

Faculty of Mechanical Engineering

B.E. Aeronautical Engineering

(R 2021) Semester – II

Course Code: BE3271 Course Title: Basic Electrical and Electronics Engineering Laboratory		
Sl. No.	Description of Equipment	Required numbers (for batch of 30 students)
1.	Verification of ohms and Kirchoff's Laws 1. DC Regulated Power supply (0 - 30 V variable) 2. Bread Board 3. Resistors 4. Multimeter 5. Connecting wires	1 1 As per circuit Diagram 1 As Required
2.	Load test on DC Shunt Motor 1. Ammeter MC (0-20A) 2. Voltmeter MC (0-300)V 3. Rheostat 7.5 Ω , 10 A 4. Tachometer 5. Field Rheostat 175 Ω , 1.5 A 6. Connecting wires	1 1 1 1 1 As Required
3.	Load test on Self Excited DC Generator 1. DC shunt generator(0- 300V) 2. Ammeter (0-30 A), (0-2A) 3. Voltmeter (0-30V) 4. Rheostat 175 Ω , 250 Ω 5. Tachometer 6. Connecting Wires	1 1 1 1 1 As Required
4.	Load Test on Induction Motor 1. Ammeter MI (0-20A) 2. Voltmeter MI (0-300)V 3. Wattmeter – 300V, 30 A 4. Tachometer – Digital 5. Connecting Wires – As Required 6. Single phase Induction motor	1 1 1 1 As Required 1
5.	Characteristics of PN and Zener Diodes 1. PN Diode (BY127, OA79), Zener diode (6.8V, 1A) 2. Resistor 1 K Ω , 100 Ω 3. Bread Board 4. DC Regulated Power supply (0 - 30 V variable) 5. Multimeter 6. Connecting wires	1 1 1 1 1 As Required
6.	Characteristics of BJT 1. Transistor (No-BC548) 2. Resistors- 1k Ω , 470K Ω , 1M Ω	1 1

	3. Bread Board DC Regulated Power supply (0 - 30 V variable) 5. Multimeter 6. Connecting wires Characteristics of SCR 1. D C Power Supply (0□128 V), (0□32V), 2. Voltmeter (0□100V) 3. SCR TYN604 4. Digital multimeter 5. Ammeters (0□100mA, 0-25mA, 0-1mA) 6. Resistors 1KΩ, 1KΩ 7. Bread board 8. Connecting Wires Characteristics of MOSFET 1. MOSFET (2N7000) 2. Bread board 3. resistor (1KΩ, 100KΩ) 4. DC power supply (0-30V) 5. Multimeter 6. Bread board 7. Connecting Wires	1 1 1 As Required 1 1 1 1 1 1 As Required 1 1 1 1 1 1 As Required
7.	Half wave and Full Wave rectifiers 1. Diodes (Si-1N4007) – 4 2. Resistor 1KΩ 3. Capacitor 100μF 4. Digital Multimeter 5. CRO 6. Transformer (6-0-6)V 7. Bread Board 8. Connecting Wires	1 1 1 1 1 1 1 As Required
8.	Study of Logic Gates 1. IC 7400, 7402, 7404, 7408, 7432, 7486 2. Digital IC trainer 3. Patch chords	1 1 As Required
9.	Implementation of Binary Adder and Subtractor 1. AND Gate IC 7408 2. X-OR Gate IC 7486 3. NOT Gate IC 7404 4. OR Gate IC 7432 5. IC Trainer Kit 6. Patch Chords	1 1 1 1 1 As Required

Faculty of Mechanical Engineering

B.E. Aeronautical Engineering

(R 2021) Semester – III

AS3361-THERMODYNAMICS AND STRENGTH OF MATERIALS LABORATORY

Requirements for a batch of 30 students

Sl. No.	Description of Equipment	Required numbers
1.	Universal Tensile Testing machine with double 1 shear attachment -"40 Ton	1
2.	Torsion Testing Machine (60 NM Capacity)	1
3.	Impact Testing Machine (300 J Capacity)	1
4.	Brinell Hardness Testing Machine	1
5.	Rockwell Hardness Testing Machine	1
6.	Spring Testing Machine for tensile and compressive loads (2500 N)	1
7.	Metallurgical Microscopes	3
8.	Muffle Furnace (800 C)	1
9.	4 stroke twin cylinder diesel engine	1
10.	Cut section model of 4 stroke diesel engine and cut section model of 2 stroke petrol engine	1
11.	Parallel and counter flow heat exchanger test rig	1
12.	Bomb Calorimeter	1
13.	Vapour compression refrigeration test rig	1
14.	Vapour compression air-conditioning test rig	1
15.	Conductive heat transfer set up	1

16.	Composite wall	1
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Faculty of Mechanical Engineering
B.E. Aeronautical Engineering
(R 2021) Semester – III

CE3362 - FLUID MECHANICS AND MACHINERY LABORATORY

Sl. No.	Description of Equipment	Required numbers
1	Bernoulli's Experiment Apparatus with accessories	01
2	Orifice/Venturi meter with accessories	01
3	Friction factor measurement setup with accessories	01
4	Low speed jet facility with accessories	01
5	Metacentric height instrument with accessories	01
6	Centrifugal pump with accessories	01
7	Gear pump with accessories	01
8	Submersible pump with accessories	01
9	Reciprocating pump with accessories	01
10	Pelton wheel turbine with accessories	01
11	Francis Turbine with accessories	01

