

DEPARTMENT OF AUTOMOBILE ENGINEERING

Course Outcomes (R-2017)

C101/HS8151-Communicative English	
CO	Outcomes
C101.1	Listen, understand and respond to others in different situations
C101.2	Write short essays of a general kind and personal letters and emails in English.
C101.3	Explain the basic grammar techniques and utilise it in enhancing language development.
C101.4	Read and Comprehend conversations and short talks delivered in English
C101.5	Develop their speaking skills and speak fluently in real contexts.
C101.6	Develop vocabulary of a general kind by developing their reading skills
C102/MA8151-Engineering Mathematics – I	
CO	Outcomes
C102.1	Evaluate integrals using techniques of integration, such as substitution, partial fractions and integration by parts.
C102.2	Evaluate integrals both by using Riemann sums and by using the Fundamental Theorem of Calculus.
C102.3	Manipulates algebraic expressions involving exponential functions
C102.4	Manipulates algebraic expressions involving logarithmic functions
C102.5	Apply differentiation to solve maxima and minima problems.
C102.6	Interpret and communicate mathematics in a variety of problem solving.
C103/PH8151-Engineering Physics	
CO	Outcomes
C103.1	Explain the Young's modulus and Rigidity modulus of elasticity of materials and its determination through experimental methods
C103.2	Describe the characteristics of laser light and their application in semiconductor laser

C103.3	Discuss the principle behind the propagation of light through an optical fibre and its application in sensors.
C103.4	Explain the different modes of heat transfer
C103.5	Relate and explain the quantum concepts in electron microscopes
C103.6	Describe the unit cell characteristics and the growth of crystals
C104/CY8151/Engineering Chemistry	
CO	Outcomes
C104.1	Explain the hardness of water
C104.2	Describe the types of catalysis
C104.3	Explain the properties of alloys and its applications
C104.4	Explain the various methods to find calorific values
C104.5	Explain importance of nuclear fission, fusion and chain reaction
C104.6	Explain basics of nano materials, their properties and applications
C105/GE8151/Problem solving and Python Programming	
CO	Outcomes
C105.1	Elaborate the organization of digital computer and design the solution for simple computing problems using algorithm.
C105.2	Develop Python programs with conditionals and loops.
C105.3	Identify the text files, reading and writing files, format operator
C105.4	Read and write data from/to files in Python Programs.
C105.5	Explain the concepts of structure and union with an example programs.
C105.6	Develop algorithmic solutions to simple computational problems
C106/GE8152/Engineering Graphics	
CO	Outcomes
C106.1	Discuss about conics and orthographic views of engineering components
C106.2	Illustrate the projection of points, lines and planes
C106.3	Classify solids and projection of solids at different positions
C106.4	Explain sectioned view of solids and development of surface
C106.5	Illustrate isometric projection and perspective views of an object/solid
C106.6	Apply the concept of drawing in practical applications
C107/GE8161/ Problem solving and Python Programming Laboratory	

CO	Outcomes
C107.1	Explain fundamental concepts and Compute the GCD of two numbers.
C107.2	Develop Python programs step-wise by defining functions and calling them.
C107.3	Implement Python programs with conditionals and loops.
C107.4	Select programming components that efficiently solve computing problems in real-world.
C107.5	Apply good programming design methods for program development.
C107.6	Develop recursive programs.
C108/BS8161/Physics and Chemistry Laboratory	
CO	Outcomes
C108.1	Determination of rigidity modulus – Torsion pendulum
C108.2	Measure the thickness of a thin wire – Air wedge method
C108.3	Compute the wavelength of mercury spectrum using properties of light
C108.4	Compute the thermal conductivity of a bad conductor using Lee’s method.
C108.5	Estimate copper content of the given solution by Eudiometry.
C108.6	Estimate sodium and potassium present in water using flame photometer.
C109/HS8251/Technical English	
CO	Outcomes
C109.1	Develop strategies and skills to enhance their ability to read and comprehend engineering and technology texts.
C109.2	Analyze the technical texts and write area- specific texts effortlessly.
C109.3	Develop their speaking skills to make technical presentations
C109.4	Write reports and winning job applications.
C109.5	Speak appropriately and effectively in varied formal and informal contexts.
C109.6	Respond intelligently and seek clarification and understand completely.
C110/MA8251/Mathematics – II	
CO	Outcomes
C110.1	Apply Laplace transform technique to solve the given ordinary differential equation
C110.2	Explain concepts of vector calculus, needed for problems in all engineering disciplines.

