SARASWATI Education Society's

SARASWATI College of Engineering

Learn Live Achieve and Contribute

Kharghar, Navi Mumbai - 410 210.

Course Objectives and Course Outcomes

Even Semester

Class: SE

Subject code: **AEC301**	Subject: **Applied Mathematics-III**	Credits:4

Course Objective:

At the end of course, student should be able to:

1	Formulate Solve & analyze Mathematics Fundamental Engineering Problems.
2	Categorize Fourier Series & Laplace Transform to solve real world problems.
3	Illustrate the Statistical Problems.
4	Distinguish Complex Variable & Integration.
5	Demonstrate the Statistical Problems.
6	Compute the Complex Variable Problems.

Course Outcomes:

At the end of course, students will attain an ability to:

1	Understand problems in Engineering domain related to Statistics.
2	Analyze & Solve Engineering Problems Using Laplace Transform.
3	Evaluate Engineering Problems Using Fourier Series.
4	Classify Engineering Problems Using Complex Variable & Integration
5	Compare problems Related to Statistics Using Various Methods
6	Illustrate Engineering Problems Using Complex Variable.

Subject code: **AEL301**	Subject: **Computer Aided Machine Drawing**	Credits:4

Course Objective:

At the end of course, student should be able to:

1	Classify Parametric Modeling Fundamentals.
2	Choose Basic Parametric Modeling Procedure.
3	Compose Solid Models of Machine Components.
4	Transform the Assembly of the Solid Models.
5	Reconstruct the Disassembly of the Solid Models.
6	Develop the Intersection of Two Solids.

Course Outcomes:

At the end of course, students will attain an ability to:

1	Apply Knowledge of Mathematics, Science & Engineering.
2	Design & Conduct Experiments, as well as to analyze & interpret Data.
3	Create Solid Models of Different Machine Parts.
4	Assemble the Machine parts to Create a Complete Machine.
5	Disassemble the Machine Parts from a Complete Machine.
6	Sketch the Different Views of Intersection of two Solids

Subject code: **AEC305**	Subject: **Material Technology**	Credits:4

Course Objective:

At the end of course, student should be able to:

1	Describe various Materials.
2	Explain various failure of Mechanism
3	Apply different types Theory of Alloys& Alloys Diagrams.
4	Determine basic engineering materials, their structure-property-performance
5	Detect the strengthening processes including heat treatment processes in order to enhance properties
6	Prescribe new materials and their applications

Course Outcomes:

At the end of course, students will attain an ability to:

1	Describe various Materials.

2	Explain various failure of Mechanism
3	Apply different types Theory of Alloys& Alloys Diagrams.
4	Determine basic engineering materials, their structure-property-performance
5	Discriminate the strengthening processes including heat treatment processes in order to enhance properties
6	Propose new materials and their applications

Subject code: **AEC304**	Subject: **Production Process-I**	Credits:4

Course Objective:

At the end of course, student should be able to:

1	Define basic production processes
2	Explain casting process
3	Distinguish various types of welding processes
4	Select appropriate production processes for a specific application.
5	Prescribe concept of producing polymer components and ceramic components
6	Compose different machine tools.

Course Outcomes:

At the end of course, students will attain an ability to:

1	Demonstrate understanding of casting process.
2	Illustrate principles of forming processes
3	Demonstrate applications of various types of welding processes.
4	Differentiate chip forming processes such as turning, milling, drilling, etc..
5	Illustrate the concept of producing polymer components and ceramic components.
6	Distinguish between the conventional and modern machine tools

Subject code: **AEC303**	Subject: **Strength of Material**	Credits:4

Course Objective:

At the end of course, student should be able to:

1	Distinguish types of stresses, strain and deformation induced in the mechanical components due to external loads.

2	Explain SFD and BMD for different types of loads and support conditions.
3	Calculate various stresses in the mechanical elements or bodies of finite dimensions that deform under loads
4	Describe strain energy in mechanical elements
5	Calculate Deflection of Cantilever, simply supported and overhang beams using double integration and Macaulay's Method for different types of loadings.
6	Compute the effects of component dimensions, materials and shapes on stresses and deformations

Course Outcomes:

At the end of course, students will attain an ability to:

1	Demonstrate fundamental knowledge about various types of loading and stresses induced
2	Draw the SFD and BMD for different types of loads and support conditions.
3	Analyze the stresses induced in basic mechanical components.
4	Estimate the strain energy in mechanical elements.
5	Analyze the deflection in beams.
6	Analyze buckling and bending phenomenon in columns, struts and beams.

