



# MOHAMED SATHAK ENGINEERING COLLEGE

KILAKARAI-623 806, RAMANATHAPURAM DIST.

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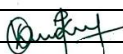
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## DEPARTMENT OF AERONAUTICAL ENGINEERING

### COURSE OUTCOMES FOR ALL COURSES

| Course Outcomes for All Courses |  |
|---------------------------------|--|
| <b>Batch:</b>                   | 2023-2027  |
| <b>Academic Year:</b>           | 2023-2024  |
| <b>Course Code</b>              | C101   |
| <b>Anna Univ Code:</b>          | HS3152   |
| <b>Course Name:</b>             | Professional English - I   |
| <b>Course Outcome Number</b>    | <b>Course Outcome Statement</b>  |
| C101.1                          | To use appropriate words in a professional context   |
| C101.2                          | To gain understanding of basic grammatical structures and use them in right context  |
| C101.3                          | To read and infer the denotative and connotative meanings of technical texts   |
| C101.4                          | To read and interpret information presented in tables, charts and other graphic forms  |
| C101.5                          | To write definitions, descriptions, narrations and essays on various topics  |
| <b>Course Code</b>              | C102   |
| <b>Anna Univ Code:</b>          | MA3151   |
| <b>Course Name:</b>             | Matrices And Calculus  |
| <b>Course Outcome Number</b>    | <b>Course Outcome Statement</b>  |
| C102.1                          | Use the matrix algebra methods for solving practical problems.   |
| C102.2                          | Apply differential calculus tools in solving various application problems.   |
| C102.3                          | Able to use differential calculus ideas on several variable functions.   |
| C102.4                          | Apply different methods of integration in solving practical problems.  |
| C102.5                          | Apply multiple integral ideas in solving areas, volumes and other practical problems.  |
| <b>Course Code</b>              | C103   |
| <b>Anna Univ Code:</b>          | PH3151   |
| <b>Course Name:</b>             | Engineering Physics  |
| <b>Course Outcome Number</b>    | <b>Course Outcome Statement</b>  |
| C103.1                          | Understand the importance of mechanics.  |
| C103.2                          | Express their knowledge in electromagnetic waves.  |
| C103.3                          | Demonstrate a strong foundational knowledge in oscillations, optics and lasers.  |
| C103.4                          | Understand the importance of quantum physics.  |
| C103.5                          | Comprehend and apply quantum mechanical principles towards the formation of energy bands.  |
| <b>Course Code</b>              | C104   |
| <b>Anna Univ Code:</b>          | CY3151   |
| <b>Course Name:</b>             | Engineering Chemistry  |
| <b>Course Outcome Number</b>    | <b>Course Outcome Statement</b>  |
| C104.1                          | To infer the quality of water from quality parameter data and propose suitable treatment methodologies to treat water                          |
| C104.2                          | To identify and apply basic concepts of surface chemistry in designing the synthesis of materials for engineering and technology applications. |
| C104.3                          | To apply the knowledge of phase rule and its composites for material selection requirements.   |
| C104.4                          | To recommend suitable fuels for engineering processes and applications.  |
| C104.5                          | To recognize different forms of energy resources and apply them for suitable applications in energy sectors.                                   |
| <b>Course Code</b>              | C105   |



  
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|                              |   |
|------------------------------|---|
| <b>Anna Univ Code:</b>       | <b>GE3151</b>   |
| <b>Course Name:</b>          | <b>Problem Solving and Python Programming</b>   |
| <b>Course Outcome Number</b> | <b>Course Outcome Statement</b>   |
| C105.1                       | Develop algorithmic solutions to simple computational problems.                                     |
| C105.2                       | Develop and execute simple Python programs.   |
| C105.3                       | Write simple Python programs using conditionals and looping for solving problems.                   |
| C105.4                       | Decompose a Python program into functions.  |
| C105.5                       | Represent compound data using Python lists, tuples, dictionaries etc.                               |
| C105.6                       | Read and write data from/to files in Python Programs.   |
| <b>Course Code</b>           | <b>C106</b>   |
| <b>Anna Univ Code:</b>       | <b>GE3171</b>   |
| <b>Course Name:</b>          | <b>Problem Solving and Python Programming Laboratory</b>  |
| <b>Course Outcome Number</b> | <b>Course Outcome Statement</b>   |
| C106.1                       | Develop algorithmic solutions to simple computational problems                                      |
| C106.2                       | Develop and execute simple Python programs  |
| C106.3                       | Implement programs in Python using conditionals and loops for solving problems.                     |
| C106.4                       | Deploy functions to decompose a Python program.   |
| C106.5                       | Process compound data using Python data structures.   |
| C106.6                       | Utilize Python packages in developing software applications.  |
| <b>Course Code</b>           | <b>C107</b>   |
| <b>Anna Univ Code:</b>       | <b>BS3171</b>   |
| <b>Course Name:</b>          | <b>Physics and Chemistry Laboratory</b>   |
| <b>Course Outcome Number</b> | <b>Course Outcome Statement</b>   |
| C107.1                       | Understand the functioning of various physics laboratory equipment.                                 |
| C107.2                       | Use graphical models to analyze laboratory data.  |
| C107.3                       | Use mathematical models as a medium for quantitative reasoning and describing physical reality.     |
| C107.4                       | Access, process and analyze scientific information.   |
| C107.5                       | Solve problems individually and collaboratively.  |
| C107.6                       | To analyse the quality of water samples with respect to their acidity, alkalinity, hardness and DO. |
| C107.7                       | To determine the amount of metal ions through volumetric and spectroscopic techniques               |
| C107.8                       | To analyse and determine the composition of alloys.   |
| C107.9                       | To learn simple method of synthesis of nanoparticles.   |
| C107.10                      | To quantitatively analyse the impurities in solution by electroanalytical techniques                |
| <b>Course Code</b>           | <b>C108</b>   |
| <b>Anna Univ Code:</b>       | <b>GE3172</b>   |
| <b>Course Name:</b>          | <b>English Laboratory</b>   |
| <b>Course Outcome Number</b> | <b>Course Outcome Statement</b>   |
| C108.1                       | To listen to and comprehend general as well as complex academic information                         |
| C108.2                       | To listen to and understand different points of view in a discussion                                |
| C108.3                       | To speak fluently and accurately in formal and informal communicative contexts                      |
| C108.4                       | To describe products and processes and explain their uses and purposes clearly and accurately       |
| C108.5                       | To express their opinions effectively in both formal and informal discussions                       |
| <b>Course Code</b>           | <b>C111</b>   |
| <b>Anna Univ Code:</b>       | <b>HS3252</b>   |
| <b>Course Name:</b>          | <b>Professional English - II</b>  |
| <b>Course Outcome Number</b> | <b>Course Outcome Statement</b>   |
| C111.1                       | To compare and contrast products and ideas in technical texts.                                      |
| C111.2                       | To identify and report cause and effects in events, industrial processes through technical texts    |