C110.3	Compute line, surface and volume integral using Gauss divergence, Green's and stoke's theorem.
C110.4	Find the various methods of complex analysis
C110.5	Find Laplace transforms can be used for efficiently solving the problems that occur in various branches of engineering disciplines
C110.6	Apply analytic functions, conformal mapping and complex integration
C111/PH8251/Materials Science	
CO	Outcomes
C111.1	Explain the peritectic phase diagram and its applications.
C111.2	Explain the T-T-T-diagram for eutectoid steel
C111.3	Describe the types of hardness test.
C111.4	Explain mechanical properties of materials and their measurement
C111.5	Explain advance engineering materials and its applications
C111.6	Explain the various types of phase diagrams and their applications
C112/BE8253/Basic Electricals, Electronics and Instrumentation Engineering	
CO	Outcomes
C112.1	Describe the Basic circuit components
C112.2	Apply Ohms Law and Kirchoff's Law to determine the voltage and Current
C112.3	Demonstrate the housing wiring and industrial wiring
C112.4	Interpret the Principles of operation and characteristics of electrical Machines
C112.5	Describe the electronics devices and circuits
C112.6	Classify the Transducers and Instruments
C113/GE8291 Environmental Science and Engineering	
CO	Outcomes
C113.1	Interpret the food chains, food webs and ecological pyramids
C113.2	Describe about the environmental pollution such as air pollution, water pollution, soil pollution and thermal pollution
C113.3	Understand the forest resources, food, resources, land resources and water resources
C113.4	Interpret the resettlement and rehabilitation of people
C113.5	Create awareness environment and human health, human rights and value education

C113.6	describe the role of information technology in environment and human health
C114/GE 8292 Engineering Mechanics	
Semester: 02	
CO	Outcomes
C114.1	Describe the equilibrium of a particle in space using principle of laws of mechanics
C114.2	Calculate the equilibrium of rigid bodies in two dimensions and in three dimensions.
C114.3	Calculate the principal moment of inertia of plane areas.
C114.4	Solve the problems using equation of motions and analyze impact of elastic bodies on collision.
C114.5	Solve the problems of simple system with sliding friction and calculate linear and angular acceleration of moving body in general plane motion.
C114.6	Apply the Laws of Mechanics for solving problem on Vector representation of forces
C115/GE8261/ Engineering Practice Laboratory	
CO	Outcomes
C115.1	Identify Tools and Techniques used for Sheet Metal Fabrication
C115.2	Use welding equipment to join the structures.
C115.3	Measure various electrical quantities
C115.4	Explain the working of electronic components and its utilization
C115.5	Apply electronic principles to develop circuits for primitive application
C115.6	Demonstrate Plumbing requirements of domestic buildings
C116/BE8261/Basic Electrical, Electronics and Instrumentation Engineering Laboratory	
CO	Outcomes
C116.1	Explain the basic theorems used in Electrical circuits and the different components and function of electrical machines.
C116.2	Do the Load test on separately excited DC generator
C116.3	Do the Load test experiments on DC shunt motor.
C116.4	Calculated the Measurement of three phase power
C116.5	Interpret the CRO and measurement of AC signals
C116.6	Demonstrate the Load test on Induction motor