Subject code: **AEC504**	Subject: **Automotive Systems**	Credits:4

Course Objective:

At the end of course, student should be able to:

1	Explain basic and advance automotive systems.
2	Interrelate working of different automotive systems and subsystems.
3	Recognize different vehicle layouts.
4	Explain idea about how automotive systems are developed.
5	Determine importance of automotive systems.
6	Explain electrical motors for automobile.

Course Outcomes:

At the end of course, students will attain an ability to:

1	Indicate different automotive systems and subsystems
2	Examine different automotive components.
3	Point out working and functions of various automotive components

4	Examine working and function of electric drive lines.
5	Interrelate working of Special vehicles through case study.
6	Infer and Demonstrate different vehicle layouts

Subject code: **AEC503**	Subject: **Heat Transfer**	Credits:4

Course Objective:

At the end of course, student should be able to:

1	Describe different modes of heat transfer
2	Classify and explain different modes of heat transfer.
3	Apply steady state approach to solve conduction problems
4	Use transient methods to solve time varying problem
5	Analyze boiling and condensation processes
6	Formulate the radiation analysis techniques on simple models

Course Outcomes:

At the end of course, students will attain an ability to:

1	Describe different modes of heat transfer
2	Classify/ Illustrate different modes of heat transfer.
3	Use/Apply steady state approach to solve conduction problems.
4	Identify and use transient methods to solve time varying problem
5	Analyze boiling and condensation processes
6	Propose the radiation analysis techniques on simple models

Subject code: **AEC501**	Subjet: **Internal Combustion Engine**	Credits:4

Course Objective:

At the end of course, student should be able to:

1	Identify Air Standard, Fuel-Air and Actual Cycles with its Analysis and types of engine
2	Generalize of SI Engine components, Ignition system and Combustion process in SI

3	Generalize of CI Engine components, Ignition system and Combustion process in CI
4	Explain engine lubrication and cooling system
5	Illustrate engine performance characteristics
6	Discuss o Modern trends in IC Engine

Course Outcomes:

At the end of course, students will attain an ability to:

1	Classify SI and CI Engines and different cycles
2	Identify and Explain working of Engine Components, Ignition System in SI Engine
3	Identify and Explain working of Engine Components, Fuel Injection System in CI Engine
4	Demonstrate engine lubrication and cooling system
5	Summarize Engine performance charateristics
6	Conclude Modern trends in IC Engine

Subject code: **AEC502**	Subject: **Mechanical Measurement and control**	Credits:4

Course Objective:

At the end of course, student should be able to:

1	Memorise knowledge of architecture of the measurement system
2	Describe calibration of different measuring instruments
3	Illusrtrate working principle of mechanical measurement system
4	Explain working of mechanical measurement system
5	Compute mathematical modelling of the control system.
6	Acquaint with control system under different time domain

Course Outcomes:

At the end of course, students will attain an ability to:

1	Classify various types of static characteristics and types of errors occurring in the system
2	Classify and select proper measuring instrument for linear and angular displacement.
3	Classify and select proper measuring instrument for pressure and temperature measurement
4	Design mathematical model of system/process for standard input responses.
5	Analyze error and differentiate various types of control systems and time domain specifications
6	Analyze the problems associated with stability.

Subject code: **AEDLO5011**	Subject: **Press Tool Design**	Credits:4

Course Objective:

At the end of course, student should be able to:

1	Describe various press working operations for mass production of sheet metal components
2	Explain sheet metal working techniques for design of press tools
3	Select press materials and hardware.
4	Illustrate construction and working of various dies.
5	Conclude basic principles of bending and drawing
6	Prescribe scrap minimization, safety aspects and automaton in press working.