  
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|                              |   |
|------------------------------|---|
| C111.3                       | To analyse problems in order to arrive at feasible solutions and communicate them in the written format.  |
| C111.4                       | To present their ideas and opinions in a planned and logical manner   |
| C111.5                       | To draft effective resumes in the context of job search.  |
| <b>Course Code</b>           | <b>C112</b>   |
| <b>Anna Univ Code:</b>       | <b>MA3251</b>   |
| <b>Course Name:</b>          | <b>Statistics And Numerical Methods</b>   |
| <b>Course Outcome Number</b> | <b>Course Outcome Statement</b>   |
| C112.1                       | Apply the concept of testing of hypothesis for small and large samples in real life problems.   |
| C112.2                       | Apply the basic concepts of classifications of design of experiments in the field of agriculture.   |
| C112.3                       | Appreciate the numerical techniques of interpolation in various intervals and apply the numerical techniques of differentiation and integration for engineering problems. |
| C112.4                       | Understand the knowledge of various techniques and methods for solving first and second order ordinary differential equations.  |
| C112.5                       | Solve the partial and ordinary differential equations with initial and boundary conditions by using certain techniques with engineering applications.                     |
| <b>Course Code</b>           | <b>C113</b>   |
| <b>Anna Univ Code:</b>       | <b>PH3205</b>   |
| <b>Course Name:</b>          | <b>Applied Physics</b>  |
| <b>Course Outcome Number</b> | <b>Course Outcome Statement</b>   |
| C113.1                       | Familiarize with theories of electrical and thermal conduction in solids, basic quantum mechanics, and energy bands   |
| C113.2                       | Gain knowledge on semiconducting materials based on energy level diagrams, its types, temperature effect.   |
| C113.3                       | Understand the mechanisms of various types of polarization and about classification and properties of ferroelectric crystals  |
| C113.4                       | Learn the classification of magnetic materials, theory and applications of ferromagnetic materials and superconductors  |
| C113.5                       | Acquire knowledge on light waves, non-linear optical properties of materials and their applications   |
| <b>Course Code</b>           | <b>C114</b>   |
| <b>Anna Univ Code:</b>       | <b>BE3251</b>   |
| <b>Course Name:</b>          | <b>Basic Electrical and Electronics Engineering</b>   |
| <b>Course Outcome Number</b> | <b>Course Outcome Statement</b>   |
| C114.1                       | Compute the electric circuit parameters for simple problems   |
| C114.2                       | Explain the working principle and applications of electrical machines   |
| C114.3                       | Analyze the characteristics of analog electronic devices  |
| C114.4                       | Explain the basic concepts of digital electronics   |
| C114.5                       | Explain the operating principles of measuring instruments   |
| <b>Course Code</b>           | <b>C115</b>   |
| <b>Anna Univ Code:</b>       | <b>GE3251</b>   |
| <b>Course Name:</b>          | <b>Engineering Graphics</b>   |
| <b>Course Outcome Number</b> | <b>Course Outcome Statement</b>   |
| C115.1                       | Use BIS conventions and specifications for engineering drawing.   |
| C115.2                       | Construct the conic curves, involutes and cycloid.  |
| C115.3                       | Solve practical problems involving projection of lines.   |
| C115.4                       | Draw the orthographic, isometric and perspective projections of simple solids.  |
| C115.5                       | Draw the development of simple solids.  |
| <b>Course Code</b>           | <b>C116</b>   |
| <b>Anna Univ Code:</b>       | <b>GE3271</b>   |
| <b>Course Name:</b>          | <b>Engineering Practices Laboratory</b>   |