C201/MA8353/Transforms and Partial Differential Equations	
CO	Outcomes
C201.1	Students would get familiarize about the Fourier series to generate a sequence of waves
C201.2	Students would have learnt about the Fourier Transform to sequence non parabolic waves to a general function.
C201.3	Students will be familiar with the construction of partial differential equation and finding methods to solve it
C201.4	Students would gain knowledge about the applications of PDE in Chemical Engineering
C201.5	Students would have acquired knowledge on Z Transforms for a 3D model and its solution
C201.6	Formulate and solve some of the physical problems
C202/ME8391/ Engineering Thermodynamics	
CO	Outcomes
C202.1	Analyze and solve real time flow and non – flow processes
C202.2	Apply second law of thermodynamics for evaluating the performance of thermal system
C202.3	Explain the properties of pure substances and analyze the performance of vapour power cycle
C202.4	Compare ideal and real gas and deduce the thermodynamics relations
C202.5	Solve the properties of gas mixtures
C202.6	Apply the principles of psychometric to analyze refrigeration & air conditioning systems
C203/CE8395/Strength of Materials for Mechanical Engineers	
CO	Outcomes
C203.1	Analyze the values of yield stress, breaking stress and ultimate stress of the given specimen under tension test.
C203.2	Defend the Rockwell hardness test over with Brinell hardness and measure the hardness of the given specimen
C203.3	Do the torsion test to determine the modulus of rigidity of given specimen
C203.4	Check the stiffness of the open coil and closed coil spring and grade them.

C203.5	Analyze the microstructure and characteristics of specimen.
C203.6	Do the Double shear test on Mild steel and Aluminum rods
C204/AT8301/Spark Ignition Engines	
CO	Outcomes
C204.1	Explain the working principles of SI and CI engines
C204.2	Explain the different types of fuel systems used in IC engines
C204.3	Explain the working of combustion systems used in IC engines
C204.4	Describe the engines standards and performance
C204.5	Explain the working of different types of cooling and lubrication systems for IC engines
C204.6	Develop a strong base for understanding future developments in the automobile industry
C205/ME8392/Manufacturing Technology	
CO	Outcomes
C205.1	Apply the knowledge of various metal casting processes.
C205.2	Describe the various welding techniques with their equipment, process capabilities and principle of operations.
C205.3	Apply the knowledge of metal working processes and the physics behind in it and focus on forging operations.
C205.4	Identify the various sheet metal forming processes for a specific application.
C205.5	Describe the properties and bonding techniques of plastics and various plastic molding techniques.
C205.6	Explain formability, characteristics, test methods and working principle of sheet metals.
C206/CE8394/Fluid Mechanics and Machinery	
CO	Outcomes
C206.1	Calculate fluid properties and characteristics of flow using mathematical knowledge.
C206.2	Calculate loses in circular conduits using conservation laws
C206.3	Make dimensional analysis of a given set of variables using Buckingham's π theorem and relate the model and prototype
C206.4	Analyze the performance of pumps

C206.5	Analyze the performance of hydraulic machines
C206.6	Apply mathematical knowledge to predict the properties and characteristics of a fluid
C207/CE8381/Strength of Materials and Fluid Mechanics and Machinery Laboratory	
CO	Outcomes
C207.1	Do the Double shear test experiments on Mild steel and Aluminum rods
C207.2	Do the Torsion test on mild steel rod
C207.3	Calculate the Strain values using Rosette strain gauge
C207.4	Analysis Microscopic Examination of Hardened samples
C207.5	Calculate the rate of flow using Rota meter.
C207.6	Do experiments and drawing the characteristic curves of reciprocating pump.
C208/ME8381/ Computer Aided Machine Drawing	
CO	Outcomes
C208.1	Describe the Code of practice for Engineering Drawing,
C208.2	Prepare the production drawings and reading of part and assembly drawings
C208.3	Draw the Bush bearing and Plummer block
C208.4	Develop knuckle, Gibs & Cotter, strap, sleeve & cotter joints using CAD
C208.5	Draw the safety and non-return valves using 2D drafting
C208.6	Do the practice in handling 2D drafting and 3D modeling software systems.
C209/HS8381/ Interpersonal Skills/ Listening and Speaking	
CO	Outcomes
C209.1	Provide guidance and practice in basic general and classroom conversation and to engage in specific academic speaking activities.
C209.2	Improve general and academic listening skills
C209.3	Make effective presentations
C209.4	Summarize academic readings and lectures conversational speech listening to and participating in conversations
C209.5	Articulate a complete idea as opposed to producing fragmented utterances
C209.6	Make the students for group discussion
C210/MA8452/Statistics and Numerical Methods	