Faculty of Mechanical Engineering

B.E. Aeronautical Engineering

(R 2021) Semester – IV

AE3411-AERODYNAMICS LABORATORY

Requirements for a batch of 30 students

Sl. No.	Description of Equipment	Required numbers
1	Subsonic Wind tunnel	1
2	Models (Rough and Smooth cylinder Symmetric Aerofoil, Cambered Aerofoil and thin Aerofoil) with pressure tapings	1 each
3	Pitch change mechanism	1
4	Multi tube Manometer	1
5	Pitot-Static Tubes	1
6	Flat plate	1
7	Wind Tunnel balances (3 or 6 components)	1
8	Smoke Generator	1
9	Supersonic wind tunnel with accessories	1
10	Schlieren system	1
11	Water flow channel	1
12	Heleshaw apparatus	1

Faculty of Mechanical Engineering
B.E. Aeronautical Engineering
(R 2021) Semester – IV
AE3412-PROPULSION LABORATORY
Requirements for a batch of 30 students

Sl. No.	Description of Equipment	Required numbers
1.	Jet engine	1
2.	Piston engine	1
3.	High Speed Jet facility with compressor and storage Tank	1
4.	Multitube manometer	3
5.	Wind tunnel	1
6.	Pressure transducer/ Pressure scanner with 16 ports	1
7.	Ramjet facility	1
8.	Conical flame holder model	1
9.	Hemispherical flame holder model	1
10.	Compressor cascade blade setup with provision to change incidence angle	1
11.	Schlieren system	1
12.	Convergent nozzle	1
13.	Convergent divergent nozzle	1
14.	Thruster with load cells	1
15.	Subsonic Diffuser models (Atleast for any two different angles)	1 each
16.	Blower set up	1
17.	2D/3D traverse mechanism	1

18.	Pitot tube and Pitot static tube	1 each
19.	Propeller blade model	1

Faculty of Mechanical Engineering
B.E. Aeronautical Engineering
(R 2021) Semester – V
AE3511-AIRCRAFT STRUCTURES LABORATORY
Requirements for a batch of 30 students

Sl. No.	Description of Equipment	Required numbers
1.	100 kN Universal Testing Machine	1
2.	Beams with weight hangers and dial gauges	6
3.	Column set up with dial gauges	2
4.	Photo elasticity set up with models	1
5.	Vibration set up with accessories	1
6.	Wagner beam	1
7.	Unsymmetrical bending set up	1
8.	Set up for combined bending and torsion	1
9.	Facilities for the fabrication of composite laminates using hand lay up	1

Faculty of Mechanical Engineering

B.E. Aeronautical Engineering

(R 2021) Semester – V

AE3581-CAD LABORATORY

Requirements for a batch of 30 students

Sl. No.	Description of Equipment	Required numbers
1	Desktop Computer with accessories	30
2	CATIA/Solidworks/PRO-E –Licenced CAD Packages	30 Licenses
3	UPS	1
4	Printer	1

Faculty of Mechanical Engineering

B.E. Aeronautical Engineering

(R 2021) Semester – VI

AE3612-FLIGHT TRAINING / FLIGHT SIMULATION LABORATORY

Requirements for a batch of 30 students

Sl. No.	Description of Equipment	Required numbers
1.	Microprocessor 8085 Kit	10
2.	Adder/Subtractor Binary bits Kit	10
3.	Encoder Kit	10
4.	Decoder Kit	10
5.	Multiplexer Kit	10
6.	Demultiplexer Kit	10
7.	computers	10
8.	Regulated power supply	10
9.	Standard Mathematical analysis software	1

Faculty of Mechanical Engineering

B.E. Aeronautical Engineering

(R 2021) Semester – VII

AE3711-AERO ENGINE AND AIRFRAME LABORATORY

Requirements for a batch of 30 students

Sl. No.	Description of Equipment	Required numbers
1	Aircraft Piston engines	1
2	Set of basic tools for dismantling and assembly	1 set
3	NDT equipment	1 set
4	Micrometers, depth gauges, vernier calipers	2 sets
5	Valve timing disc	1
6	Shear cutter pedestal type	1
7	Drilling Machine	1
8	Bench Vices	1
9	Radius Bend bars	1
10	Pipe Flaring Tools	1
11	Welding machine	1
12	Glass fibre, epoxy resin	1
13	Strain gauges and strain indicator	1

Faculty of Mechanical Engineering

B.E. Aeronautical Engineering

(R 2021) Semester – VII

AE3712-AIRCRAFT SYSTEMS LABORATORY

Requirements for a batch of 30 students

Sl. No.	Description of Equipment	Required numbers
1.	Serviceable aircraft with all above systems	1
2.	Hydraulic Jacks (Screw Jack)	5
3.	Trestle adjustable	5
4.	Spirit Level	2
5.	Levelling Boards	2
6.	Cable Tensiometer	1
7.	Adjustable Spirit Level	1
8.	Plumb Bob	1
9.	Weighing machine	1
10	Load cell	1

Faculty of Mechanical Engineering

B.E. Aeronautical Engineering

(R 2021) Semester – VII

AE3781-COMPUTATIONAL ANALYSIS LABORATORY

Requirements for a batch of 30 students

Sl. No.	Description of Equipment	Required numbers
1.	High End system/Work station with necessary storage system	30
2.	Modelling and CFD & FE Analysis packages with Licence	30
3.	UPS	1
4.	Printer	1