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| Course Outcome Number  | Course Outcome Statement  |
|------------------------|---|
| C116.1                 | Draw pipe line plan; lay and connect various pipe fittings used in common household plumbing work;  |
| C116.2                 | Saw; plan; make joints in wood materials used in common household wood work.  |
| C116.3                 | Wire various electrical joints in common household electrical wire work.  |
| C116.4                 | Weld various joints in steel plates using arc welding work; Machine various simple processes like turning, drilling, tapping in parts; Assemble simple mechanical assembly of common household equipments; Make a tray out of metal sheet using sheet metal work. |
| C116.5                 | Solder and test simple electronic circuits; Assemble and test simple electronic components on PCB.  |
| <b>Course Code</b>     | <b>C117</b>   |
| <b>Anna Univ Code:</b> | <b>BE3271</b>   |
| <b>Course Name:</b>    | <b>Basic Electrical and Electronics Engineering Laboratory</b>  |
| Course Outcome Number  | Course Outcome Statement  |
| C117.1                 | Use experimental methods to verify the Ohm's and Kirchhoff's Laws.  |
| C117.2                 | Analyze experimentally the load characteristics of electrical machines  |
| C117.3                 | Analyze the characteristics of basic electronic devices   |
| C117.4                 | Analyze the behavior of digital devices.  |
| C117.5                 | Use DSO to measure the various parameters   |
| <b>Course Code</b>     | <b>C118</b>   |
| <b>Anna Univ Code:</b> | <b>GE3272</b>   |
| <b>Course Name:</b>    | <b>Communication Laboratory</b>   |
| Course Outcome Number  | Course Outcome Statement  |
| C118.1                 | Speak effectively in group discussions held in a formal/semi formal contexts.   |
| C118.2                 | Discuss, analyse and present concepts and problems from various perspectives to arrive at suitable solutions  |
| C118.3                 | Write emails, letters and effective job applications.   |
| C118.4                 | Write critical reports to convey data and information with clarity and precision.   |
| C118.5                 | Give appropriate instructions and recommendations for safe execution of tasks.  |
| <b>Batch:</b>          | <b>2022-2026</b>  |
| <b>Academic Year:</b>  | <b>2023-24</b>  |
| <b>Course Code</b>     | <b>C201</b>   |
| <b>Anna Univ Code:</b> | <b>MA3351</b>   |
| <b>Course Name:</b>    | <b>Transform and Partial Differential Equations</b>   |
| Course Outcome Number  | Course Outcome Statement  |
| C201.1                 | Understand how to solve the given standard partial differential equations.  |
| C201.2                 | Solve differential equations using Fourier series analysis which plays a vital role in engineering applications.  |
| C201.3                 | Appreciate the physical significance of Fourier series techniques in solving one and two dimensional heat flow problems and one dimensional wave equations.   |
| C201.4                 | Understand the mathematical principles on transforms and partial differential equations would provide them the ability to formulate and solve some of the physical problems of engineering.   |
| C201.5                 | Use the effective mathematical tools for the solutions of partial differential equations by using Z transform techniques for discrete time systems.   |
| <b>Course Code</b>     | <b>C202</b>   |
| <b>Anna Univ Code:</b> | <b>AE3351</b>   |
| <b>Course Name:</b>    | <b>Aero Engineering Thermodynamics</b>  |
| Course Outcome Number  | Course Outcome Statement  |
| C202.1                 | Apply the laws of thermodynamics in real time problems.   |
| C202.2                 | Demonstrate the principal operation of piston engine and jet engines.   |
| C202.3                 | Demonstrate the efficiency of different air standard cycles.  |



  
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|                              |  |
|------------------------------|--|
| C202.4                       | Determine the heat transfer in different conditions of working medium  |
| C202.5                       | Solve heat transfer problems in complex systems.   |
| C202.6                       | Solve problems related to conduction convention and radiation  |
| <b>Course Code</b>           | <b>C203</b>  |
| <b>Anna Univ Code:</b>       | <b>AE3352</b>  |
| <b>Course Name:</b>          | <b>Solid Mechanics</b>   |
| <b>Course Outcome Number</b> | <b>Course Outcome Statement</b>  |
| C203.1                       | Clear understanding of mechanical behaviour of materials.  |
| C203.2                       | Knowledge of different structural members and load types.  |
| C203.3                       | Design members under axial loading.  |
| C203.4                       | Design member under torsion loading.   |
| C203.5                       | Calculate beams deflections.   |
| <b>Course Code</b>           | <b>C204</b>  |
| <b>Anna Univ Code:</b>       | <b>CE3391</b>  |
| <b>Course Name:</b>          | <b>Fluid Mechanics and Machinery</b>   |
| <b>Course Outcome Number</b> | <b>Course Outcome Statement</b>  |
| C204.1                       | Understand the properties and behaviour in static conditions. Also to understand the conservation laws applicable to fluids and its application through fluid kinematics and dynamics  |
| C204.2                       | Estimate losses in pipelines for both laminar and turbulent conditions and analysis of pipes connected in series and parallel. Also to understand the concept of boundary layer and its thickness on the flat solid surface. |
| C204.3                       | Formulate the relationship among the parameters involved in the given fluid phenomenon and to predict the performances of prototype by model studies   |
| C204.4                       | Explain the working principles of various turbines and design the various types of turbines.   |
| C204.5                       | Explain the working principles of centrifugal, reciprocating and rotary pumps and design the centrifugal and reciprocating pumps   |
| <b>Course Code</b>           | <b>C205</b>  |
| <b>Anna Univ Code:</b>       | <b>AE3301</b>  |
| <b>Course Name:</b>          | <b>Elements of Aeronautical Engineering</b>  |
| <b>Course Outcome Number</b> | <b>Course Outcome Statement</b>  |
| C205.1                       | Illustrate the history of aircraft & developments over the years.  |
| C205.2                       | Ability to identify the types & classifications of components and control systems.   |
| C205.3                       | Explain the basic concepts of flight & Physical properties of Atmosphere.  |
| C205.4                       | Identify the types of fuselage and constructions.  |
| C205.5                       | Distinguish the types of Engines and explain the principles of Rocket.   |
| <b>Course Code</b>           | <b>C206</b>  |
| <b>Anna Univ Code:</b>       | <b>AE3302</b>  |
| <b>Course Name:</b>          | <b>Aircraft Systems And Instrumentation</b>  |
| <b>Course Outcome Number</b> | <b>Course Outcome Statement</b>  |
| C206.1                       | Demonstrate the ability to design a various system using pneumatic and hydraulic components.   |
| C206.2                       | Keep abreast knowledge on various flight control system and its recent advancements.   |
| C206.3                       | Demonstrate the fundamental understanding of the operation of engine auxiliary systems.  |
| C206.4                       | To understand the various cabin comfort system used in aircraft modern display systems.  |
| C206.5                       | Describe the principle behind the operation of various vital parameter displays and its uses in effective conduct of the flight.   |
| <b>Course Code</b>           | <b>C207</b>  |
| <b>Anna Univ Code:</b>       | <b>CE3362</b>  |
| <b>Course Name:</b>          | <b>Fluid Mechanics &amp; Machinery Laboratory</b>  |
| <b>Course Outcome Number</b> | <b>Course Outcome Statement</b>  |