Course Outcomes:

At the end of course, students will attain an ability to:

1	Demonstrate various press working operations for mass production of sheet metal parts
2	Identify press tool requirements to build concepts pertaining to design of press tools
3	Prepare working drawings and setup for economic production of sheet metal components
4	Select suitable materials for different elements of press tools
5	Illustrate the principles and blank development in bent & drawn components.
6	Revise failure mechanisms of pressed components, safety aspects and automation in press working

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Class: BE

Subject code: **AEC703**	Subject: **Automotive Design.**	Credits:4

Course Objective:

At the end of course, student should be able to:

1	Design of Principal parts of I.C. Engines
2	Design ofCrank, crankshaft and crank pin
3	Design of Clutches and Gear Boxes
4	Study of Design of Drive train
5	Explain the fundamental knowledge in the field of automotive design
6	Outline the analytical abilities to give solutions to Automotive design problems

Course Outcomes:

At the end of course, students will attain an ability to:

1	Design of various parts of I.C. Engines
2	Design ofCrank, crankshaft and crank pin
3	Design of Clutches and Gear Boxes
4	Design of Drive train
5	Judge the fundamental knowledge in the field of automotive design
6	Determine the analytical abilities to give solutions to Automotive design problems

Subject code: **AEC702**	Subject: **CAD/CAM/CAE**	Credits:4

Course Objective:

At the end of course, student should be able to:

1	Discuss new and exciting field of Intelligent CAD/CAM/CAE with particular focus on engineering product design and manufacturing.
2	Associate a holistic view of initial competency in engineering design by modern computational methods.
3	Design New API for CAD.
4	Interrelate use of rapid prototyping and tooling concepts in real life applications.
5	Predict CAM Tool path Creation and NC- G code output.
6	Compute 2D and 3D transformation for CAD.

Course Outcomes:

At the end of course, students will attain an ability to:

1	Identify proper computer graphics techniques for geometric modeling.
2	Transform, manipulate objects and store and manage data.
3	Prepare part programming applicable to CNC machines.
4	Use rapid prototyping and tooling concepts in any real life applications.
5	Identify the tools for Analysis of a complex engineering component.
6	Generate CAM Tool path Creation and NC- G code output.

Subject code: **AEC704**	Subject: **Product Design and Development**	Credits:4

Course Objective:

At the end of course, student should be able to:

1	Describe basic concepts of product design
2	Analyze DFMA approach of manufacturing
3	Distinguish product design methodologies.
4	Compute house of quality concept used in QFD

5	Interpret product design needs and issues in industry
6	acquaint with legal and social issues pertaining to product development

Course Outcomes:

At the end of course, students will attain an ability to:

1	Demonstrate product design and development process
2	Illustrate considerations of Design for Manufacturing and Assembly in product development.
3	Analyze a product in perspective of aesthetic and ergonomic considerations.
4	Illustrate concepts of QFD aspects in product development.
5	Demonstrate applicability of value engineering in product optimization
6	Demonstrate legal and social issues pertaining to product development.

Subject code: **AEE 7017**	Subject: **Transportation Management &Motor Industries**	Credits:4

Course Objective:

At the end of course, student should be able to:

1	Describe various Motor Vehicle Act
2	Explain various Taxation act.
3	Apply different types of motor insurance
4	Determine Passenger Transport Operation
5	Detect the basic concepts of transport management
6	Design Advance Techniques in Traffic Management

Course Outcomes:

At the end of course, students will attain an ability to:

1	Recognize various Motor Vehicle Act
2	Explain various Taxation act.
3	Use different types of motor insurance
4	Determine Passenger Transport Operation
5	Detect the basic concepts of transport management
6	Design Advance Techniques in Traffic Management

Subject code: **AEE 7011**	Subject: **Power Plant Engineering**	Credits:4

Course Objective:

At the end of course, student should be able to:

1	Recognize the various sources of energy and power plant selections criteria.
2	Access the measurements of Run-off, estimating stream flow and size of reservoir for hydroelectric power plant.
3	List the basic working principles of different power plant.
4	Appraise the economics of power plant.
5	Integrate the principles of Nuclear energy and Nuclear power plants.
6	Recall the types of tariff methods and cost of electrical energy.

Course Outcomes:

At the end of course, students will attain an ability to:

1	Comprehend various equipment's and systems utilized in power plants
2	Illustrate power plant economics
3	Select the site for power plant by comparing various types of power plant.
4	Discuss types of reactors, waste disposal issues in nuclear power plants
5	Demonstrate the working of PWR, BWR, and CANDU reactors.
6	Plot the load curve and performance & operating characteristics of power plant.

Subject code: **AEC302**	Subject: **Thermodynamics**	Credits:4

Course Objective:

At the end of course, student should be able to:

1	Describe the energy concept in general, heat, and work.
2	Extrapolate to apply the basic principle of thermodynamics
3	Illustrate the fundamentals of quantification and grade of energy.
4	Interpret the concept of entropy and irreversibility.
5	Use the steam table and Mollier charts.
6	Integrate the application of the concepts of thermodynamics in vapour power, gas power cycles.