CO	Outcomes
C210.1	Relate basic hypothesis testing and analysis of variance
C210.2	Describe the concept of algebraic and transcendental equations
C210.3	Compute the Eigen values of matrix numerically
C210.4	Express approximate interpolating polynomials for equal and unequal intervals.
C210.5.	Extending the concepts of numerical differentiation and integration to calculate velocity, acceleration and the area of the region boundary by curves.
C210.6	Solve the ordinary and partial differential equations by numerical methods.
C211/AT8401/Compression Ignition Engines	
CO	Outcomes
C211.1	Explain the intake, exhaust, fuel injection system and combustion in diesel engines
C211.2	Discuss the various alternative fuels for C.I Engines
C211.3	Explain the concept of formation of emission
C211.4	Classify the air filters
C211.5.	Construction and principle operation of CRDI
C211.6	Explain the stages of combustion
C212/ME8491/Engineering Metallurgy	
CO	Outcomes
C212.1	Illustrate phase diagram for multi component systems and explain the various microstructures of steel and cast iron
C212.2	Describe various types of heat treatment process and sketch isothermal transformation.
C212.3	Compare the composition and properties of various ferrous and non-ferrous alloys.
C212.4	Describe properties and applications of polymers and composite materials
C212.5	Explain various mechanical testing methods of ferrous and non-ferrous materials.
C212.6	Analyze the fatigue and creep failure mechanisms.
C213/EC8396/Electronics and Microprocessors	
CO	Outcomes
C213.1	Explain the fundamentals of electronics and write its application
C213.2	Discuss the basic interfacing concepts
C213.3	Describe the architecture of 8085 Microprocessor

C213.4	Explain the applications of microprocessor temperature control
C213.5	Discuss simple programs using arithmetic and logical operations.
C213.6	Describe the fundamental concept of semi conductors, Transistor
C214/AT8402/ Automotive Chassis	
CO	Outcomes
C214.1	Describe the concepts of various vehicle frames, front axles and steering systems.
C214.2	Illustrate the construction and working principle of final drives.
C214.3	Discuss about the rear axle and suspension system.
C214.4	Explain the conditions for true rolling motion of wheels during steering.
C214.5	Explain about the constructional feature of wheels and tyres.
C214.6	Explain the Steering geometry and types of steering gear box
C215/PR8451/Mechanics of Machines	
CO	Outcomes
C215.1	Describe the concepts of machines, mechanisms and related terminologies.
C215.2	Analyze simple mechanisms for displacement, velocity and acceleration Graphically
C215.3	Analyze various motion transmission elements like gears, gear trains, cams, belt drive and rope drive.
C215.4	Apply analytical, mathematical and graphical aspects of kinematics of machines for effective design.
C215.5	Evaluate friction and its effects in mechanical components.
C215.6	Design the kinematic linkages for a given mechanism.
C216/AT8411/Automotive Components Laboratory	
CO	Outcomes
C216.1	Identify and assemble the automobile components
C216.2	Describe different types of frames used in various automobiles
C216.3	Describe the petrol engine fuel system
C216.4	Construct the diesel engine fuel system
C216.5	Identify and assemble the driveline system
C216.6	Identify dismantling of multi cylinder diesel engine
C217/EC8382/Electronics and Microprocessors Laboratory	

CO	Outcomes
C217.1	Draw speed characteristic of PN Junction Diode
C217.2	Draw speed characteristic of Uni Junction Transistor
C217.3	Explain the different types of logic Gates
C217.4	Do the test on speed characteristic of different microprocessor machine
C217.5	Do the test on Stepper Motor Interfacing
C217.6	Use microcontroller and programming
C301/ME8593/Design of Machine Elements	
CO	Outcomes
C301.1	Discuss the stresses and strains in machine elements subjected to various loads
C301.2	Design the components for transmission like shafts and couplings.
C301.3	Analyze the structural joints such as riveted joints, welded joints, Bolts, Knuckle and cotter joints.
C301.4	Design the machine elements like springs, flywheel.
C301.5	Analyze and design the automobile components like crank shaft and connecting rod.
C301.6	Design and select suitable bearings for Engineering applications.
C302/AT8501/Automotive Transmission	
CO	Outcomes
C302.1	Explain the construction and working of clutches and gearbox
C302.2	Illustrate the working principle of Torques convertor and fluid coupling used in automobiles.
C302.3	Describe the working of epicyclic gearboxes used in automatic transmission
C302.4	Discuss the applications of automatic transmission systems.
C302.5	Explain the working principle of hydrostatic and electric drive used
C302.6	Explain the concepts of manual and automatic transmission of an automobile
C303/AT8502/ Automotive Electrical and Electronics Systems	
CO	Outcomes
C303.1	Discuss Cranking motor construction and testing methods.
C303.2	Explain the principle of alternator and to test the alternator
C303.3	Illustrate the various ignition systems in IC Engine