  
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|------------------------------|---|
| C207.1                       | Verify and apply Bernoulli equation for flow measurement like Orifice/Venturi meter.  |
| C207.2                       | Measure friction factor in pipes and compare with Moody diagram and verify momentum conservation law.   |
| C207.3                       | Determine the performance characteristics of Rotodynamic pumps.   |
| C207.4                       | Determine the performance characteristics of positive displacement pumps.   |
| C207.5                       | Determine the performance characteristics of turbines.  |
| <b>Course Code</b>           | <b>C208</b>   |
| <b>Anna Univ Code:</b>       | <b>AS3361</b>   |
| <b>Course Name:</b>          | <b>Thermodynamics And Strength Of Materials Lab</b>   |
| <b>Course Outcome Number</b> | <b>Course Outcome Statement</b>   |
| C208.1                       | Analyse the Hardness and Tensile strength of the given material   |
| C208.2                       | Examine the deformation and torsion strength of the given material  |
| C208.3                       | Analyse the compression and shear strength of given materials   |
| C208.4                       | Perform test on diesel/petrol engine  |
| C208.5                       | Analyze the heat transfer properties of solid and composite walls   |
| C208.6                       | Determine the properties of the fuels.  |
| <b>Course Code</b>           | <b>C209</b>   |
| <b>Anna Univ Code:</b>       | <b>GE3361</b>   |
| <b>Course Name:</b>          | <b>PROFESSIONAL DEVELOPMENT</b>   |
| <b>Course Outcome Number</b> | <b>Course Outcome Statement</b>   |
| C209.1                       | Use MS Word to create quality documents, by structuring and organizing content for their day to day technical and academic requirements                           |
| C209.2                       | Use MS EXCEL to perform data operations and analytics, record, retrieve data as per requirements and visualize data for ease of understanding                     |
| C209.3                       | Use MS PowerPoint to create high quality academic presentations by including common tables, charts, graphs, interlinking other elements, and using media objects. |
| <b>Course Code</b>           | <b>C211</b>   |
| <b>Anna Univ Code:</b>       | <b>MA3452</b>   |
| <b>Course Name:</b>          | <b>VECTOR CALCULUS AND COMPLEX FUNCTIONS</b>  |
| <b>Course Outcome Number</b> | <b>Course Outcome Statement</b>   |
| C211.1                       | Evaluate real and complex integrals using the Cauchy integral formula and the residue theorem.  |
| C211.2                       | Appreciate how complex methods can be used to prove some important theoretical results.   |
| C211.3                       | Evaluate line, surface and volume integrals in simple coordinate systems.   |
| C211.4                       | Calculate grad, div and curl in Cartesian and other simple coordinate systems, and establish identities connecting these quantities.                              |
| C211.5                       | Use Gauss, Stokes and Greens theorems to simplify calculations of integrals and prove simple results.   |
| <b>Course Code</b>           | <b>C212</b>   |
| <b>Anna Univ Code:</b>       | <b>AE3401</b>   |
| <b>Course Name:</b>          | <b>AERODYNAMICS I</b>   |
| <b>Course Outcome Number</b> | <b>Course Outcome Statement</b>   |
| C212.1                       | Apply the basics physics for low-speed flows.   |
| C212.2                       | Apply the concept of 2D, inviscid incompressible flows in low-speed aerodynamics.   |
| C212.3                       | Solve lift generation problems using aerofoil theories.   |
| C212.4                       | Make use of lifting line theory for solving flow properties.  |
| C212.5                       | Solve the boundary layer equations for a steady, two-dimensional incompressible flow  |
| C212.6                       | Solve the properties of turbulent flow.   |
| <b>Course Code</b>           | <b>C213</b>   |
| <b>Anna Univ Code:</b>       | <b>AE3402</b>   |
| <b>Course Name:</b>          | <b>AIR BREATHING PROPULSION</b>   |



