St. JOSEPH
COLLEGE OF ENGINEERING
Near Toll Plaza, Sriperumbudur, Chennai - 602 117
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YEAR	I	SEM	I	SUBJECT CODE	MA8151
SUBJECT	ENGINEERING MATHEMATICS-I				

101	COURSE OUTCOME
C101.1	Speak clearly, confidently, comprehensibly, and communicate with one or many listeners using appropriate communicative strategies.
C101.2	Write cohesively and coherently and flawlessly avoiding grammatical errors, using a wide vocabulary range, organizing their ideas logically on a topic.
C101.3	Read different genres of texts adopting various reading strategies.
C101.4	Listen/view and comprehend different spoken discourses/excerpts in different accents.
C101.5	Identify topics and formulate questions for productive inquiry.

YEAR	I	SEM	I	SUBJECT CODE	PH8151
SUBJECT	ENGINEERING PHYSICS				

C102	COURSE OUTCOME
C102.1	Explain the concepts of Differential Calculus.
C102.2	Identify the functions of more than one variable and hence finding the maximum and minimum value of that function.
C102.3	Explain the concepts of Integral calculus used in evaluating integrals both by using Riemannsums and by the Fundamental Theorem of Calculus.
C102.4	Evaluate the multiple integrals for finding the volume and area of multi-dimensional objects.
C102.5	Apply the knowledge of ordinary differential equations to solve the engineering problems.

YEAR	I	SEM	I	SUBJECT CODE	PH8151
SUBJECT	ENGINEERING PHYSICS				

C103	COURSE OUTCOME
C103.1	Gain knowledge based on properties of matter its applications. Analyze the requirement of the good shaft and can understand the advantages of I shape beams.
C103.2	Acquire knowledge on the concepts of waves and optical devices such as LASE. Understand the application of LASER in fiber optics
C103.3	Have adequate knowledge on the concepts of thermal properties of materials. Gain knowledge the applications of thermal properties of materials in expansions joints and heat exchangers.
C103.4	Get knowledge on advanced physics concepts of quantum theories. Understand the quantum tunneling concepts and its applications in tunneling microscopes.
C103.5	Understand the basis of crystals and their structure

YEAR	I	SEM	I	SUBJECT CODE	CY8151
SUBJECT	ENGINEERING CHEMISTRY				

C104	COURSE OUTCOME
C104.1	Ability to discuss boiler troubles and water softening methods.
C104.2	Ability to discuss different types of adsorption isotherm and catalysis.
C104.3	Able to construct phase diagrams and summarize the properties of alloys.
C104.4	Ability to describe the types of fuels and analysis of flue gas.
C104.5	Ability to outline various energy resources and storage devices.

YEAR	I	SEM	I	SUBJECT CODE	GE8151
SUBJECT	PROBLEM SOLVING AND PYTHON PROGRAMMING				

C105	COURSE OUTCOME
C105.1	Develop algorithmic solutions to simple computational problems
C105.2	Read, write, execute by hand simple Python programs.
C105.3	Structure simple Python programs for solving problems.
C105.4	Decompose a Python program into functions
C105.5	Represent compound data using Python lists, tuples, dictionaries.
C105.6	Read and write data from/to files in Python Programs

YEAR	I	SEM	I	SUBJECT CODE	GE8152
SUBJECT	ENGINEERING GRAPHICS				

C106	COURSE OUTCOME
C106.1	Familiarize with the fundamentals and standards of Engineering graphics
C106.2	Perform freehand sketching of basic geometrical constructions and multiple views of objects.
C106.3	Project orthographic projections of lines and plane surfaces
C106.4	Draw projections and solids and development of surfaces
C106.5	Visualize and to project isometric and perspective sections of simple solids

YEAR	I	SEM	I	SUBJECT CODE	GE8161
SUBJECT	PROBLEM SOLVING AND PYTHON PROGRAMMING LABORATORY				

L101	COURSE OUTCOME
L101.1	Write, test, and debug simple Python programs
L101.2	Implement Python programs with conditionals and loops
L101.3	Develop Python programs step-wise by defining functions and calling them
L101.4	Use Python lists, tuples, dictionaries for representing compound data
L101.5	Read and write data from/to files in Python.