Course Outcomes:

At the end of course, students will attain an ability to:

1	Demonstrate application of the laws of thermodynamics to wide range of systems.
2	Write steady flow energy equation for various flow and non-flow thermodynamic systems.
3	Compute heat and work interactions in thermodynamic systems.
4	Demonstrate the interrelations between thermodynamic functions to solve practical problems.
5	Use of steam table and mollier chart to compute thermodynamic interactions.
6	Compute efficiencies of heat engines, power cycles, etc.

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Course Objectives and Course Outcomes

Even Semester

Class SE

Subject code: **AEC401**	Subject: **Applied Mathematics-IV**	Credits:4

Course Objective:

At the end of course, student should be able to:

1	Justify, Formulate, Solve & analyze Mathematics Fundamental Engineering Problems.
2	Compare Engineering Problems to Mathematical Contacts.
3	Develop a Solid Foundation in Mathematical Fundamentals required to solve Engineering Problems.
4	Classify Linear Algebra through Matrices.
5	Describe the Principles of Vector Analysis, Sampling Theory & Probability.
6	Categorize Principles of Probability & Probability Distribution.

Course Outcomes:

At the end of course, students will attain an ability to:

1	Compose problems in Engineering domain related to Linear Algebra Using Matrices.
2	Prepare matrix algebra with its specific rules to solve a system of Linear Equations.
3	Understand & apply the Concept of Probability Distribution & Sampling theory to Engineering Problems.
4	Apply Principle of Vector Differential & Integral Calculus to the analysis of Engineering Problems.
5	Illustrate, Formulate, Solve Linear Programming Engineering problems.
6	Understand & apply the Concept of Probability Distribution in Engineering Problems

Subject code: **AEC402**	Subject: **Fluid Mechanics**	Credits:4

Course Objective:

At the end of course, student should be able to:

1	Describe fluid statics and fluid dynamics
2	Demonstrate measurement as well as calibration principles
3	verify the concepts learnt in theory course
4	Identify application of mass, momentum and energy equations in fluid flow.
5	Compare various flow measurement techniques
6	Prescribe fundamentals of compressible fluid flows.

Course Outcomes:

At the end of course, students will attain an ability to:

1	Define properties of fluids and classification of fluids
2	Evaluate hydrostatic forces on various surfaces and predict stability of floating bodies
3	Formulate and solve equations of the control volume for fluid flow systems
4	Apply Bernoulli's equation to various flow measuring devices
5	Calculate resistance to flow of incompressible fluids through closed conduits and over surfaces
6	Apply fundamentals of compressible fluid flows to relevant systems

Subject code: **AEC405**	Subject: **Kinematics of Machinary**	Credits:4

Course Objective:

At the end of course, student should be able to:

1	Describe Kinematics of Rigid bodies.
2	Explain Basics of Kinematics
3	Apply different types Special Mechanism.
4	Determine basic concept of kinematics and kinetics of machine elements
5	Detect the various basic mechanisms and inversions
6	Prescribe basics of power transmission

Course Outcomes:

At the end of course, students will attain an ability to:

1	Describe Kinematics of Rigid bodies.

2	Summarize Basics of Kinematics
3	Apply different types Special Mechanism.
4	Determine basic concept of kinematics and kinetics of machine elements
5	Detect the various basic mechanisms and inversions
6	Prescribe basics of power transmission

Subject code: **AEC404**	Subject: **Production Process II**	Credits:4

Course Objective:

At the end of course, student should be able to:

1	Describe basic machining process.
2	Explain the fundamental of metal cutting and tool engineering.
	Categorize sheet metal forming as well as mechanical behavior of stress system in metal forming Processes.
4	Illustrate basic principles of design of jigs and fixtures
5	Classify Non-traditional machining operations.
6	Rewrite fundamentals of additive manufacturing

Course Outcomes:

At the end of course, students will attain an ability to:

1	Demonstrate understanding of metal cutting principles and mechanism
2	Explain cutting tool geometry of single point and multipoint cutting tool
3	Infer various concepts of sheet metal forming operations
4	Compare concepts and use of jigs and fixture
5	Illustrate various non-traditional machining techniques
6	Revise concepts and applications of additive manufacturing

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Class: TE

Subject code: **AEC601**	Subject: **Chassis and body engineering**	Credits:4

Course Objective:

At the end of course, student should be able to:

1	Describe different types of vehicle body design.
2	Classify and explain different chassis construction.
3	Apply roll over analysis to solve rolling problems
4	Use of rolling drag method to solve varying problems
5	Analyze Vehicle Aerodynamic drag.
6	Formulate the design procedure for commercial Vehicle body structure.