  
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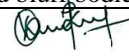
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| Course Outcome Number  | Course Outcome Statement  |
|------------------------|---|
| C213.1                 | To be able to apply control volume and momentum equation to estimate the forces produced by aircraft propulsion systems   |
| C213.2                 | To be able to describe the principal figures of merit for aircraft engine   |
| C213.3                 | To be able to describe the principal design parameters and constraints that set the performance of gas turbine engines.   |
| C213.4                 | To apply ideal and actual cycle analysis to a gas turbine engine to relate thrust and fuel burn to component performance parameters.  |
| C213.5                 | Understanding the workings of multistage compressor or turbine, and to be able to use velocity triangles and the Euler Turbine Equation to estimate the performance of a compressor or turbine stage. |
| <b>Course Code</b>     | <b>C214</b>   |
| <b>Anna Univ Code:</b> | <b>AE3491</b>   |
| <b>Course Name:</b>    | <b>MECHANICS OF MACHINES</b>  |
| Course Outcome Number  | Course Outcome Statement  |
| C214.1                 | Design the linkages and the cam mechanisms for specified output motions   |
| C214.2                 | Determine the gear parameters of toothed gearing and speeds of gear trains in various applications.   |
| C214.3                 | Evaluate the frictional torque in screw threads, clutches, brakes and belt drives.  |
| C214.4                 | Determine the forces on members of mechanisms during static and dynamic equilibrium conditions.   |
| C214.5                 | Determine the balancing masses on rotating machineries and the natural frequencies of free and forced vibratory systems   |
| <b>Course Code</b>     | <b>C215</b>   |
| <b>Anna Univ Code:</b> | <b>AE3403</b>   |
| <b>Course Name:</b>    | <b>AIRCRAFT STRUCTURES I</b>  |
| Course Outcome Number  | Course Outcome Statement  |
| C215.1                 | Explain the method to analyse the linear static analysis of determinate and indeterminate aircraft structural components  |
| C215.2                 | Apply the energy methods to determine the reactions of structure  |
| C215.3                 | Analyse the column structure with different end condition.  |
| C215.4                 | Design the component using different theories of failure.   |
| C215.5                 | Create a structure to carry the given load by considering effect of induced stresses  |
| <b>Course Code</b>     | <b>C216</b>   |
| <b>Anna Univ Code:</b> | <b>GE3451</b>   |
| <b>Course Name:</b>    | <b>ENVIRONMENTAL SCIENCE AND SUSTAINABILITY</b>   |
| Course Outcome Number  | Course Outcome Statement  |
| C216.1                 | To recognize and understand the functions of environment, ecosystems and biodiversity and their conservation.   |
| C216.2                 | To identify the causes, effects of environmental pollution and natural disasters and contribute to the preventive measures in the society.  |
| C216.3                 | To identify and apply the understanding of renewable and non-renewable resources and contribute to the sustainable measures to preserve them for future generations.                                  |
| C216.4                 | To recognize the different goals of sustainable development and apply them for suitable technological advancement and societal development.   |
| C216.5                 | To demonstrate the knowledge of sustainability practices and identify green materials, energy cycles and the role of sustainable urbanization.  |
| <b>Course Code</b>     | <b>C217</b>   |
| <b>Anna Univ Code:</b> | <b>AE3411</b>   |
| <b>Course Name:</b>    | <b>AERODYNAMICS LABORATORY</b>  |
| Course Outcome Number  | Course Outcome Statement  |
| C217.1                 | Calculate the aerodynamic forces and moments experienced by airfoils, wings and bluff bodies.   |



  
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|                              |  |
|------------------------------|--|
| C217.2                       | Evaluate the performance of thin airfoils with the effects of angle of attack and camber by considering thin aerofoil theory                                   |
| C217.3                       | Measure flow velocity , lift and drag by use of wind tunnel instrument and to Visualize the flow by water flow and smoke methods.                              |
| <b>Course Code</b>           | <b>C218</b>  |
| <b>Anna Univ Code:</b>       | <b>AE3412</b>  |
| <b>Course Name:</b>          | <b>PROPULSION LABORATORY</b>   |
| <b>Course Outcome Number</b> | <b>Course Outcome Statement</b>  |
| C218.1                       | Identify components and information of piston and gas turbine engine.  |
| C218.2                       | Analyze the behaviour of flow through ducts and jet engine components to distinguish subsonic and supersonic flow characteristics.                             |
| C218.3                       | Visualize flow phenomenon in supersonic flow.  |
| <b>Batch:</b>                | <b>2021-2025</b>   |
| <b>Academic Year:</b>        | <b>2023-24</b>   |
| <b>Course Code</b>           | <b>C301</b>  |
| <b>Anna Univ Code:</b>       | <b>AE3501</b>  |
| <b>Course Name:</b>          | <b>AIRCRAFT STRUCTURES II</b>  |
| <b>Course Outcome Number</b> | <b>Course Outcome Statement</b>  |
| C301.1                       | Analyse and investigate the normal stress variation on unsymmetrical sections subjected to bending moments.  |
| C301.2                       | Determine the shear flow variation in thin walled open sections with skin effective and ineffective in bending. Also to find out the shear centre of sections. |
| C301.3                       | Calculate the shear flow variation in single cell and multicell tubes subjected to shear and torque loads  |
| C301.4                       | Investigate the behaviour of buckling of simply supported plates and also to know the effective width of sheet stringers combination.                          |
| C301.5                       | Analyse the shear and bending moment variation of aircraft wing and fuselage and also to know the characteristics of thin webbed beams.                        |
| <b>Course Code</b>           | <b>C302</b>  |
| <b>Anna Univ Code:</b>       | <b>AE3502</b>  |
| <b>Course Name:</b>          | <b>AERODYNAMICS II</b>   |
| <b>Course Outcome Number</b> | <b>Course Outcome Statement</b>  |
| C302.1                       | Calculate the compressible flow through a duct of varying cross section.   |
| C302.2                       | Use quasi one-dimensional theory to analyse compressible flow problems.  |
| C302.3                       | Estimate fluid properties in Rayleigh and Fanno type flows.  |
| C302.4                       | Estimate the properties across normal and oblique shock waves.   |
| C302.5                       | Understand the knowledge of various techniques and methods for solving differential equations of motion for steady compressible flows.                         |
| C302.6                       | Predict the properties of transonic flows.   |
| <b>Course Code</b>           | <b>C303</b>  |
| <b>Anna Univ Code:</b>       | <b>CAE345</b>  |
| <b>Course Name:</b>          | <b>COMPOSITE MATERIALS AND STRUCTURES (PE-I)</b>   |
| <b>Course Outcome Number</b> | <b>Course Outcome Statement</b>  |
| C303.1                       | Apply the micromechanics for the analysis of composite materials   |
| C303.2                       | Apply the macromechanics for the analysis of composite materials   |
| C303.3                       | Experiment with the laminated composites for various loading cases   |
| C303.4                       | Demonstrate the manufacturing of composites  |
| C303.5                       | Explain the applications and uses of composites in various fields  |
| <b>Course Code</b>           | <b>C304</b>  |
| <b>Anna Univ Code:</b>       | <b>CAE350</b>  |
| <b>Course Name:</b>          | <b>NAVIGATION AND COMMUNICATION SYSTEM (PE-II)</b>   |