C303.4	Discuss the various sensors used in automobiles.
C303.5	Discuss about the wiring & lighting systems for automobiles.
C303.6	Explain the electrical components used in vehicles
C304/AT8503/Vehicle Design Data Characteristics	
CO	Outcomes
C304.1	Illustrate the basic design principle of vehicle
C304.2	Discuss functions of several variables pertaining to vehicular design.
C304.3	Determine the performance curves pertain to engine.
C304.4	Calculate the gear ratios
C304.5	Evaluate the performance curves pertain to chassis.
C304.6	Design the different types of gear box
C305/AT8504/Automotive Fuels and Lubricants	
CO	Outcomes
C305.1	Discuss the concepts of manufacturing fuels & lubricants
C305.2	Discuss about various fuels & lubricants for IC engines
C305.3	Explain the testing methods of lubricants
C305.4	Illustrate the testing methods of automotive fuels
C305.5	Develop the strong base for combustion methodology of automotive fuels and lubricants.
C305.6	Determine the calorific value of the fuel
C306/ORO551/ Renewable Energy Sources	
CO	Outcomes
C306.1	Describe the Economics of renewable energy systems.
C306.2	Calculate the ranges of Solar Radiation using flat plate collector
C306.3	Classify the Wind Energy Systems
C306.4	Prepare the alternate fuel such as ethanol and bio diesel
C306.5	Explain the Open and Closed OTEC Cycle system
C306.6	Interpret the Solar PV Applications.
C307/AT8511/Automotive Electrical and Electronics Laboratory	
CO	Outcomes
C307.1	Solve the faults in electrical systems.

C307.2	Solve the faults in electronics systems and rectify it.
C307.3	Demonstrate the battery test using hydrometer
C307.4	Analysis and Diagnosis of ignition system faults
C307.5	Identify Fault Diagnosis of various sensors
C307.6	Do the test of starting motor and generators
C308/AT8512/Automotive Fuels and Lubricants Laboratory	
CO	Outcomes
C308.1	Analyze the lubricants and fuels used for IC engines
C308.2	Experiment the test of fuels
C308.3	Discuss the International and National standards for fuels and lubricants.
C308.4	Identify the Octane and Cetane Number of fuels.
C308.5	Do the characteristic and chase the fuels and lubricants for the automobiles.
C308.6	Determine the calorific value of given fuel
C309/HS8581/Professional Communication	
CO	Outcomes
C309.1	Make effective presentations
C309.2	Participate confidently in Group Discussions.
C309.3	Attend job interviews and be successful in them.
C309.4	Develop adequate Soft Skills required for the workplace
C309.5	Recognize differences between groups and teams
C309.6	Develop a long term career plan-making career changes
C310/GE8077/ Total Quality Management	
CO	Outcomes
C310.1	Apply the tools and techniques of quality management to manufacturing
C310.2	Explain the basic concept of TQM
C310.3	Apply TQM principles in shop floor
C310.4	Explain the seven TQM tools
C310.5	Write the benefits of environmental management system
C310.6	Explain the deeming principles
C311/AT8601/Automotive Engine Components Design	