YEAR	I	SEM	0I	SUBJECT CODE	BS8161
SUBJECT	PHYSICS AND CHEMISTRY LABORATORY				

L102	COURSE OUTCOME
L102.1	Ability to explain the young's modulus by non-uniform bending and rigidity modulus by torsion pendulum.
L102.2	Ability to comprehend the compressibility of given liquid using ultrasonic interferometer and wavelength of mercury spectrum.
L102.3	Ability to estimate the thickness of thin materials by air wedge method. and Ability to estimate the strength of ferrous solution by potentiometric titration
L102.4	Ability to estimate the strength of acid by conductometry and P^Hmetry
L102.5	Able to estimate water quality parameters.

YEAR	I	SEM	02	SUBJECT CODE	HS8251
SUBJECT	TECHNICAL ENGLISH				

C201	COURSE OUTCOME
C201.1	Develop strategies and skills to enhance their ability to read and comprehend engineering and technology texts.
C201.2	Foster their ability to write convincing job applications and effective reports.
C201.3	Develop their speaking skills to make technical presentations, participate in group discussions of engineering .
C201.4	Strengthen their listening skill which will help them comprehend lectures and talks in their areas of specialization. Needed in engineering applications.
C201.5	Reading and understanding technical articles.

YEAR	I	SEM	02	SUBJECT CODE	MA8251
SUBJECT	ENGINEERING MATHEMATICS-I				

C202	COURSE OUTCOME
C202.1	Solve problems in Eigen values and Eigen vectors, which is used in diagonalization of matrix.
C202.2	Analyze the concepts of gradient, divergence and curl of a vector point function and related identities. Evaluate the line, surface and volume integrals using vector calculus.
C202.3	Evaluate real and complex parts by applying the concepts of analytic functions.
C202.4	Evaluate real integrals by applying the technique of complex integration.
C202.5	Apply the knowledge of Laplace Transforms in solving Ordinary Differential Equations.

YEAR	I	SEM	02	SUBJECT CODE	PH8251
SUBJECT	MATERIALS SCIENCE				

C203	COURSE OUTCOME
C203.1	Distinguish conductor, Semiconductors and insulators based on classical and quantum theories
C203.2	Explain electronic structure transport properties and carrier mechanism in semiconductors
C203.3	Develop understanding of the fundamentals of magnetic materials, their classifications and application in data storage devices.
C203.4	Understand the optical properties of materials and applications of these properties in fabrication of modern optical and electro-optical devices
C203.5	Interpret how the properties of Nano-objects depend on confining electron waves, and how this can be exploited.

YEAR	I	SEM	02	SUBJECT CODE	E8253
SUBJECT	BASIC ELECTRICAL, ELECTRONICS AND INSTRUMENTATIONENGINEERING				

C204	COURSE OUTCOME
C204.1	Understand electric circuits and working principles of electrical machines
C204.2	Understand the concepts of various electronic devices
C204.3	Choose appropriate instruments for electrical measurement for a specific application
C204.4	Explain the Construction & Static Characteristics of Electronic devices and its Application
C204.5	Choose the Instrument for Electrical measurement for a specific application

YEAR	I	SEM	02	SUBJECT CODE	GE8291
SUBJECT	ENVIRONMENTAL SCIENCE AND ENGINEERING				

C205	COURSE OUTCOME
C205.1	Able to discuss different types of ecosystem and bio diversity
C205.2	Able to create awareness about various environmental pollutions.
C205.3	Able to summarize natural resources and the impacts of over utilization with case studies.
C205.4	Able to outline social issues related to environment.
C205.5	Able to explain the impact of human population on environment.

