### SEMESTER III
(Applicable to the students admitted from the Academic year 2008 – 2009 onwards)

<table>
<thead>
<tr>
<th>CODE NO.</th>
<th>COURSE TITLE</th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA 2211</td>
<td>Transforms And Partial Differential Equations</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>AE 2201</td>
<td>Mechanics of Machines</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>AE 2202</td>
<td>Aero Engineering Thermodynamics</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>ME 2204</td>
<td>Fluid Mechanics and Machinery</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>AE 2203</td>
<td>SOLID MECHANICS*</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>AE 2204</td>
<td>Elements of Aeronautics</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

** Practical

<table>
<thead>
<tr>
<th>CODE NO.</th>
<th>COURSE TITLE</th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>AE 2206</td>
<td>STRENGTH OF MATERIALS LAB*</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>ME 2208</td>
<td>Fluid Mechanics and Machinery Lab</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>AE 2207</td>
<td>Thermodynamics Lab</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

**'Production Technology’ and ‘Manufacturing Technology Lab’ which was earlier in the semester 3rd of the curriculum is now moved over to the semester 4 of the curriculum.

### SEMESTER IV
(Applicable to the students admitted from the Academic year 2008 – 2009 onwards)

<table>
<thead>
<tr>
<th>CODE NO.</th>
<th>COURSE TITLE</th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA 2264</td>
<td>Numerical Methods</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>AE 2251</td>
<td>Aerodynamics - I</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>AE 2252</td>
<td>Aircraft Systems and Instruments</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>AE 2253</td>
<td>PRODUCTION TECHNOLOGY**</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>AE 2254</td>
<td>Aircraft Structures - I</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>AE 2255</td>
<td>Propulsion-</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

**PRACTICAL

<table>
<thead>
<tr>
<th>CODE NO.</th>
<th>COURSE TITLE</th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>AE 2257</td>
<td>Aircraft Structures Lab - I</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>AE 2258</td>
<td>Aerodynamics Lab</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>AE 2259</td>
<td>Aircraft Component Drawing</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>AT 2206</td>
<td>MANUFACTURING TECHNOLOGY LAB**</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

*‘Solid Mechanics’ and ‘The strength of materials lab’ which was earlier in the 4th semester curriculum is now moved over to the semester 3 of the curriculum.
OBJECTIVES
The course objective is to develop the skills of the students in the areas of Transforms and Partial Differential Equations. This will be necessary for their effective studies in a large number of engineering subjects like heat conduction, communication systems, electro-optics and electromagnetic theory. The course will also serve as a prerequisite for post graduate and specialized studies and research.

1. **FOURIER SERIES**
   9 + 3

2. **FOURIER TRANSFORMS**
   9 + 3

3. **PARTIAL DIFFERENTIAL EQUATIONS**
   9 +3

4. **APPLICATIONS OF PARTIAL DIFFERENTIAL EQUATIONS**
   9 + 3
   Solutions of one dimensional wave equation – One dimensional equation of heat conduction – Steady state solution of two-dimensional equation of heat conduction (Insulated edges excluded) – Fourier series solutions in cartesian coordinates.

5. **Z -TRANSFORMS AND DIFFERENCE EQUATIONS**
   9 + 3

Lectures : 45  Tutorials : 15  Total : 60
TEXT BOOKS


REFERENCES

OBJECTIVE

To expose the students the different mechanisms, their method of working, Forces involved and consequent vibration during working

1. MECHANISMS


2. FRICTION

- Friction in screw and nut – Pivot and collar – Thrust bearing – Plate and disc clutches – Belt (flat and V) and rope drives. Ratio of tensions – Effect of centrifugal and initial tension – Condition for maximum power transmission – Open and crossed belt drive.

3. GEARING AND CAMS

- Gear profile and geometry – Nomenclature of spur and helical gears – Gear trains: Simple, compound gear trains and epicyclic gear trains - Determination of speed and torque - Cams – Types of cams – Design of profiles – Knife edged, flat faced and roller ended followers with and without offsets for various types of follower motions

4. BALANCING

- Static and dynamic balancing – Single and several masses in different planes – Balancing of reciprocating masses- primary balancing and concepts of secondary balancing – Single and multi cylinder engines (Inline) – Balancing of radial V engine – direct and reverse crank method

5. VIBRATION


TOTAL : 60

TEXT BOOKS


REFERENCES

OBJECTIVE
To give a brief background of application of various laws of thermodynamics and its application in heat transfer, refrigeration and air-conditioning, jet propulsion system.