  
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| Course Outcome Number  | Course Outcome Statement   |
|------------------------|--|
| C304.1                 | Students will understand the advanced concepts of Aircraft Navigation  |
| C304.2                 | To provide the necessary mathematical knowledge those are needed in modeling the navigation process and methods.   |
| C304.3                 | The students will have an exposure on various Navigation systems such as Inertial Measurement systems, Radio Navigation Systems, Satellite Navigation – GPS.               |
| C304.4                 | Landing aids and will be able to deploy these skills effectively in the analysis and understanding of navigation systems in an aircraft.                                   |
| C304.5                 | Learn and apply the principles of Radar and its related components.  |
| <b>Course Code</b>     | <b>C305</b>  |
| <b>Anna Univ Code:</b> | <b>AE3002</b>  |
| <b>Course Name:</b>    | <b>AIRCRAFT GENERAL ENGINEERING AND MAINTENANCE PRACTICES (PE-III)</b>   |
| Course Outcome Number  | Course Outcome Statement   |
| C305.1                 | Explain the various ground support system for aircraft operations  |
| C305.2                 | Illustrate the ground servicing of critical aircraft systems   |
| C305.3                 | Inspect the aircraft by considering the FAA airworthiness regulations and the check list.  |
| C305.4                 | Apply the maintenance procedures to the aircraft subsystem and equipment's   |
| C305.5                 | Explain the specifications standards of aircraft hardware systems and materials.   |
| <b>Course Code</b>     | <b>C306</b>  |
| <b>Anna Univ Code:</b> | <b>AE3511</b>  |
| <b>Course Name:</b>    | <b>AIRCRAFT STRUCTURES LABORATORY</b>  |
| Course Outcome Number  | Course Outcome Statement   |
| C306.1                 | Evaluate the effects of bending in the aircraft structures.  |
| C306.2                 | Explain the shear centre of the aircraft structures.   |
| C306.3                 | Compare the photo-elastic techniques on the aircraft structures.   |
| C306.4                 | Justify the experimental findings in clear oral and concise report.  |
| <b>Course Code</b>     | <b>C307</b>  |
| <b>Anna Univ Code:</b> | <b>AE3581</b>  |
| <b>Course Name:</b>    | <b>CAD LABORATORY</b>  |
| Course Outcome Number  | Course Outcome Statement   |
| C307.1                 | Compare commercial design software and understand its structure.   |
| C307.2                 | Deduct the aircraft and spacecraft components and solve engineering problems.  |
| C307.3                 | Explain a formal technical report and convey engineering specifications.   |
| <b>Course Code</b>     | <b>C311</b>  |
| <b>Anna Univ Code:</b> | <b>AE3691</b>  |
| <b>Course Name:</b>    | <b>FLIGHT DYNAMICS</b>   |
| Course Outcome Number  | Course Outcome Statement   |
| C311.1                 | Build an understanding about forces & moments of an aircraft, types of drag, drag polar, and performance in level flight   |
| C311.2                 | Develop an understanding about basic maneuvering performance (range, endurance, climbing, gliding & turning flight), v-n diagram and load factor.                          |
| C311.3                 | Build knowledge about degrees of stability, stick fixed & stick free stability, stability criteria, effect of fuselage & CG location, stick forces, aerodynamic balancing. |
| C311.4                 | Explanation about lateral control, rolling & yawing moments, static directional stability, rudder & aileron control requirements and rudder lock.                          |
| C311.5                 | Illustration about dynamic longitudinal stability, stability derivatives, modes & stability criterion, lateral and directional dynamic stability                           |
| <b>Course Code</b>     | <b>C312</b>  |
| <b>Anna Univ Code:</b> | <b>AE3601</b>  |
| <b>Course Name:</b>    | <b>AIRCRAFT DESIGN</b>   |