YEAR	I	SEM	02	SUBJECT CODE	GE8292
SUBJECT	ENGINEERING MECHANICS				

C206	COURSE OUTCOME
C206.1	illustrate the vectorial and scalar representation of forces and moments
C206.2	Analyze the rigid body in equilibrium
C206.3	Evaluate the properties of surfaces and solids
C206.4	Calculate dynamic forces exerted in rigid body
C206.5	Determine the friction and the effects by the laws of friction

YEAR	I	SEM	02	SUBJECT CODE	GE8261
SUBJECT	ENGINEERING PRACTICES LABORATORY				

L201	COURSE OUTCOME
L201.1	fabricate carpentry components and pipe connections including plumbing works
L201.2	use welding equipments to join the structures.
L201.3	Carry out the basic machining operations
L201.4	Make the models using sheet metal works
L201.5	Illustrate on centrifugal pump, Air conditioner, operations of smithy, foundry and fittings
L201.6	Carry out basic home electrical works and appliances
L201.7	Elaborate on the components, gates, soldering practices

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YEAR	I	SEM	02	SUBJECT CODE	BE8261
SUBJECT	BASIC ELECTRICAL, ELECTRONICS AND INSTRUMENTATION ENGINEERING LABORATORY				

L202	COURSE OUTCOME
L202.1	Ability to determine the speed characteristic of different electrical machines
L202.2	Ability to design simple circuits involving diodes and transistors
L202.3	Ability to use operational amplifiers

YEAR	II	SEM	III	SUBJECT CODE	MA8353
SUBJECT	TRANSFORMS AND PARTIAL DIFFERENTIAL EQUATIONS				

C301	COURSE OUTCOME
C301.1	Solve partial differential equations (up to third order, with two variables)
C301.2	Express the periodic function in an infinite Fourier series.
C301.3	Solve wave and heat flow equations using method of separation of variables and Fourier series.
C301.4	Apply Fourier transform techniques to evaluate integrals.
C301.5	Solve difference equations using Z-Transform.

YEAR	II	SEM	03	SUBJECT CODE	ME8391
SUBJECT	ENGINEERING THERMODYNAMICS				

C302	COURSE OUTCOME
C302.1	Apply the first law of thermodynamics for simple open and closed systems under steady and unsteady conditions
C302.2	Apply second law of thermodynamics to open and closed systems and calculate entropy and availability
C302.3	Apply Rankine cycle to steam power plant and compare few cycle improvement methods
C302.4	Derive simple thermodynamic relations of ideal and real gases
C302.5	Derive simple thermodynamic relations of ideal and real gases process

YEAR	II	SEM	III	SUBJECT CODE	CE8394
SUBJECT	FLUID MECHANICS AND MACHINERY				

C303	COURSE OUTCOME
C303.1	Apply mathematical knowledge to predict the properties and characteristics of a fluid.
C303.2	Can analyze and calculate major and minor losses associated with pipe flow in piping networks.
C303.3	Can mathematically predict the nature of physical quantities
C303.4	Can critically analyse the performance of pumps
C303.5	Can critically analyse the performance of turbines

YEAR	II	SEM	03	SUBJECT CODE	ME8351
SUBJECT	MANUFACTURING TECHNOLOGY - I				

C304	COURSE OUTCOME
C304.1	Explain different metal casting processes, associated defects, merits and demerits
C304.2	Compare different metal joining processes
C304.3	Summarize various hot working and cold working methods of metals.
C304.4	Explain various sheet metal making processes.
C304.5	Distinguish various methods of manufacturing plastic components

YEAR	II	**SEM**	03	**SUBJECT CODE**	ME8351
SUBJECT	ELECTRICAL DRIVES AND CONTROLS				

C305	**COURSE OUTCOME**
C305.1	Explain the basic concepts of Electric drives and the loading conditions with selection of rating for drive motors
C305.2	Summarize the different characteristics of DC shunt motors with braking mechanisms and type of loads
C305.3	Describe the different starting methods of DC motors and three phase motors
C305.4	Contrast with the conventional and solid-state control of DC drives and their applications
C305.5	Discuss the speed control of AC machines and the using of converters in their applications