1. BASIC THERMODYNAMICS 15+3

2. AIR CYCLES 5+3
Otto, Diesel, Dual combustion and Brayton combustion cycles – Air standard efficiency - Mean effective pressure – Actual and theoretical PV diagrams of two stroke and four stroke IC Engines.

3. THERMODYNAMICS OF ONE DIMENSIONAL FLUID FLOW 12+3
Application of continuity, momentum and energy equations- Rankine cycle - Isentropic flow of ideal gases through nozzles - Simple jet propulsion system - Thrust rocket motor – Specific impulse.

4. REFRIGERATION AND AIR CONDITIONING 6+3

5. AIR COMPRESSORS 7+3
Classification and working principle of compressors (Descriptive Treatment). Isothermal and Isentropic efficiency of air compressors.

TOTAL : 60

TEXT BOOKS

REFERENCES
ME 2204  FLUID MECHANICS AND MACHINERY  3 1 0 4
(Common to Aeronautical, Mechanical, Automobile & Production)

OBJECTIVES:
The student is introduced to the mechanics of fluids through a thorough understanding of the properties of the fluids. The dynamics of fluids is introduced through the control volume approach which gives an integrated understanding of the transport of mass, momentum and energy. The applications of the conservation laws to flow through pipes and hydraulics machines are studied.

I. INTRODUCTION
12
Units & Dimensions. Properties of fluids – Specific gravity, specific weight, viscosity, compressibility, vapour pressure and gas laws – capillarity and surface tension. Flow characteristics: concepts of system and control volume. Application of control volume to continuity equation, energy equation, momentum equation and moment of momentum equation.

II. FLOW THROUGH CIRCULAR CONDUITS
12

III. DIMENSIONAL ANALYSIS
9
Dimension and units: Buckingham’s П theorem. Discussion on dimensionless parameters. Models and similitude. Applications of dimensionless parameters.

IV. ROTO DYNAMIC MACHINES
16

V. POSITIVE DISPLACEMENT MACHINES
11

TOTAL 60

TEXT BOOKS:

REFERENCES:
OBJECTIVE
To give brief descriptions on the behaviour of materials due to axial, bending and torsional and combined loads.

1. BASICS AND AXIAL LOADING


2. STRESSES IN BEAMS

Shear force and bending moment diagrams for simply supported and cantilever beams-Bending stresses in straight beams-Shear stresses in bending of beams with rectangular, I & T etc cross sections-beams of uniform strength

3. DEFLECTION OF BEAMS

Double integration method – McCauley’s method - Area moment method – Conjugate beam method-Principle of super position-Castigliano’s theorem and its application

4. TORSION

Torsion of circular shafts - shear stresses and twist in solid and hollow circular shafts – closely coiled helical springs.

5. BI AXIAL STRESSES

Stresses in thin circular cylinder and spherical shell under internal pressure – volumetric Strain. Combined loading – Principal Stresses and maximum Shear Stresses - Analytical and Graphical methods.

TOTAL : 60

TEXT BOOKS

REFERENCES
TEXT BOOK:


REFERENCES:

5. Serope Kalpajian, Steven R. Schimid, Manuyfacturing Engineering and Technology, Pearson Education, Inc.2002 (second Indian Reprint)
OBJECTIVE
To introduce the basic concepts of aerospace engineering and the current developments in the field.

1. AIRCRAFT CONFIGURATIONS 6
Brief History-Components of an airplane and their functions. Different types of flight vehicles, classifications. Basic instruments for flying,

2. INTRODUCTION TO PRINCIPLES OF FLIGHT 8
Physical properties and structure of the atmosphere, Temperature, pressure and altitude relationships, Evolution of lift, drag and moment. Different types of drag.

3. INTRODUCTION TO AERODYNAMICS 9
Aerodynamic forces on aircraft – classification of NACA aerofoils, aspect ratio, wing loading, Mach number, centre of pressure and aerodynamic centre-aerofoil characteristics-lift, drag curves.