  
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| Course Outcome Number  | Course Outcome Statement   |
|------------------------|--|
| C312.1                 | Explain the preliminary design of an aircraft starting from data collection to satisfy mission specifications.   |
| C312.2                 | Apply the procedure involved in weight estimation, power plant selection, estimation of the performance parameters, stability aspects, design of structural components of the airplane, stability of structural elements, estimation of critical loads etc |
| C312.3                 | Estimate of geometric and design parameters of an airplane and to initiate the design of a system, component, or process to meet requirements for aircraft systems;  |
| C312.4                 | Design the aircraft to a level of sufficient detail to demonstrate that it satisfies given mission specifications  |
| C312.5                 | Create a Work environment involving the integration of engineering practices in such subjects as aerodynamics, structures, propulsion, and flight mechanics.   |
| <b>Course Code</b>     | <b>C313</b>  |
| <b>Anna Univ Code:</b> | <b>CAE346</b>  |
| <b>Course Name:</b>    | <b>AEROSPACE MATERIALS (PE-IV)</b>   |
| Course Outcome Number  | Course Outcome Statement   |
| C313.1                 | Explain the advanced concepts of aerospace materials.  |
| C313.2                 | Describe the necessary mathematical knowledge that are needed in understanding their significance and operation.   |
| C313.3                 | Explain various topics such as elements of aerospace materials, mechanical behaviour of materials, ceramics and composites.  |
| C313.4                 | Deploy the skills effectively in the understanding of aerospace materials  |
| C313.5                 | Characterize high temperature materials  |
| <b>Course Code</b>     | <b>C314</b>  |
| <b>Anna Univ Code:</b> | <b>CAE347</b>  |
| <b>Course Name:</b>    | <b>AVIONICS (PE-V)</b>   |
| Course Outcome Number  | Course Outcome Statement   |
| C314.1                 | Built Digital avionics architecture.   |
| C314.2                 | Design Navigation system.  |
| C314.3                 | Integrate avionics systems using data buses.   |
| C314.4                 | Analyze the performance of various cockpit display technologies.   |
| C314.5                 | Design autopilot for small aircrafts using MATLAB.   |
| <b>Course Code</b>     | <b>C315</b>  |
| <b>Anna Univ Code:</b> | <b>CMF338</b>  |
| <b>Course Name:</b>    | <b>NON DESTRUCTIVE TESTING AND EVALUATION (PE-VI)</b>  |
| Course Outcome Number  | Course Outcome Statement   |
| C315.1                 | Discuss the basics of NDT and its industrial standards   |
| C315.2                 | Acquire knowledge on the concept and procedure for liquid and magnetic penetrant testing.  |
| C315.3                 | Interpret the given mechanical components to inspect using radiograph testing methods techniques   |
| C315.4                 | Apply ultrasonic techniques based on materials and its application.  |
| C315.5                 | Describe the applications of electrical and other NDT methods.   |
| <b>Course Code</b>     | <b>C316</b>  |
| <b>Anna Univ Code:</b> | <b>MX3089</b>  |
| <b>Course Name:</b>    | <b>INDUSTRIAL SAFETY (MC-II)</b>   |
| Course Outcome Number  | Course Outcome Statement   |
| C316.1                 | Understand the basic concept of safety.  |
| C316.2                 | Obtain knowledge of Statutory Regulations and standards.   |
| C316.3                 | Know about the safety Activities of the Working Place  |
| C316.4                 | Analyze on the impact of Occupational Exposures and their Remedies   |
| C316.5                 | Obtain knowledge of Risk Assessment Techniques.  |



  
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|                              |   |
|------------------------------|---|
| <b>Course Code</b>           | <b>C317</b>   |
| <b>Anna Univ Code:</b>       | <b>AE3611</b>   |
| <b>Course Name:</b>          | <b>AIRCRAFT DESIGN PROJECT</b>  |
| <b>Course Outcome Number</b> | <b>Course Outcome Statement</b>   |
| C317.1                       | Evaluate the weight estimation, drag estimation and selection of design parameters of the aircraft  |
| C317.2                       | Estimate the performance of the aircraft design.  |
| C317.3                       | Design the aircraft wings, fuselage, loading gears etc., in structural point of view.   |
| <b>Course Code</b>           | <b>C318</b>   |
| <b>Anna Univ Code:</b>       | <b>AE3612</b>   |
| <b>Course Name:</b>          | <b>FLIGHT TRAINING/ FLIGHT SIMULATION LABORATORY</b>  |
| <b>Course Outcome Number</b> | <b>Course Outcome Statement</b>   |
| C318.1                       | Acquire flying experience on a trainer aircraft.  |
| C318.2                       | Determine the C.G position of an airplane.  |
| C318.3                       | Calculate the performance parameters such as rate of climb, climb angle etc.  |
| C318.4                       | Compute the stability parameters such as stick fixed neutral point, stick free neutral point and control parameters such as stick fixed manoeuvre point, stickfree manoeuvre point. |
| C318.5                       | Get practical experience of Dutch roll and phugoid motion.  |
| <b>Batch:</b>                | <b>2020-2024</b>  |
| <b>Academic Year:</b>        | <b>2023-2024</b>  |
| <b>Course Code</b>           | <b>C401</b>   |
| <b>Anna Univ Code:</b>       | <b>GE8077</b>   |
| <b>Course Name:</b>          | <b>TOTAL QUALITY MANAGEMENT</b>   |
| <b>Course Outcome Number</b> | <b>Course Outcome Statement</b>   |
| C401.1                       | The student would be able to apply the tools and techniques of quality management to manufacturing and services processes.  |
| <b>Course Code</b>           | <b>C402</b>   |
| <b>Anna Univ Code:</b>       | <b>AE8751</b>   |
| <b>Course Name:</b>          | <b>AVIONICS</b>   |
| <b>Course Outcome Number</b> | <b>Course Outcome Statement</b>   |
| C402.1                       | Ability to built Digital avionics architecture  |
| C402.2                       | Ability to Design Navigation system   |
| C402.3                       | Ability to design and perform analysis on air system  |
| C402.4                       | Integrate avionics systems using data buses.  |
| C402.5                       | Analyze the performance of various cockpit display technologies.  |
| C402.6                       | Design autopilot for small aircrafts using MATLAB   |
| <b>Course Code</b>           | <b>C403</b>   |
| <b>Anna Univ Code:</b>       | <b>ME8093</b>   |
| <b>Course Name:</b>          | <b>COMPUTATIONAL FLUID DYNAMICS</b>   |
| <b>Course Outcome Number</b> | <b>Course Outcome Statement</b>   |
| C403.1                       | Derive the governing equations and boundary conditions for Fluid dynamics   |
| C403.2                       | Analyze Finite difference and Finite volume method for Diffusion  |
| C403.3                       | Analyze Finite volume method for Convective diffusion   |
| C403.4                       | Analyze Flow field problems   |
| C403.5                       | Explain the Turbulence models and Mesh generation techniques  |
| <b>Course Code</b>           | <b>C404</b>   |
| <b>Anna Univ Code:</b>       | <b>AE8009</b>   |
| <b>Course Name:</b>          | <b>AIRFRAME MAINTENANCE AND REPAIR(PE-III)</b>  |
| <b>Course Outcome Number</b> | <b>Course Outcome Statement</b>   |