YEAR	II	SEM	03	SUBJECT CODE	ME8361
SUBJECT	MANUFACTURING TECHNOLOGY LABORATORY – I				

L301.	COURSE OUTCOME
L301.1	Demonstrate the safety precautions exercised in the mechanical workshop.
L301.2	Make the workpiece as per given shape and size using Lathe.
L301.3	Join two metals using arc welding
L301.4	Use sheet metal fabrication tools and make simple tray and funnel.
L301.5	Use different molding tools, patterns and prepare sand moulds

YEAR	I	SEM	03	SUBJECT CODE	ME8381
SUBJECT	COMPUTER AIDED MACHINE DRAWING				

L302	COURSE OUTCOME
L302.1	Follow the drawing standards, Fits and Tolerances
L302.2	Understand the 2D drafting techniques.
L302.3	Recreate part drawings using CAD software
L302.4	Exhibit ethical principles in engineering practices
L302.5	Perform task as an individual and / or team member to manage the task in time

YEAR	II	SEM	03	SUBJECT CODE	EE8361
SUBJECT	ELECTRICAL ENGINEERING LABORATORY				

L303	COURSE OUTCOME
L303.1	skilled to perform load test O.C.C and Load characteristics of DC Shunt and DC Series generator
L303.2	ability to perform load test, O.C & S.C on a single-phase transformer
L303.3	ability to find regulation of an alternator by EMF & MMF methods
L303.4	skilled to find V curves and inverted V curves of synchronous motor
L303.5	ability to find load test and speed control on single phase and three phase induction motor.

YEAR	II	SEM	03	SUBJECT CODE	HS8381
SUBJECT	INTERPERSONAL SKILLS/LISTENING & SPEAKING				

L304	COURSE OUTCOME
L304.1	Listen and respond appropriately
L304.2	Participate in group discussions
L304.3	Make effective presentations
L304.4	Participate confidently and appropriately in conversations both formal and informal

YEAR	II	SEM	04	SUBJECT CODE	MA8452
SUBJECT	STATISTICS AND NUMERICAL METHODS				

C401	COURSE OUTCOME
C401.1	Classify the equations into algebraic, transcendental, system of linear equations, and apply the techniques to solve them numerically.
C401.2	Compute the largest eigen value and corresponding eigenvector and numerical techniques like power and Jacobi methods.
C401.3	Demonstrate the interpolation methods and calculate the differentiation and integration of functions numerically.
C401.4	Determine the solutions of differential equations of first order, and second order using Taylors, Euler, Modified Euler, Runge-kutta method of fourth order and Milne's predictor corrector method.
C401.5	Apply statistical techniques-t, χ^2 and F-test to small sample for testing means and variances, and normal distribution to large sample for testing mean and difference of means in problems.

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YEAR	II	SEM	04	SUBJECT CODE	ME8492
SUBJECT	KINEMATICS OF MACHINERY				

C402	COURSE OUTCOME
C402.1	Discuss the basics of mechanism.
C402.2	Calculate velocity and acceleration in simple mechanisms
C402.3	Develop CAM profiles
C402.4	Solve problems on gears and gear trains
C402.5	Examine friction in machine elements

YEAR	II	SEM	04	SUBJECT CODE	ME8451
SUBJECT	MANUFACTURING TECHNOLOGY – II				

C403	COURSE OUTCOME
C403.1	Explain the mechanism of material removal processes.
C403.2	Describe the constructional and operational features of center lathe and other special purpose lathes
C403.3	Describe the constructional and operational features of shaper, planner, milling, drilling, sawing and broaching machines
C403.4	Explain the types of grinding and other super finishing processes apart from gear manufacturing processes
C403.5	Summarize numerical control of machine tools and write a part program

YEAR	II	SEM	04	SUBJECT CODE	ME8491
SUBJECT	ENGINEERING METALLURGY				

C404	COURSE OUTCOME
C404.1	Use BIS conventions and specifications for engineering drawing.
C404.2	Construct the conic curves, involutes and cycloid.
C404.3	Solve practical problems involving projection of lines.
C404.4	Draw the orthographic, isometric and perspective projections of simple solids.
C404.5	Draw the development of simple solids