Course Outcomes:

At the end of course, students will attain an ability to:

1	Describe different typesof vehicle body design.
2	Classify/ Illustrate and explain different chassis construction.
3	Use/Apply roll over analysis to solve rolling problems
4	Identify and use of rolling drag method to solve varying problems
5	Analyze Vehicle Aerodynamic drag.
6	Propose the design procedure for commercial Vehicle body structure.

Subject code: **AEC603**	Subject: **Finite Element Analysis**	Credits:4

Course Objective:

At the end of course, student should be able to:

1	To familiarize with concepts of FEM.
2	To study the applicability of FEM to engineering problems.
3	To acquaint with application of numerical techniques for solving problems.
4	To study basic finite element formulation techniques to solve engineering problems.
5	To learn finite element equations to model engineering problems.
6	To learn FEA application software.

Course Outcomes:

At the end of course, students will attain an ability to:

1	Solve differential equations using weighted residual methods.
2	Develop the finite element equations to model engineering problems governed by second order differential equations.
3	Apply the basic finite element formulation techniques to solve engineering problems by using one dimensional element.
4	Apply the basic finite element formulation techniques to solve engineering problems by using two dimensional elements.
5	Apply the basic finite element formulation techniques to find natural frequency of single degree of vibration system.
6	Use commercial FEA software, to solve problems related to automobile engineering.

Subject code: **AEDLO6021**	Subject: **Mechatronics**	Credits:4

Course Objective:

At the end of course, student should be able to:

1	Describe key elements of Mechatronics system and its integration
2	Classify sensors and actuators
3	Illustrate concepts of sensors characterization and its interfacing with microcontrollers
4	Recognize concepts of actuators and its interfacing with microcontrollers
5	use continuous control logics i.e. P, PI, PD and PID

6	Compose discrete control logics in PLC systems and its industrial applications

Course Outcomes:

At the end of course, students will attain an ability to:

1	Identify the suitable sensor and actuator for a Mechatronics system
2	Select suitable logic control
3	Analyze continuous control logics for standard input conditions
4	Develop ladder logic programming
5	Design hydraulic/pneumatic circuits
6	Design a Mechatronics system

Subject code: **AEC604**	Subject: **Mechanical Vibration**	Credits:4

Course Objective:

At the end of course, student should be able to:

1	Describe Basic Concepts of Vibration
2	Explain Free Undamped Single Degree of Freedom Vibration
3	Apply Free Damped Single Degree of Freedom Vibration Systems
4	Determine Undamped Multi Degree of Freedom Vibration Systems
5	Detect the principles of vibration measuring instruments.
6	Design balancing of mechanical systems.

Course Outcomes:

At the end of course, students will attain an ability to:

1	RecognizeBasic Concepts of Vibration
2	Explain Free Undamped Single Degree of Freedom Vibration
3	Apply Free Damped Single Degree of Freedom Vibration Systems
4	Determine Undamped Multi Degree of Freedom Vibration Systems
5	Detect the principles of vibration measuring instruments.
6	Formulate balancing of mechanical systems.

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Class: BE

Subject code: **AEC801**	Subject: **Autotronics**	Credits:4

Course Objective:

At the end of course, student should be able to:

1	Describe basic and advanced electronic systems
2	Explaindifferent automotive systems and sub systems.
3	Classify basic and advanced electronic technologies like Battery.
4	Classify and compare basic and advanced electronic technologies like Fuel Cell.
5	Determine basic and advanced electronic technologies like EMC
6	Construct basic idea about how electrical systems are developed.

Course Outcomes:

At the end of course, students will attain an ability to:

1	Describe basic and advanced electronic systems
2	Explain different automotive systems and sub systems.
3	Classify basic and advanced electronic technologies like Battery.
4	Identify and compare basic and advanced electronic technologies like Fuel Cell.
5	Analyze basic and advanced electronic technologies like EMC
6	Propose the basic idea about how electrical systems are developed.