  
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|                              |  |
|------------------------------|--|
| C404.1                       | Identify and apply the principles of function and safe operation to aircraft as per FAA  |
| C404.2                       | Understand general airframe structural repairs, the structural repair manual and structural control programme  |
| C404.3                       | Understand the nature of airframe structural component inspection, corrosion repair and non-destructive inspection   |
| C404.4                       | Understand aircraft component disassembly, reassembly and troubleshooting  |
| C404.5                       | Know about aircraft adhesives, sealants, bonding techniques, repair procedures and the types and detection of defects in aircraft composite materials  |
| C404.6                       | Identify, install, inspect, fabricate and repair aircraft sheet metal and synthetic, material structures   |
| <b>Course Code</b>           | <b>C405</b>  |
| <b>Anna Univ Code:</b>       | <b>AE8007</b>  |
| <b>Course Name:</b>          | <b>AIRCRAFT MATERIALS(PE-II)</b>   |
| <b>Course Outcome Number</b> | <b>Course Outcome Statement</b>  |
| C405.1                       | Role of corrosion and heat treatment processes of aircraft materials   |
| C405.2                       | Knowledge in usage of composite materials in aircraft component design.  |
| C405.3                       | Exposure to high temperature materials for space applications  |
| C405.4                       | Provide the necessary mathematical knowledge that are needed in understanding their significance and operation.  |
| <b>Course Code</b>           | <b>C406</b>  |
| <b>Anna Univ Code:</b>       | <b>AE8711</b>  |
| <b>Course Name:</b>          | <b>AIRCRAFT SYSTEMS LABORATORY</b>   |
| <b>Course Outcome Number</b> | <b>Course Outcome Statement</b>  |
| C406.1                       | Ability to understand to procedure involved in maintenance of various air frame systems  |
| <b>Course Code</b>           | <b>C407</b>  |
| <b>Anna Univ Code:</b>       | <b>AE8712</b>  |
| <b>Course Name:</b>          | <b>FLIGHT INTEGRATION SYSTEM AND CONTROL LABORATORY</b>  |
| <b>Course Outcome Number</b> | <b>Course Outcome Statement</b>  |
| C407.1                       | Ability to understand digital electronics circuits   |
| C407.2                       | Ability to use microprocessor in Flight control  |
| C407.3                       | Ability to perform stability analysis  |
| <b>Course Code</b>           | <b>C408</b>  |
| <b>Anna Univ Code:</b>       | <b>AE8713</b>  |
| <b>Course Name:</b>          | <b>AIRCRAFT DESIGN PROJECT-II</b>  |
| <b>Course Outcome Number</b> | <b>Course Outcome Statement</b>  |
| C408.1                       | On completion of Aircraft design project II the students will be in a position to design aircraft wings, fuselage, landing gears etc., and also able to angle the design in terms of structural point of view. |
| <b>Course Code</b>           | <b>C411</b>  |
| <b>Anna Univ Code:</b>       | <b>AE8012</b>  |
| <b>Course Name:</b>          | <b>WIND TUNNEL TECHNIQUES (PE-IV)</b>  |
| <b>Course Outcome Number</b> | <b>Course Outcome Statement</b>  |
| C411.1                       | Understand the working principle of Blow down, In draft tunnels and their specifications   |
| C411.2                       | Knowledge about horizontal buoyancy, flow angularities while carrying out calibration  |
| C411.3                       | Understand the working principle of component axis balance and internal balances   |
| C411.4                       | Ability to carry out the smoke and tuft flow visualisation procedures in WT testing  |
| <b>Course Code</b>           | <b>C412</b>  |
| <b>Anna Univ Code:</b>       | <b>PR8491</b>  |
| <b>Course Name:</b>          | <b>COMPUTER INTEGRETED MANUFACTURING (PE-V)</b>  |
| <b>Course Outcome Number</b> | <b>Course Outcome Statement</b>  |



  
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|                              |   |
|------------------------------|---|
| C412.1                       | Describe about the classical production system, the components of CIM   |
| C412.2                       | Explain the concept of Computer Aided Process Planning (CAPP) and Material Requirements Planning (MRP)  |
| C412.3                       | Illustrate the cellular manufacturing using Rank order, Clustering and Hollier method   |
| C412.4                       | Explain Flexible Manufacturing system and applications of Automated Guided Vehicles in the implementation of CIM  |
| C412.5                       | Describe the configurations of Industrial Robots, and their part programming  |
| C412.6                       | Understand the use of computers in various Manufacturing support systems.   |
| <b>Course Code</b>           | <b>C413</b>   |
| <b>Anna Univ Code:</b>       | <b>AE8811</b>   |
| <b>Course Name:</b>          | <b>Project Work</b>   |
| <b>Course Outcome Number</b> | <b>Course Outcome Statement</b>   |
| C413.1                       | On Completion of the project work students will be in a position to take up any challenging practical problems and find solution by formulating proper methodology. |



  
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