YEAR	II	SEM	04	SUBJECT CODE	CE8395
SUBJECT	STRENGTH OF MATERIALS FOR MECHANICAL ENGINEERS				

C405	COURSE OUTCOME
C405.1	Understand the concepts of stress and strain in simple and compound bars, the importance of principal stresses and principal planes
C405.2	Understand the load transferring mechanism in beams and stress distribution due to shearing force and bending moment
C405.3	Apply basic equation of simple torsion in designing of shafts and helical spring
C405.4	Calculate the slope and deflection in beams using different methods
C405.5	Analyze and design thin and thick shells for the applied internal and external pressures

YEAR	II	SEM	04	SUBJECT CODE	ME8493
SUBJECT	THERMAL ENGINEERING - I				

C406.	COURSE OUTCOME
C406.1	Apply thermodynamic concepts to different air standard cycles and solve problems
C406.2	Solve problems in single stage and multistage air compressors
C406.3	Explain the functioning and features of IC engines, components and auxiliaries
C406.4	Calculate performance parameters of IC Engines
C406.5	Explain the flow in Gas turbines and solve problems

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YEAR	II	SEM	04	SUBJECT CODE	ME8462
SUBJECT	MANUFACTURING TECHNOLOGY LABORATORY – II				

L4O1	COURSE OUTCOMES
L4O1.1	use different machine tools to manufacturing gears
L4O1.2	Ability to use different machine tools to manufacturing gears.
L4O1.3	Ability to use different machine tools for finishing operations
L4O1.4	Ability to manufacture tools using cutter grinder
L4O1.5	Develop CNC part programming

YEAR	II	SEM	04	SUBJECT CODE	CE8381
SUBJECT	STRENGTH OF MATERIALS AND FLUID MECHANICS AND MACHINERY LABORATORY				

L401	COURSE OUTCOME
L401.1	Perform Tension, Torsion, Hardness, Compression, and Deformation test on Solid materials
L401.2	Use the measurement equipments for flow measurement
L401.3	Perform test on different fluid machinery.

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YEAR	II	SEM	04	SUBJECT CODE	HS8461
SUBJECT	ADVANCED READING AND WRITING				

L403	COURSE OUTCOME
L403.1	Write different types of essays
L403.2	Write winning job applications
L403.3	Read and evaluate texts critically
L403.4	Display critical thinking in various professional contexts

YEAR	3	SEM	05	SUBJECT CODE	ME8595
SUBJECT	THERMAL ENGINEERING-II				

C501	COURSE OUTCOME
C501.1	Solve problems in Steam Nozzle
C501.2	Explain the functioning and features of different types of Boilers and auxiliaries and calculate performance parameters
C501.3	Explain the flow in steam turbines, draw velocity diagrams for steam turbines and solveproblems.
C501.4	Summarize the concept of Cogeneration, Working features of Heat pumps and Heat exchangers
C501.5	Solve problems using refrigerant table / charts and psychrometric charts

YEAR	III	SEM	05	SUBJECT CODE	ME8593
SUBJECT	DESIGN OF MACHINE ELEMENTS				

C502	COURSE OUTCOME
C502.1	Explain the influence of steady and variable stresses in machine component design.
C502.2	Apply the concepts of design to shafts, keys and couplings.
C502.3	Apply the concepts of design to temporary and permanent joints.
C502.4	Apply the concepts of design to energy absorbing members, connecting rod and crank shaft
C502.5	Apply the concepts of design to bearings

YEAR	III	SEM	05	SUBJECT CODE	ME8501
SUBJECT	METROLOGY AND MEASUREMENTS				

C303	COURSE OUTCOME
C503.1	Discuss the measurement systems, units and dimensions, calibration and correction .
C503.2	Explain the various linear and angular measurement systems and understand the concept of interchange .
C503.3	Describe the working principle of auto collimator, CMM and list the applications of them .
C503.4	Explain the various form measurements like thread, gear, straightness, flatness, roundness and surface finish.
C503.5	Discuss the working of miscellaneous measuring equipment for measuring temperature, velocity, pressure