4. INTRODUCTION TO AIRPLANE STRUCTURES AND MATERIALS 12

5. POWER PLANTS USED IN AIRPLANES 10
Basic ideas about piston, turboprop and jet engines, Use of propeller and jets for thrust production., Principles of operation of rocket, types of rockets

TOTAL : 45

TEXT BOOKS

REFERENCE
OBJECTIVE
To develop the knowledge in testing the materials for hardness, fatigue, impact, tension and torsion.

LIST OF EXPERIMENTS
Brinell Hardness test
Rockwell Hardness test
Tension test
Torsion test
Izod Impact test
Charpy Impact test
Reverse plate bending Fatigue test
Rotating Beam Fatigue test
Testing of springs
Block Compression Test

TOTAL : 45 PERIODS

LIST OF EQUIPMENTS
(for a batch of 30 students)

<table>
<thead>
<tr>
<th>Sl.No</th>
<th>Details of Equipments</th>
<th>Qty Required</th>
<th>For Experiments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Hardness Testing Machine</td>
<td>1</td>
<td>1, 2</td>
</tr>
<tr>
<td>2.</td>
<td>Universal Testing Machine</td>
<td>1</td>
<td>1, 2, 3, 9, 10</td>
</tr>
<tr>
<td>3.</td>
<td>Impact Testing Machine</td>
<td>1</td>
<td>5, 6</td>
</tr>
<tr>
<td>4.</td>
<td>Fatigue tester- Rotating Beam</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>5.</td>
<td>Fatigue tester –Reverse plate bending</td>
<td>1</td>
<td>7</td>
</tr>
</tbody>
</table>
ME2208 FLUID MECHANICS AND MACHINERY LABORATORY 0 0 3 2
(Common to Aeronautical, Automobile, Mech & Prod)

OBJECTIVE
To study the flow measurement and the performance of fluid machinery

LIST OF EXPERIMENTS
1. Calibration of venturimeter
2. Pressure measurement with pitot static tube
3. Determination of pipe flow losses.
4. Verification of Bernoulli’s theorem
5. Flow visualization by Hele shaw apparatus
6. Performance test on centrifugal pumps
7. Performance test on reciprocating pumps
8. Performance test on piston wheel turbine
9. Performance test on Francis turbine
10. Determination of Viscosity of a Fluid

TOTAL : 45 PERIODS

LIST OF EQUIPMENTS
(for a batch of 30 students)

<table>
<thead>
<tr>
<th>Sl.No</th>
<th>Details of Equipments</th>
<th>Qty Req.</th>
<th>Experiment No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Venturimeter setup</td>
<td>1</td>
<td>1,3</td>
</tr>
<tr>
<td>2.</td>
<td>Pipe friction set up</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>3.</td>
<td>Pitot tube set up</td>
<td>1</td>
<td>2,4</td>
</tr>
<tr>
<td>4.</td>
<td>Jet pump</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>5.</td>
<td>Submersible pump</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>6.</td>
<td>Centrifugal pump</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>7.</td>
<td>Reciprocating pump</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>8.</td>
<td>Pelton wheel turbine and Francis turbine</td>
<td>1</td>
<td>8,9</td>
</tr>
<tr>
<td>9.</td>
<td>Viscosity Meter</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>10.</td>
<td>Hele-shaw apparatus</td>
<td>1</td>
<td>5</td>
</tr>
</tbody>
</table>
OBJECTIVE
To enhance the basic knowledge in applied thermodynamics

LIST OF EXPERIMENTS
Performance test on a 4-stroke engine
Valve timing of a 4-stroke engine and port timing of a 2-stroke engine
Determination of effectiveness of a parallel flow heat exchanger
Determination of effectiveness of a counter flow heat exchanger
Determination of heating value of a fuel
COP test on a vapour compression refrigeration test rig
COP test on a vapour compression air-conditioning test rig
Determination of specific heat of solid
Determination of Thermal Conductivity of solid.
Determination of Thermal Resistance of a Composite wall.