Subject code: **AEE8025**	Subject: **Project Management**	Credits:4

Course Objective:

At the end of course, student should be able to:

1	Memorize the students with the use of a structured methodology/approach for each and every unique project undertaken, including utilizing project management concepts, tools and techniques.

2	Recite the students with the use of selection criteria.
3	construct project management schedule
4	Explain the students with opportunities and threats to the project
5	Formulate project management life cycle and make them knowledgeable about the various phases from project initiation through closure.
6	Explore actual project management

Course Outcomes:

At the end of course, students will attain an ability to:

1	Apply selection criteria and select an appropriate project from different options.
2	Write work break down structure for a project and develop a schedule based on it.
3	Identify opportunities and threats to the project and decide an approach to deal with them strategically.
4	Use Earned value technique and determine & predict status of the project.
5	Capture lessons learned during project phases and document them for future reference
6	Analyse real time time project execution

Subject code: **AEC802**	Subject: **Vehicle Dynamics**	Credits:4

Course Objective:

At the end of course, student should be able to:

1	Describe Tire construction and naming system.
2	Explain different road and aerodynamic loads.
3	Classify suspension dynamics on vehicle body
4	Classify and compare steering systems on driver comfort.
5	Determine different handling characteristics.
6	Design recent developments in dynamics

Course Outcomes:

At the end of course, students will attain an ability to:

1	Describe Tire construction and naming system.
2	Explain different road and aerodynamic loads.
3	Classify suspension dynamics on vehicle body
4	Identify and compare steering systems on driver comfort.
5	Analyze basic and advanced handling characteristics.

6	Propose recent developments in dynamics

Subject code: **AEC803**	Subject: **Vehicle Maintenance.**	Credits:4

Course Objective:

At the end of course, student should be able to:

1	Explain basic types of vehicle maintenance along with its importance
2	Point out Maintenance of Automobile Electronics Components and Accessorie
3	Describe Maintenance of Lubrication ,Cooling ,Fuel Delivery Lubrication System Diagnosis and service
4	Prepare aware about workshop skills and career opportunities available in Automobile Industry
5	ExplainMaintenance of Heating and air conditioning Systems.
6	Describe acquaint with various Trouble shooting, fault tracing practices available in automobile industry.

Course Outcomes:

At the end of course, students will attain an ability to:

1	Demonstrate the maintenance procedure for automotive Engine and prepare checklist
2	Assess OBD for diagnosing various faults
3	Express Maintenance of Lubrication ,Cooling ,Fuel Delivery Lubrication System Diagnosis and service
4	Summarize aware about workshop skills and career opportunities available in Automobile Industry
5	Classify the Maintenance of Heating and air conditioning Systems.
6	Discuss acquaint with various Trouble shooting, fault tracing practices available in automobile industry

Subject code: **AEE8022**	Subject: **Vehicle Safety.**	Credits:4

Course Objective:

At the end of course, student should be able to:

1	Explain the basic safety concepts
2	Express and explain accident reconstruction analysis methods.
3	Compare different issues in vehicle safety
4	Illustrate and analyse rear crash of automotives.
5	Analyse the reconstruction of vehicle rool-over.
6	Formulate the different automotive safety systems

Course Outcomes:

At the end of course, students will attain an ability to:

1	Describe the basic safety concepts
2	Classify/ Illustrate and explain accident reconstruction analysis methods.
3	Sketch different issues in vehicle safety
4	Identify and analyse rear crash of automotives.
5	Analyse the reconstruction of vehicle rool-over.
6	Propose the different automotive safety systems

Subject code: **AEC602**	Subject: **Machine Design I**	Credits:4

Course Objective:

At the end of course, student should be able to:

1	Explain and study basic principles of machine design.
2	InterpretAesthetic and Ergonomics consideration indesign.
3	Acquaint with the concepts of design based on strength & rigidity.
4	Familiarize with use of design data books & various codes of practice.
5	Infer conversant with preparation of working drawings based on designs.
6	Estimate endurance limit.

Course Outcomes:

At the end of course, students will attain an ability to:

1	Reproduce the understanding of various design considerations.
2	Demonstrate the basic principles of machine design.
3	Organize the Design of machine elements for static as well as dynamic loading.
4	Combine the Design of machine elements based on strength/ rigidity concepts.
5	Access design data books in designing various components.
6	Acquire skill in preparing production drawings pertaining to various designs.