YEAR	III	SEMESTER	05	SUB CODE	ME8594
SUBJECT	DYNAMICS OF MACHINES				

C504	COURSE OUTCOME
C504.1	Calculate static and dynamic forces of mechanisms
C504.2	Calculate the balancing masses and their locations of reciprocating and rotating masses
C504.3	Compute the frequency of free vibration
C504.4	Compute the frequency of forced vibration and damping coefficient
C504.5	Calculate the speed and lift of the governor and estimate the gyroscopic effect on automobiles, ships and airplanes

YEAR	III	SEM	05	SUBJECT CODE	ME8511
SUBJECT	KINEMATICS AND DYNAMICS LABORATORY				

L501.	COURSE OUTCOME
L501.1	Explain gear parameters, kinematics of mechanisms, gyroscopic effect and working of lab equipments
L501.2	Determine mass moment of inertia of mechanical element, governor effort and range sensitivity, natural frequency and damping coefficient, torsional frequency, critical speeds of shafts, balancing mass of rotating and reciprocating masses, and transmissibility ratio

YEAR	V	SEM	05	SUBJECT CODE	ME8512
SUBJECT	THERMAL ENGINEERING LABORATORY				

L502	COURSE OUTCOME
L502.1	conduct tests on heat conduction apparatus and evaluate thermal conductivity of materials
L502.2	conduct tests on natural and forced convective heat transfer apparatus and evaluate heat transfer coefficient
L502.3	conduct tests on radiative heat transfer apparatus and evaluate Stefan Boltzmann constant and emissivity
L502.4	conduct tests to evaluate the performance of parallel/counter flow heat exchanger apparatus and reciprocating air compressor
L502.5	conduct tests to evaluate the performance of refrigeration and air conditioning test rigs

YEAR	V	SEM	5	SUBJECT CODE	ME8513
SUBJECT	METROLOGY AND MEASUREMENTS LABORATORY				

L503	COURSE OUTCOME
L503.1	Measure the gear tooth dimensions, angle using sine bar, straightness and flatness, thread parameters, temperature using thermocouple, force, displacement, torque and vibration.
L503.2	Calibrate the Vernier, micrometer and slip gauges and setting up the comparator for the inspection

YEAR	V	SEM	05	SUBJECT CODE	OIM552
SUBJECT	LEAN MANUFACTURING				

C506	COURSE OUTCOME
C506.1	Identify key requirements and concepts in lean manufacturing.
C506.2	Initiate a continuous improvement change program in a manufacturing organization
C506.3	Analyze and improve a manufacturing system by applying lean manufacturing tools
C506.4	Build value stream map for improving the productivity
C506.5	Improve productivity through lean practices

YEAR	III	SEM	06	SUBJECT CODE	ME8651
SUBJECT	DESIGN OF MACHINE ELEMENTS				

C601	COURSE OUTCOME
C601.1	Apply the concepts of design to belts, chains and rope drives
C601.2	Apply the concepts of design to spur, helical gears
C601.3	Apply the concepts of design to worm and bevel gears
C601.4	Apply the concepts of design to gear boxes
C601.5	Apply the concepts of design to cams, brakes and clutches

YEAR	III	SEM	06	SUBJECT CODE	ME8691
SUBJECT	COMPUTER AIDED DESIGN AND MANUFACTURING				

C602	COURSE OUTCOME
C602.1	Explain the 2D and 3D transformations, clipping algorithm, Manufacturing models andMetrics
C602.2	Explain the fundamentals of parametric curves, surfaces and Solids
C602.3	Summarize the different types of Standard systems used in CAD
C602.4	Apply NC & CNC programming concepts to develop part programme for Lathe & Milling Machines
C602.5	Summarize the different types of techniques used in Cellular Manufacturing and FMS

YEAR	III	SEM	06	SUBJECT CODE	ME8693
SUBJECT	HEAT AND MASS TRANSFER				

C603	COURSE OUTCOMES
C603.1	Apply heat conduction equations to different surface configurations under steady state and transient conditions and solve problems
C603.2	Apply free and forced convective heat transfer correlations to internal and external flows through/over various surface configurations and solve problems
C603.3	Explain the phenomena of boiling and condensation, apply LMTD and NTU methodsof thermal analysis to different types of heat exchanger configurations and solveproblems.
C603.4	Explain basic laws for Radiation and apply these principles to radiative heat transferbetween different types of surfaces to solve problems.
C603.5	Apply diffusive and convective mass transfer equations and correlations to solve problems for different applications.