TOTAL : 45 PERIODS

LIST OF EQUIPMENTS
(for a batch of 30 students)

<table>
<thead>
<tr>
<th>Sl.No</th>
<th>Details of Equipments</th>
<th>Qty Req.</th>
<th>Experiment No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>4 stroke twin cylinder diesel engine</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2.</td>
<td>Cut section model of 4 stroke diesel engine and cut section model of 2 stroke petrol engine</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>3.</td>
<td>Parallel and counter flow heat exchanger test rig</td>
<td>1</td>
<td>3,4</td>
</tr>
<tr>
<td>4.</td>
<td>Bomb Calorimeter</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>5.</td>
<td>Vapour compression refrigeration test rig</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>6.</td>
<td>Vapour compression air-conditioning test rig</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>7.</td>
<td>Conductive Heat Transfer set up</td>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td>8.</td>
<td>Composite wall</td>
<td>1</td>
<td>10</td>
</tr>
</tbody>
</table>
AIM

With the present development of the computer technology, it is necessary to develop efficient algorithms for solving problems in science, engineering and technology. This course gives a complete procedure for solving different kinds of problems occur in engineering numerically.

OBJECTIVES

At the end of the course, the students would be acquainted with the basic concepts in numerical methods and their uses are summarized as follows:

The roots of nonlinear (algebraic or transcendental) equations, solutions of large system of linear equations and eigen value problem of a matrix can be obtained numerically where analytical methods fail to give solution.

When huge amounts of experimental data are involved, the methods discussed on interpolation will be useful in constructing approximate polynomial to represent the data and to find the intermediate values.

The numerical differentiation and integration find application when the function in the analytical form is too complicated or the huge amounts of data are given such as series of measurements, observations or some other empirical information.

Since many physical laws are couched in terms of rate of change of one/two or more independent variables, most of the engineering problems are characterized in the form of either nonlinear ordinary differential equations or partial differential equations. The methods introduced in the solution of ordinary differential equations and partial differential equations will be useful in attempting any engineering problem.

1. SOLUTION OF EQUATIONS AND EIGENVALUE PROBLEMS


2. INTERPOLATION AND APPROXIMATION

Lagrangian Polynomials – Divided differences – Interpolating with a cubic spline – Newton’s forward and backward difference formulas.

3. NUMERICAL DIFFERENTIATION AND INTEGRATION

4. **INITIAL VALUE PROBLEMS FOR ORDINARY DIFFERENTIAL EQUATIONS**


5. **BOUNDARY VALUE PROBLEMS IN ORDINARY AND PARTIAL DIFFERENTIAL EQUATIONS**

Finite difference solution of second order ordinary differential equation – Finite difference solution of one dimensional heat equation by explicit and implicit methods – One dimensional wave equation and two dimensional Laplace and Poisson equations.

L = 45  T = 15  Total = 60

**TEXT BOOKS**


**REFERENCE BOOKS**


OBJECTIVE
To understand the behaviour of airflow over bodies with particular emphasis on airfoil sections in the incompressible flow regime.

1. REVIEW OF BASIC FLUID MECHANICS
Continuity, momentum and energy equations.

2. TWO DIMENSIONAL FLOWS
Basic flows – Source, Sink, Free and Forced vortex, uniform parallel flow. Their combinations, Pressure and velocity distributions on bodies with and without circulation in ideal and real fluid flows.

3. GENERATION OF LIFT

4. AIRFOIL AND WING THEORY
Joukowski, Karman - Trefftz, Profiles - Thin aerofoil theory and its applications. Vortex line, Horse shoe vortex, Biot and Savart law, Lifting line theory and its limitations.

5. VISCOUS FLOW
Newton’s law of viscosity, Boundary Layer, Navier-Stokes equation, displacement, Momentum thickness, Flow over a flat plate, Blasins solution.