CO	Outcomes
C311.1	Describe the concepts of Limits, Fits and tolerances pertaining to automotive engine components
C311.2	Evaluate the design concepts for cylinder, piston and connecting rod.
C311.3	Design the crankshaft of an engine under different loading conditions.
C311.4	Determine the design criteria associated with flywheel for an engine.
C311.5	Design the Camshaft and valves for an IC engine.
C311.6	Design the engine components used in an automobile.
C312/AT8602/Automotive Chassis Components Design	
CO	Outcomes
C312.1	Discuss about various vehicular structures.
C312.2	Evaluate engineering problems related to automobile drive line components.
C312.3	Explain about the performances of various axles and to design the same.
C312.4	Design the various braking systems.
C312.5	Design the various suspension systems.
C312.6	Design the automotive components like frame, axel.
C313/AT8603/Two and Three Wheelers	
CO	Outcomes
C313.1	Explain about the Engines employed for two and three wheelers.
C313.2	Discuss about the Chassis and its sub-systems.
C313.3	Discuss about the functionality of Brakes and wheels.
C313.4	Illustrate the specific Case studies of major Indian models.
C313.5	Explain about Servicing, maintenance and trouble shooting of two and three wheelers.
C313.6	Develop the sub system of two and three wheeler
C314/AT8604/Vehicle Dynamics	
CO	Outcomes
C314.1	Explain the concept of mechanical vibrating system
C314.2	Analyze fundamentals of vibration theory and familiar with their mathematic models.
C314.3	Solve the suspension and tire related vibrations
C314.4	Develop themselves about the vibration control techniques & stability of vehicle

C314.5	Apply the numerical methods in automobiles
C314.6	Analyze the longitudinal dynamics and control
C315/AT8002/ Advance Theory of IC Engines	
CO	Outcomes
C315.1	Classify the various types combustion processes of IC engine
C315.2	Explain the fuel air cycle and actual cycle
C315.3	Describe the chemical composition and molecular structure of hydrocarbon fuels
C315.4	Explain the LHR engine and recent developments
C315.5	Analysis of pressure crank angle diagrams in SI and CI engines
C315.6	Calculate of ignition delay and combustion duration
C316/AT8611/Computer Aided Engine and Chassis Design Laboratory	
CO	Outcomes
C316.1	Draw the piston and connecting rod.
C316.2	Draw the crankshaft and flywheel.
C316.3	Use the modeling tool to draw piston and connecting rod.
C316.4	Draw the clutches and gearbox.
C316.5	Draw the rear axle and final drive bearings.
C316.6	Do the proactive in handling 2D drafting and 3D modeling software systems.
C317/AT8612/ Two and Three Wheelers Laboratory	
CO	Outcomes
C317.1	Experiment on dynamometers.
C317.2	Use tools to assemble the engine components
C317.3	Experiment on two and three wheelers.
C317.4	Experiment on compression test on spring tester
C317.5	Experiment on shock absorber test.
C317.6	Use tools to dismantling and assembling of three wheeler steering system
C401/AT8701/Engine and Vehicle Management System	
CO	Outcomes
C401.1	Explain the role of various sensor
C401.2	Illustrate the working principle of influence in controlling pollution

C401.3	Discuss the modern control strategies like Fuzzy logic and adaptive control
C401.4	Explain the basics of Vehicle Motion Control and telemetric system
C401.5	Explain the different types of sensors used in automotive system
C401.6	Explain the fundamentals of automotive electronics
C402/ME8692/Finite Element Analysis	
CO	Outcomes
C402.1	Solve problems by applying standard finite element techniques.
C402.2	Analyze 1-D finite elements and to build the stiffness matrix.
C402.3	Examine 2-D finite element continuum for structural applications.
C402.4	Solve 1-D and 2-D heat transfer problems using finite element approach.
C402.5	Apply axis symmetric formulation for specific applications and Make use of finite element principles in iso parametric applications.
C402.6	Apply the concepts of finite element principles in iso parametric applications
C403/AT8702/Vehicle Maintenance	
CO	Outcomes
C403.1	Explain the procedure for dismantling and assembling the engine
C403.2	Discuss Gain skills in handling situations where the vehicle is likely to fail.
C403.3	Describe the maintenance procedures like repairing, overhauling etc.,
C403.4	Explain the concept of fault diagnosis
C403.5	Discuss the various advances in fault diagnosis
C403.6	Develop a strong base for understanding of automotive brake bleeding
C404/OML751/ Testing of Materials	
CO	Outcomes
C404.1	Classify the materials testing and select the tool and machine
C404.2	Interpret the different mechanical testing such as hardness, impact, tensile
C404.3	Describe the Principles, Techniques, Advantages, Limitations and Applications of non destructive testing
C404.4	Interpret the different characterization techniques such as SEM and TEM
C404.5	Interpret the other testing such as thermal testing and chemical testing
C404.6	Analyze the element by Inductively Coupled Plasma-Optical Emission Spectroscopy and Plasma-Mass Spectrometry