YEAR	III	SEM	06	SUBJECT CODE	ME8692
SUBJECT	FINITE ELEMENT ANALYSIS				

C604	COURSE OUTCOME
C604.1	Summarize the basics of finite element formulation.
C604.2	Apply finite element formulations to solve one dimensional Problems.
C604.3	Apply finite element formulations to solve two dimensional scalar Problems.
C604.4	Apply finite element method to solve two-dimensional Vector problems.
C604.5	Apply finite element method to solve problems on iso parametric element and dynamic Problems

YEAR	III	SEM	06	SUBJECT CODE	ME8694
SUBJECT	HYDRAULICS AND PNEUMATICS				

C605	COURSE OUTCOME
C605.1	Explain the Fluid power and operation of different types of pumps.
C605.2	Summarize the features and functions of Hydraulic motors, actuators and Flow control valves
C605.3	Explain the different types of Hydraulic circuits and systems
C605.4	Explain the working of different pneumatic circuits and systems
C605.5	Summarize the various trouble shooting methods and applications of hydraulic and pneumatic systems.

YEAR	III	SEM	06	SUBJECT CODE	ME8091
SUBJECT	AUTOMOBILE ENGINEERING				

C606	COURSE OUTCOME
C606.1	Recognize the various parts of the automobile and their functions and materials.
C606.2	Discuss the engine auxiliary systems and engine emission control.
C606.3	Distinguish the working of different types of transmission systems.
C606.4	Explain the Steering, Brakes and Suspension Systems.
C606.5	Predict possible alternate sources of energy for IC Engines.

YEAR	III	SEM	06	SUBJECT CODE	ME8681
SUBJECT	CAD / CAM LABORATORY				

C607	COURSE OUTCOME
C607.1	Draw 3D and Assembly drawing using CAD software
C607.2	Draw 3D and Assembly drawing of Safety valves andnon-return valves
C607.3	Draw 3D and Assembly drawing of machine components
C607.4	Demonstrate manual part programming with G and M codes using CAM
C607.5	Summarize Computer Aided Part Programming

YEAR	III	SEM	VI	SUBJECT CODE	ME8682
SUBJECT	DESIGN AND FABRICATION PROJECT				

P601	COURSE OUTCOME
P601.1	design and Fabricate the machine element or the mechanical product.
P601.2	demonstrate the working model of the machine element or the mechanical product

YEAR	III	SEM	VI	SUBJECT CODE	HS8581
SUBJECT	PROFESSIONAL COMMUNICATION				

L602	COURSE OUTCOME
L602.1	Speak clearly, confidently, comprehensibly, and communicate with one or many listeners using appropriate communicative strategies.
602.2	Write cohesively and coherently and flawlessly avoiding grammatical errors, using a wide vocabulary range, organizing their ideas logically on a topic.
L602.3	Read different genres of texts adopting various reading strategies.
L602.4	Listen/view and comprehend different spoken discourses/excerpts in different accents.
L602.5	Identify topics and formulate questions for productive inquiry.

YEAR	IV	SEM	07	SUBJECT CODE	ME 8792
SUBJECT	POWERPLANT ENGINEERING				

C701	COURSE OUTCOME
C701.1	Explain the layout, construction and working of the components inside a thermal power plant.
C701.2	Explain the layout, construction and working of the components inside a Diesel, Gas and Combined cycle power plants.
C701.3	Explain the layout, construction and working of the components inside nuclear power plants
C701.4	Explain the layout, construction and working of the components inside Renewable energy power plants.
C701.5	Explain the applications of power plants while extend their knowledge to power plant economics and environmental hazards and estimate the costs of electrical energy production.

