
3. Acquire skills for scientific problem solving related to environmental pollution and Disaster Management. (K3)
4. Disseminate the need for the natural resources and its application to meet the modern requirements. (K2)
5. Aware of environmental issues and Protection Acts to achieve the Sustainable Development Goals. (K2)
6. Recognize the need for population control measures and the environmental based value.education concepts for attaining an eco- friendly environment. (K2)

20ESEE201 SDG NO. 4 & 9	ELECTRICAL TECHNOLOGY WITH LABORATORY	L	T	P	C
		3	0	2	4

OUTCOMES:
Upon completion of the course, the students should be able to

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1. Understand electric circuits and apply circuit theorems. (K2)
2. Apply the knowledge of electric circuits for engineering application. (K3)
3. Understand the working principles of various electrical machines. (K2)
4. Choose the electrical machines for different applications. (K3)
5. Analyze the performance of electrical machines and electrical circuits in practical. (K4)
6. Build the knowledge to select the starters and braking for electrcial machines. (K2)

20BSPH202 SDG NO. 4	PHYSICS OF MATERIALS	L	T	P	C
		3	0	0	3

OUTCOMES:
Upon completion of the course, the students should be able to

1. Understand the concept of formation of alloys and invariant phase reactions related to unary and binary system (K3)
2. Demonstrate the practical exposure on microstructure of ferrous and non-ferrous alloys and their applications (K3)
3. Explain the classification, phase transformation and the effect alloying elements in ferrous alloys (K2)
4. Analyze the various testing procedures for understanding the properties of materials and the strengthening methods (K4)
5. Gain knowledge on magnetic, dielectric, super conducting, composite, ceramic materials, metallic glasses, shape memory alloys, nanomaterials and their properties (K2)
6. Apply the suitable magnetic, superconducting, ceramic, nano, composite materials and shape memory alloys for specific engineering applications (K3)

20ESGE201 SDG NO. 4,9,12	ENGINEERING PRACTICES LABORATORY	L	T	P	C
		0	0	3	1.5

OUTCOMES:
Upon completion of the course, the students should be able to

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1. Elaborate on the components, gates, soldering practices. Calculate electrical parameters such as voltage, current, resistance and power. (K1)
2. Design and implement Rectifier and Timer circuits (K2)
3. Measure the electrical energy by single phase and three phase energy meters. (K2)
4. Prepare the carpentry and plumbing joints. (K2)
5. Perform different types of welding joints and sheet metal works (K2)
6. Perform different machining operations in lathe and drilling. (K2)

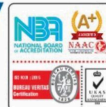| 20TPHS201 SDG NO. 4&5	SKILL ENHANCEMENT	L	T	P	C
		0	0	2	1

OUTCOMES:
On completion of this course, the student should be able to
1. Construct a suitable resume and registration procedure for online mock assessments. (K1)
2. Handle various virtual meeting tools. (K3)
3. Acquire exposure about online certification courses. (K4)
4. Get involved and work in a collaborative manner. (K2)
5. Gain knowledge in various presentation methodologies. (K1)
6. Apply knowledge to practice Google suite features and SWOT analysis. (K3)

20HSMG201 SDG NO. 4 & 5	INTERPERSONAL VALUES	L	T	P	C
		2	0	0	0

OUTCOMES:

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Upon completion of the course, the student should be able to

1. Develop a healthy relationship & harmony with others. (K1)
2. Practice respecting every human being. (K3)
3. Practice to eradicate negative temperaments. (K3)
4. Acquire Respect, Honesty, Empathy, Forgiveness and Equality. (K4)
5. Manage the cognitive abilities of an Individual. (K5)
6. Understanding the importance of public speaking and teamwork. (K2)

SEMESTER - III

20ESCE201 SDG NO. 4, 9, 12	ENGINEERING MECHANICS	L	T	P	C
		3	0	0	3

OUTCOMES:

Upon completion of the course, the students should be able to

1. Recall the basic vector operations. (K1)
2. Apply the basic concepts of laws of mechanics to solve engineering problems. (K3)
3. Predict the effect of forces on particles under static and dynamic conditions. (K3)
4. Analyse the effect of forces on rigid bodies under static and dynamic conditions. (K3)
5. Apply the concepts of centroid and moment of inertia for various shapes and sections. (K3)
6. Examine the effect of frictional forces on bodies. (K3)

20MEPC301 SDG NO. : 4,9,12,13	MANUFACTURING PROCESSESS	L	T		P	C
		3	0		0	3

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OUTCOMES:

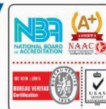**Upon completion of the course, the students should be able to**