TOTAL : 45

TEXT BOOKS

REFERENCES
AE2252  AIRCRAFT SYSTEMS AND INSTRUMENTATION  3 0 0 3

OBJECTIVE

To describe the principle and working of aircraft systems and instruments

1.  AIRPLANE CONTROL SYSTEMS  10

Conventional Systems - fully powered flight controls - Power actuated systems – Modern control systems - Digital fly by wire systems - Auto pilot system active control Technology,

2.  AIRCRAFT SYSTEMS  12

Hydraulic systems - Study of typical workable system - components - Pneumatic systems - Advantages - Working principles - Typical Air pressure system – Brake system - Typical Pneumatic power system - Components, Landing Gear systems - Classification

3.  ENGINE SYSTEMS  8

Fuel systems for Piston and jet engines, - Components of multi engines. lubricating systems for piston and jet engines - Starting and Ignition systems - Typical examples for piston and jet engines.

4.  AUXILIARY SYSTEM  8

Basic Air cycle systems - Vapour Cycle systems, Evaporative vapour cycle systems - Evaporative air cycle systems - Fire protection systems, Deicing and anti icing systems.

5.  AIRCRAFT INSTRUMENTS  7


TOTAL : 45

TEXT BOOKS


REFERENCES

OBJECTIVE

The components such as a piston, connecting rod, crankshaft, engine block, front axle, frame, body etc., are manufactured by various types of production processes involving casting, welding, machining, metal forming, powder metallurgy, etc. hence Engineering students must study this course production technology.

1. CASTING
   Casting types, procedure to make sand mould, types of core making, moulding tolls, machine moulding, special moulding processes-co₂ moulding, shell moulding, investment moulding, permanent mould casting, pressure die casting, centrifugal casting, continuous casting, casting defects.

2. WELDING

3. MACHINING
   General principles (with schematic diagrams only) of working and commonly performed operations in the following machines: Lathe, Shaper, Planer, Horizontal milling machine, Universal drilling machine, Cylindrical grinding machine, Capstan and Turret lathe. Basics of CNC machines.

4. FORMING AND SHAPING OF PLASTICS
   Types of plastics-characteristics of the forming and shaping processes-Moulding of Thermoplastics-working principles and typical applications of Injection moulding-Plunger and screw machines-Blow moulding-Rotational moulding-Film moulding-Extrusion-typical industrial applications-Thermoforming-processing of thermosets-working principles and typical applications-compression moulding-Transfer moulding-Bonding of thermoplastics-Fusion and solvent methods-Induction and Ultrasonic methods.

5. METAL FORMING AND POWDER METALLURGY
   Principles and applications of the following processes: Forging, Rolling, Extrusion, Wire drawing and Spinning, Powder metallurgy-Principal steps involved advantages. Disadvantages and limitations of powder metallurgy.

TOTAL:45
OBJECTIVE
To study different types of beams and columns subjected to various types of loading and support conditions with particular emphasis on aircraft structural components.

1. **STATICALLY DETERMINATE STRUCTURES**
   Analysis of plane Truss-Method of joints-3 D Truss-Plane frames-Composite beam.

2. **STATICALLY INDETERMINATE STRUCTURES**

3. **ENERGY METHODS**
   Strain Energy due to axial, bending and Torsional loads – Castigliano’s theorems-
   Maxwell's Reciprocal theorem, Unit load method - application to beams, trusses, frames, rings, etc.

4. **COLUMNS**
   Columns with various end conditions – Euler’s Column curve – Rankine’s formula -
   Column with initial curvature - Eccentric loading – South well plot – Beam column.

5. **FAILURE THEORY**
   Maximum Stress theory – Maximum Strain Theory – Maximum Shear Stress Theory –
   Distortion Theory – Maximum Strain energy theory – Application to aircraft Structural problems.

**TOTAL : 60**

**TEXT BOOK**

**REFERENCE**
OBJECTIVE
To understand the principles of operation and design of aircraft and spacecraft power plants.

1. **FUNDAMENTALS OF GAS TURBINE ENGINES**

2. **SUBSONIC AND SUPERSONIC INLETS FOR JET ENGINES**

3. **COMBUSTION CHAMBERS**

4. **NOZZLES**

5. **COMPRESSORS**

**TOTAL : 45**

**TEXT BOOKS**

**REFERENCES**
OBJECTIVE
To study experimentally the load deflection characteristics structural materials under different types of loads.