C405/AT8004/New Generation and Hybrid Vehicles	
CO	Outcomes
C405.1	Explain the working principle of lean burn engine
C405.2	Explain the working principle of aerodynamic drag
C405.3	Illustrate the basics of Vehicle Motion Control and telemetric system
C405.4	Discuss the recent development pertain to newer vehicle
C405.5	Discuss the Recent technologies in the area of suspension systems, brakes, aerodynamics
C405.6	Develop a strong base for understanding of automotive braking system
C406/ME8099/Robotics	
CO	Outcomes
C406.1	Explain the concepts of industrial robots, classification, specifications and coordinate systems. Also summarize the need and application of robots in different sectors.
C406.2	Illustrate the different types of robot drive systems as well as robot end effectors.
C406.3	Apply the different sensors and image processing techniques in robotics to improve the ability of robots.
C406.4	Develop robotic programs for different tasks and familiarize with the kinematics motions of robot.
C406.5	Examine the implementation of robots in various industrial sectors and interpolate the economic analysis of robots.
C406.6	Derive the 2DOF, 3DOF
C407/AT8711/Engine Performance and Emission Testing Laboratory	
CO	Outcomes
C407.1	Use the knowledge of test engines
C407.2	Analyze the performance and heat balance test on IC engines using various dynamometers.
C407.3	Conduct exhausts gas analysis.
C407.4	Examine and control the emission
C407.5	Draw the Valve timing and port timing diagram
C407.6	Discuss to handle different equipments to conduct performance test.

C408/AT8712/Vehicle Maintenance Laboratory	
CO	Outcomes
C408.1	Do the test engine analysis using diagnostic systems.
C408.2	Evaluate wheel balancing and alignment.
C408.3	Calculate the timing and test a fuel injection pump.
C408.4	Solve the faults and knowledge on maintenance
C408.5	Experiment of fault diagnosis and service of Electrical system like battery
C408.6	Experiment of fault diagnosis and service of vehicle air conditioning system
C409/AT8801/ Vehicle Body Engineering	
CO	Outcomes
C409.1	Explain the different types of car body.
C409.2	Discuss the constructional details of the bus body.
C409.3	Explain the regulations and constructional details of a commercial vehicle body.
C409.4	Describe the role of various aerodynamic forces and moments, measuring instruments
C409.5	Explain the materials used in body building, tools used and procedure for body repairs.
C409.6	Design and construct the external body of the vehicles.
C410/AT8008/Transport Management	
CO	Outcomes
C410.1	Explain the various transport system
C410.2	Write the training procedure
C410.3	Explain the various types of fare collecting method
C410.4	Describe the factors of bus scheduling
C410.5	Discuss about the motor vehicle act
C410.6	Interpret the maintenance aspects of transport
C411/MG8591/Principles of Management	
CO	Outcomes
C411.1	Explain the purpose of management & managerial roles in local and global organization
C411.2	Prescribe the decision making model under different conditions

C411.3	Explain the process of staff selection and career development
C411.4	Demonstrate creativity and innovation, and explain the motivational theories
C411.5	Explain the process of different types of control, and planning operations in management
C411.6	Explain the System and process of controlling
C412/AT8811/Project Work	
CO	Outcomes
C412.1	Develop the ability to solve a specific problem
C412.2	Select the proper tool and machine to carry out the experiment
C412.3	Identify the problem of the project
C412.4	Analyze the mechanical and thermal characteristic
C412.5	Apply the mechanism to execute the project
C412.6	Calculate the mechanical and thermal values using formula