YEAR	IV	SEM	07	SUBJECT CODE	ME8793
SUBJECT	PROCESS PLANNING AND COST ESTIMATION				

C702	COURSE OUTCOME
C702.1	Select the process, equipment and tools for various industrial products.
C702.2	Prepare process planning activity chart.
C702.3	Explain the concept of cost estimation.
C702.4	Compute the job order cost for different type of shop floor.
C702.5	Calculate the machining time for various machining operations.

YEAR	IV	SEM	07	SUBJECT CODE	ME8791
SUBJECT	MECHATRONICS				

C703	COURSE OUTCOME
C703.1	Discuss the interdisciplinary applications of Electronics, Electrical, Mechanical and Computer Systems for the Control of Mechanical, Electronic Systems and sensor technology.
C703.2	Discuss the architecture of Microprocessor and Microcontroller, Pin Diagram, Addressing Modes of Microprocessor and Microcontroller.
C703.3	Discuss Programmable Peripheral Interface, Architecture of 8255 PPI, and various device interfacing
C703.4	Explain the architecture, programming and application of programmable logic controllers to problems and challenges in the areas of Mechatronic engineering.
C703.5	Discuss various Actuators and Mechatronics system using the knowledge and skills acquired through the course and from the given case studies

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YEAR	IV	SEM	07	SUBJECT CODE	OML 751
SUBJECT	TESTING OF MATERIALS				

CE704	COURSE OUTCOME
CE704.1	Identify suitable testing technique to inspect industrial component
CE704.2	Ability to use the different technique and know its applications and limitations

YEAR	IV	SEM	07	SUBJECT CODE	ME8073
SUBJECT	UNCONVENTIONAL MACHINING PROCESSES				

CE705	COURSE OUTCOME
CE705.1	Explain the need for unconventional machining processes and its classification.
CE705.2	Compare various thermal energy and electrical energy based unconventional machining processes
CE705.3	Summarize various chemical and electro-chemical energy based unconventional machining processes
CE705.4	Explain various Nano abrasives based unconventional machining processes
CE705.5	Distinguish various recent trends based unconventional machining processes

YEAR	IV	SEM	07	SUBJECT CODE	ME 8711
SUBJECT	SIMULATION AND ANALYSIS LAB				

CL706	COURSE OUTCOME
CL706.1	Simulate the working principle of air conditioning system, hydraulic and pneumatic cylinder and cam follower mechanisms using MATLAB.
CL706.2	Analyze the stresses and strains induced in plates, brackets and beams and heat transfer problems.
CL706.3	calculate the natural frequency and mode shape analysis of 2D components and beams.

YEAR	IV	SEM	07	SUBJECT CODE	ME8781
SUBJECT	MECHATRONICS LABORATORY				

CL707	COURSE OUTCOME
CL707.1	Demonstrate the functioning of mechatronics system with various pneumatic, hydraulic and electrical systems.
CL707.2	Demonstrate the functioning of control systems with the help of PLC and microcontrollers.

YEAR	IV	SEM	08	SUBJECT CODE	MG8591
SUBJECT	PRINCIPLES OF MANAGEMENT				

C801	COURSE OUTCOME
801.1	Understand and apply planning functions.
C801.2	Understanding functions of organizations
C801.3	Able to explain staffing and leading functions
C801.4	Understanding functions of controlling
C801.5	Analyze and implement the management principles for an effective organization.

YEAR	IV	SEM	08	SUBJECT CODE	ME8094
SUBJECT	COMPUTER INTEGRATED MANUFACTURING SYSTEMS				

PE801	COURSE OUTCOME
PE801.1	Explain the basic concepts of CAD, CAM and computer integrated manufacturing systems
PE801.2	Summarize the production planning and control and computerized process planning
PE801.3	Differentiate the different coding systems used in group technology
PE801.4	Explain the concepts of flexible manufacturing system (FMS) and automated guided vehicle (AGV) system
PE801.5	Classification of robots used in industrial applications

YEAR	IV	SEM	08	SUBJECT CODE	ME8811
SUBJECT	PROJECT WORK				

PCO	COURSE OUTCOME
PCO1	On completion of the project work, students will be in a position to take up any challenging practical problems and find solutions by formulating proper methodology