LIST OF EXPERIMENTS
1. Determination of Young’s modulus of steel using mechanical extensometers.
2. Determination of Young’s modulus of aluminum using electrical extensometers
3. Determination of fracture strength and fracture pattern of ductile and brittle materials
4. Determination of forces in statically indeterminate force system.
5. Deflection of beams with various end conditions.
6. Verification of Maxwell’s Reciprocal theorem & principle of superposition
7. Column – Testing
8. South – well’s plot.
10. Determination of membrane stresses in a thin cylinder under internal pressure.

TOTAL : 45 PERIODS

LIST OF EQUIPMENTS
(for a batch of 30 students)

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Equipments</th>
<th>Qty</th>
<th>Experiments No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Universal Testing Machine</td>
<td>1</td>
<td>1,2,3, 9</td>
</tr>
<tr>
<td>2.</td>
<td>Mechanical Extensometer</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>3.</td>
<td>Electrical strain gauge</td>
<td>10</td>
<td>2, 4, 10</td>
</tr>
<tr>
<td>4.</td>
<td>Hinged bar suspended by two wires of different materials.</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>5.</td>
<td>Strain indicator</td>
<td>1</td>
<td>2, 4, 10</td>
</tr>
<tr>
<td>6.</td>
<td>Dial Gauges</td>
<td>12</td>
<td>5, 6</td>
</tr>
<tr>
<td>7.</td>
<td>Beam Test set up with various end conditions</td>
<td>2</td>
<td>5, 6</td>
</tr>
<tr>
<td>8.</td>
<td>Column Test Apparatus</td>
<td>1</td>
<td>7, 8</td>
</tr>
<tr>
<td>9.</td>
<td>Thin walled pressure vessel</td>
<td>1</td>
<td>10</td>
</tr>
</tbody>
</table>
OBJECTIVE
To familiarize the students in basic aerodynamics and use of wind tunnels.

LIST OF EXPERIMENTS
1. Generation of lift and tip vortices.
2. Flow visualization in water flow channel
3. Flow visualization in smoke tunnel
4. Plot of RPM Vs test section velocity in a subsonic wind tunnel.
5. Pressure distribution over circular cylinder.
7. Force measurement using wind tunnel balance.
8. Mach number distribution in nozzle of supersonic wind tunnel.
9. Use of Schlieren system to visualize shock.
10. Use of Shadow graph system to visualize shock.

TOTAL : 45 PERIODS

LIST OF EQUIPMENT
(for a batch of 30 students)

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Items</th>
<th>Quantity</th>
<th>Experiment No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Blower, Balance, and small aspect ratio model</td>
<td>1 each.</td>
<td>1</td>
</tr>
<tr>
<td>2.</td>
<td>Water flow channel &amp; models</td>
<td>1 set</td>
<td>2</td>
</tr>
<tr>
<td>3.</td>
<td>Subsonic wind tunnel</td>
<td>1 No.</td>
<td>3, 4,5,6,7</td>
</tr>
<tr>
<td>4.</td>
<td>Smoke apparatus and rake</td>
<td>1 each.</td>
<td>3</td>
</tr>
<tr>
<td>5.</td>
<td>Manometer, Pitot-Static tube</td>
<td>1 No.</td>
<td>4, 5, 6</td>
</tr>
<tr>
<td>6.</td>
<td>Circular cylinder and Aerofoil pressure distribution models</td>
<td>1 each</td>
<td>5, 6</td>
</tr>
<tr>
<td>7.</td>
<td>Wind tunnel strain gauge balance</td>
<td>1 No.</td>
<td>7</td>
</tr>
<tr>
<td>8.</td>
<td>Supersonic wind tunnel, Mercury manometer</td>
<td>1 No.</td>
<td>8, 9, 10</td>
</tr>
<tr>
<td>9.</td>
<td>Schlieren system and Shadow graph system</td>
<td>1 No.</td>
<td>9, 10</td>
</tr>
<tr>
<td>10.</td>
<td>Sharp nosed and Blunt nosed models</td>
<td>1 No. each</td>
<td>9, 10</td>
</tr>
</tbody>
</table>
OBJECTIVE
To introduce the concept of design of basic structural components and to draft both manually and using modelling package.