1. Students able to know the capability of selecting suitable manufacturing processes to manufacture the products optimally. (K2)
2. Obtain fundamental knowledge and able to know the method of operations in manufacturing processes. (K2)
3. Understand the knowledge about the various tools, equipment, and machinery required for basic manufacturing processes. (K2)
4. Understand the requirements to achieve Best quality manufacturing methods for various industrial engineering needs. (K2)
5. Students can able to apply the different metal removing, finishing and super finishing and for component production.(K2)
6. Understand the application, advantages and limitations of various manufacturing processes Introduce to recent emerging areas in primary manufacturing process.(K2)

20MEPC302 SDG NO. 4,7, 12,15	BASIC THERMAL SCIENCES	L	T	P	C
		3	1	0	4

OUTCOMES:

Upon completion of the course, the students should be able to

1. Describe the various thermodynamics systems and its associated laws (K1)
2. State and apply the laws of thermodynamics for various thermal systems (K2)
3. Illustrate the concept of available and unavailable energies for different thermodynamic systems (K3)
4. Identify the suitable thermodynamic cycle for power developing and cooling systems (K3)
5. Derive the thermodynamic relations for real and ideal gases and gas mixtures (K3)
6. Make use of Thermodynamic charts and tables to obtain the properties for various processes (K3)

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20MEPC303 SDG NO. 4,8,9,12	ENGINEERING METALLURGY	L	T	P	C
		3	0	0	3

OUTCOMES:

Upon completion of the course, the students should be able to:

1. Impart knowledge in basics of materials and its characteristics. [K2]
2. Interpret the phase diagram by identifying appropriate transformation process. [K2]
3. Restate in preparing specimens for material testing as per standards. [K2]
4. Identify the effect of secondary processes in material properties. [K3]
5. Apply the secondary processes and its effects on microstructure of different materials. [K3]
6. Analyze the characteristics of materials for industrial applications. [K4]

20BSMA303 SDG NO. 4	PARTIAL DIFFERENTIAL EQUATIONS AND PROBABILITY THEORY	L	T	P	C
		3	1	0	4

OUTCOMES:

Upon completion of the course, the students should be able to

1. Solve first order linear and nonlinear partial differential equations, linear partial differential equations of second and higher order with constant coefficients and find the variable separable solution of partial differential equations. (K3)
2. Find the Fourier series solution of one-dimensional wave equation, one dimensional and two-dimensional heat equations. (K3)
3. Formulate and classify a partial differential equation. (K2)
4. Compute the Fourier Transform, Inverse Fourier Transform, Sine and Cosine Transform of simple functions. (K3)
5. Calculate the probability, conditional probability and statistical averages of events, one dimensional, two-dimensional random variables defined on discrete and continuous sample space, and random variables associated with discrete and continuous distributions. (K3)
6. Apply Central limit theorem to find the approximate probabilities of the sum and average of larger number of independent and identically

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distributed random variables and use the concept of transformation of random variables to find the marginal and joint Probability density functions. (K3)

20CEPC306 SDG NO. 4,6,9,14	FLUID MECHANICS AND MACHINERY	L	T	P	C
		3	0	0	3

OUTCOMES:

Upon completion of the course, the students should be able to

1. Interpret the values and relationships of fluid properties, principles of continuity, momentum and energy as applied to fluid motions. (K2)
2. Compare and contrast the different types of flows in a fluid motion. (K2)
3. Understand the applications of hydro machines in industries. (K2)
4. Illustrate and Interpret a suitable hydro machines in relation to given situation in hydro power plants. (K2)
5. Develop a range of analytical fluid flow and evaluation techniques using fluid mechanics principles. (K3)
6. Apply dimensional analysis to predict physical parameters that impact the effectiveness. (K3)

20MEPL301 SDG NO. 4,9,12,13	MANUFACTURING PROCESS LABORATORY	L	T	P	C
		0	0	3	1.5

OUTCOMES:

Upon completion of the course, the students should be able to

1. Join two metals using arc welding. (K2)
2. Use sheet metal fabrication tools and make simple tray and funnel.(K2)
3. Use different moulding tools, patterns and prepare sand moulds.(K2)
4. Make the workpiece as per given shape and size using Lathe, Milling, Drilling and Special Purpose Machines.(K2)
5. Use different machine tools to manufacture gears and finishing operations(K2)
6. Develop simplified Manufacturing Processes with the aim of reduction of cost and scrap(K2)

20MEPL302 SDG NO. 4, 8, 9,12	COMPUTER AIDED DRAFTING LABORATORY	L	T	P	C
		0	0	3	1.5

OUTCOMES:

Upon completion of the course, the students should be able to

1. Comprehend the absolute, relative and polar coordinate systems. (K1)
2. Create, edit, annotate and plot drawings using basic AutoCAD commands. (K1)
3. Visualize and graphically reproduce complex layouts in drafting and design areas.(K2)
4. Create 3D Models and Plotting of Simple objects.(K2)
5. Create graphical models by creating basic solid primitives.(K3)
6. Generate bill of materials in assembly. (K3)

20METE301 SDG NO. 4,11,15	LIVE-IN-LAB - I	L	T	P	C
		0	0	2	1

OUTCOMES:

Upon completion of the course, the students should be able to

1. List the problems and conduct literature survey to identify the gap and come up with an application oriented research problem in the specific domain.(K1)
2. Understand the project characteristics and explore necessary tools and components needed at various stages of the project(K2)
3. Design and validate the proposed system using simulation.(K3)
4. Develop the Prototype of the proposed system by adapting Industrial safety standards and best financial management practices(K5)
5. Analyze the obtained results and prepare a technical report.(K4)
6. Evaluate the project and go for journals and patents publication.(K5)

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20METP301	SKILL ENHANCEMENT	L	T	P	C
SDG NO. 4		0	0	2	1

COURSE OUTCOMES :

Upon completion of this course, the students should be able to:

1. Analyze their quantitative ability. (K4)
2. Understand the ability of arithmetic reasoning along with creative thinking and problem solving skills. (K2)
3. Create their verbal ability through vocabulary building and grammar. (K6)
4. Evaluate the situations to analyse the computational methods in order to identify and abstract the programming task involved. (K5)
5. Understanding the basics of geometric dimensioning and tolerance.(K2)
6. Identify the symbols of GD&T. (K1)

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SEMESTER - IV

20MEPC401	MEASUREMENTS AND	L	T	P	C
SDG NO. 4,8,9,12,16	CONTROL SYSTEMS	3	0	0	3

OUTCOMES:

Upon completion of the course, the students should be able to

1. Describe the concepts of measurements and control systems to apply in various metrologicalinstruments.(K2)
2. Illustrate measurement of field variables like motion, speed, force, torque and power.(K2)
3. Outline various measuring techniques of field variables like pressure, temperature inindustrial applications.(K2)
4. Explain different time domain ,frequency domain and specification parameters to conclude dynamic performance of a system. (K2)
5. Identify time domain ,frequency domain system and their components, selection to meet desired response.(K3)
6. Select electrical models/ mechanical models to design a physical system for a specific operation.(K3)

20MEPC402	METROLOGY, MEASUREMENTS AND	L	T	P	C
SDG NO. 4,8,9, 12,16	COMPUTER AIDED INSPECTION	3	0	0	3

OUTCOMES:

Upon completion of the course, the students should be able to

1. Describe the concepts of measurements to apply in various metrological instruments used in engineering applications.(K2)
2. Outline the principles of different measurement tools to interpret the results.(K2)
3. Illustrate the concepts of advanced measuring techniques in metrology.(K2)
4. Exhibit the different profile parameter measurements used for industrial components.(K2)
5. Make use of basic metrological knowledge for solving engineering problems.(K3)

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6. Apply relevant measuring principles to measure mechanical parameters in industrial applications.(K3)

20MEPC403	COMPUTER AIDED DESIGN AND MANUFACTURING	L	T	P	C
SDG NO. 4,8,9,12		3	0	0	3

OUTCOMES:

Upon completion of the course, the students should be able to

1. Understand the basic concepts of transformations, clipping algorithm, Manufacturing models and Metrics in Design and Manufacturing (K2)
2. Apply the fundamentals of parametric curves, surfaces and Solids in Desgin and Manufacturing (K3)
3. Apply the Visual Realsim Concepts to reduce computation in Desgin and Manufacturing (K3)
4. Discover the different types of Standard systems used in Design and Manufacturing (K3)
5. Apply CNC programming concepts to develop part programme for Lathe & Milling Machines (K3)
6. Summarize the different types of modelling & manufacturing techniques used in product development (K2)

20MEPC404	APPLIED THERMAL SCIENCES	L	T	P	C
SDG NO. 4,7,9,13		3	0	0	3

OUTCOMES:

Upon completion of the course, the students should be able to

1. Select suitable thermal systems for various thermal applications (K1)
2. Recognize and discuss the principles of turbo machines for enabling a sustainable society. (K2)
3. Identify and examine the problems associated to different thermal systems (K3)
4. Calculate the performance of power developing and refrigerating systems (K3)
5. Compute the performance of turbo machines and various thermal components. (K3)

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6. Apply thermodynamic concepts, laws and methodologis to different power and cooling systems (K3)

20BSMA403 SDG NO. 4	STATISTICS AND NUMERICAL METHODS	L	T	P	C
		3	1	0	4

OUTCOMES:

Upon completion of the course, the students should be able to

1. Apply test of hypothesis for large and small samples in various real-life problems. (K3)
2. Apply chi-square test for goodness of fit and test for independence and interpret the results. (K3)
3. Construct an optimal design for practical problems and analyze the data to obtain objective conclusions. (K4)
4. Obtain the numerical solution of algebraic, transcendental equations and Eigen value problems. (K3)
5. Apply numerical techniques to interpolate data and find differentiation and integration. (K3)
6. Solve ordinary and partial differential equations using numerical techniques. (K3)

20CEPC405 SDG NO. 4, 9	STRENGTH OF MATERIALS FOR MECHANICAL ENGINEERS	L	T	P	C
		3	0	0	3

OUTCOMES:

Upon completion of the course, the students should be able to

1. Interpret the concepts and principles of stress and strain and perform calculations, related to the strength of structured and mechanical components (K3).
2. Analyse members subjected to tension, compression, torsion, bending and combined stresses using the fundamental concepts of stress, strain and elastic behavior of materials.(K3)
3. Predict the internal stresses developed in structural and mechanical components.(K3)

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4. Demonstrate an understanding of the relationships between loads, member forces and deformations and material stresses and strains (K3)
5. Demonstrate an understanding of the assumptions and limitations of the structural mechanics theory.(K3)
6. Apply structural mechanics of deformable bodies to solve engineering problems (K3)

20MEPL401 SDG NO. 4,7,12	METROLOGY AND MEASUREMENTS LABORATORY	L	T	P	C
		0	0	3	1.5

OUTCOMES:

Upon completion of the course, the students should be able to

1. Discuss the various parameters like length, height, angle, displacement, flatness, etc.(K2)
2. Intrepret the various linear and angular measurements using measurants like comparator, sine bar, floating carriage micrometer etc.(K2)
3. Inspect various profiles of small mechanical components using light illumination devices.(K2)
4. Develop the knowledge on measuring various physical and dynamic properties like Tolerance, force and temperature using LVDT, Load cell and Thermocouples.(K3)
5. Formulate some unknown quantity or parameter of engineering interest(K3)
6. Relate the surface quality of a given specimen which is important in all kind of manufacturing.(K3)

20CEPL403 SDG NO. 4,9	STRENGTH OF MATERIALS AND FLUID MECHANICS & MACHINERY LABORATORY	L	T	P	C
		0	0	3	1.5

OUTCOMES:

Upon completion of the course, the students should be able to

1. Explain and perform different destructive testing's such as Tension test, Shear test, Impact test, Hardness test to estimate the strength under externally applied loads with due consideration to safety. (K2)

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2. Estimate and compare the elastic constants such as Young's modulus and Rigidity modulus of the given specimen through Deflection testing and spring testing with standard values. (K2)
3. Compare the structures and hardness of Unhardened and Hardened specimen through microscopic examinations. (K2)
4. Measure the flow rate of fluid using different flow measuring devices and calculate the friction loss and other minor losses in a pipe flow. (K2)
5. Predict the basic performance characteristics of hydraulic Pumps. (K2)
6. Predict the basic performance characteristics of hydraulic Turbines. (K2)

20METE401 SDG NO.4,6,7,8,9, 11,12,13, 17	LIVE-IN-LAB - II	L	T	P	C
		0	0	2	1

OUTCOMES:

Upon completion of the course, the students should be able to

1. Conduct literature survey to identify the gap and an application oriented research problem in the specific domain(K4)
2. Design and validate the proposed system using simulation(K6)
3. Prototype the proposed system(K5)
4. Analyze the obtained results and prepare a technical report(K4)
5. Publish the work in journals and apply for the patents.(K3)
6. Prepare for industrial environment and real time work(K3)

20METP401 SDG NO. 4	SKILL ENHANCEMENT	L	T	P	C
		0	0	2	1

PROBLEM SOLVING SKILLS – PHASE 1

COURSE OBJECTIVE:

l Improve their quantitative ability.

l Improve their reasoning ability.

l Enhance their verbal ability through vocabulary building and grammar

l Equip with creative thinking and problem solving skills

ADVANCED C PROGRAMMING AND CNC PROGRAMMING - PHASE 2

COURSE OUTCOMES :

Upon completion of this course, the students should be able to:

1. Analyze their quantitative ability. (K4)
2. Understand the ability of arithmetic reasoning along with creative thinking and problem solving skills. (K2)
3. Create their verbal ability through vocabulary building and grammar. (K6)
4. Evaluate code organization and functional hierarchical decomposition with complex data types. (K5)
5. Understand to improve C programming skills to apply advance structured and procedural programming. (K2)
6. Write a part program for a given product drawing and demonstrate the program by using a CNC Machine. (K2)