LIST OF EXERCISES
Design and Drafting of riveted joints
Design and Drafting of welded joints.
Design and Drafting Control Components Cam
Design and Drafting Control Components Bell Crank
Design and Drafting Control Components Gear
Design and Drafting Control Components Push-pull rod
Three view diagram of a typical aircraft
Layout of typical wing structure.
Layout of typical fuselage structure.
Layout of Control System

TOTAL : 60 PERIODS

LIST OF EQUIPMENT
(for a batch of 30 students)

<table>
<thead>
<tr>
<th>Sl.No</th>
<th>Equipments</th>
<th>Quantity</th>
<th>Experiments No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Drawing Boards, Drafting machines</td>
<td>30</td>
<td>1, 5</td>
</tr>
</tbody>
</table>
LIST OF EXPERIMENTS

1. LATHE
   1.1. Facing, plain turning and step turning
   1.2. Taper turning using compound rest.
   1.3. Taper turning using taper turning attachment
   1.4. Single start V thread, cutting and knurling
   1.5. Boring and internal thread cutting.

2. SHAPER AND SLOTTING
   2.1. Machining a V-block (in a Shaper)
   2.2. Machining hexagonal shape (in a Shaper)
   2.3. Machining internal key-way (in a slotter)

3. DRILLING
   3.1 Drilling 4 or 6 holes at a given pitch circle on a plate
   3.2 Drilling, reaming and tapping

4. MILLING
   4.1 Plain Milling Exercise
   4.2 Gear Milling Exercise

5. GRINDING
   Cylindrical Grinding Exercise

TOTAL : 45 PERIODS

LIST OF EQUIPMENTS (For A Batch Of 30 Students)

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Centre Lathe with accessories</td>
<td>5No.</td>
</tr>
<tr>
<td>2</td>
<td>Shaping Machine</td>
<td>2 No.</td>
</tr>
<tr>
<td>3</td>
<td>Slotting Machine</td>
<td>1 No.</td>
</tr>
<tr>
<td>4</td>
<td>Radial Drilling Machine</td>
<td>2 No.</td>
</tr>
<tr>
<td>5</td>
<td>Upright Drilling Machine</td>
<td>2 No.</td>
</tr>
<tr>
<td>6</td>
<td>Milling Machine</td>
<td>2 No.</td>
</tr>
<tr>
<td>7</td>
<td>Cylindrical Grinding Machine</td>
<td>1 No.</td>
</tr>
</tbody>
</table>
Studyguideindia, Anna University Coimbatore Courses offered, eligibility criteria and admission details of Anna University Coimbatore. Anna University Coimbatore address, ranking, Syllabus, Anna University Coimbatore results, university contact details, placements. Anna University Coimbatore Details. Affiliated Colleges. College Name. Anna University Coimbatore. Type of Institution. Universities. Category. Co-Education. Address. Gct Campus Thadagam Road Coimbatore Pincode - 641013 Coimbatore (Dist) Tamil Nadu. Phone. 0422 - 654566/6546655. Contact details of Anna University of Technology Coimbatore. Name (international): Anna University of Technology Coimbatore. Name (local): Anna University of Technology Coimbatore. Type of institution: University. Address Meet the TOP ranked institutions in India. Job Opportunities. job vacancies worldwide. Internships | Anna University of Technology Coimbatore. Graduate Job Vacancies | Anna University of Technology Coimbatore. Academic Jobs, Faculty Vacancies, Jobs | Anna University of Technology Coimbatore. Administration, General Job Vacancies | Anna University of Technology Coimbatore. Study Opportunities. Bachelors, Masters, PhD programs worldwide. Unspecified courses, programs, degrees. Coimbatore Institute of Engineering and Technology. 12. 7176. Ambal Professional Group of Institutions (Formerly Professional Group of Institutions). 8. 7324. For other district list of affiliated colleges to Anna University Click Here. Search. list of engineering colleges in coimbatore. Engineering colleges in coimbatore. Affiliated colleges coimbatore. Anna University affiliated colleges in coimbatore. Top Anna University affiliated colleges in coimbatore. Counselling code for Anna University affiliated colleges in coimbatore. Anna University Engineering colleges in coimbatore. Tamil Nadu Engineering Admissions â€“ TNEA. Mr. Padeepz. Related Articles. INFO. Anna University Affiliated colleges in TIRUCHIRAPPALLI.