

**Faculty of Mechanical Engineering**

**B.E. Aerospace Engineering**

**(R 2021) Semester – II**

**Course Code: BE3271 Course Title: Basic Electrical and Electronics Engineering Laboratory**

<b>Sl. No.</b>	<b>Description of Equipment</b>	<b>Required numbers (for batch of 30 students)</b>
<b>1.</b>	<b>Verification of ohms and Kirchoff's Laws</b> 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
<b>2.</b>	<b>Load test on DC Shunt Motor</b> 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
<b>3.</b>	<b>Load test on Self Excited DC Generator</b> 1. DC shunt generator(0- 300V) 2. Ammeter (0-30 A), (0-2A) 3. Voltmeter (0-30V) 4. Rheostat 175Ω, 250 Ω 5. Tachometer 6. Connecting Wires	1 1 1 1 1 As Required
<b>4.</b>	<b>Load Test on Induction Motor</b> 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
<b>5.</b>	<b>Characteristics of PN and Zener Diodes</b> 1. PN Diode (BY127, OA79), Zener diode (6.8V, 1A) 2. Resistor 1 KΩ, 100Ω 3. Bread Board 4. DC Regulated Power supply (0 - 30 V variable) 5. Multimeter 6. Connecting wires	1 1 1 1 1 As Required
<b>6.</b>	<b>Characteristics of BJT</b> 1. Transistor (No-BC548) 2. Resistors- 1kΩ, 470KΩ, 1MΩ 3. Bread Board DC Regulated Power supply (0 - 30 V variable) 5. Multimeter 6. Connecting wires	1 1 1 1 1 As Required

	<p><b>Characteristics of SCR</b></p> <ol style="list-style-type: none"> <li>1. D C Power Supply (0□128 V), (0□32V ),</li> <li>2. Voltmeter (0□100V)</li> <li>3. SCR TYN604</li> <li>4. Digital multimeter</li> <li>5. Ammeters (0□100mA, 0-25mA, 0-1mA)</li> <li>6. Resistors 1KΩ, 1KΩ</li> <li>7. Bread board</li> <li>8. Connecting Wires</li> </ol> <p><b>Characteristics of MOSFET</b></p> <ol style="list-style-type: none"> <li>1. MOSFET (2N7000)</li> <li>2. Bread board</li> <li>3. resistor (1KΩ, 100KΩ)</li> <li>4. DC power supply (0-30V)</li> <li>5. Multimeter</li> <li>6. Bread board</li> <li>7. Connecting Wires</li> </ol>	<p>1 1 1 1 1 1 As Required</p> <p>1 1 1 1 1 1 As Required</p>
7.	<p><b>Half wave and Full Wave rectifiers</b></p> <ol style="list-style-type: none"> <li>1. Diodes (Si-1N4007) – 4</li> <li>2. Resistor 1KΩ</li> <li>3. Capacitor 100μF</li> <li>4. Digital Multimeter</li> <li>5. CRO</li> <li>6. Transformer (6-0-6)V</li> <li>7. Bread Board</li> <li>8. Connecting Wires</li> </ol>	<p>1 1 1 1 1 1 1 As Required</p>
8.	<p><b>Study of Logic Gates</b></p> <ol style="list-style-type: none"> <li>1. IC 7400, 7402, 7404,7408,7432,7486</li> <li>2. Digital IC trainer</li> <li>3. Patch chords</li> </ol>	<p>1 1 As Required</p>
9.	<p><b>Implementation of Binary Adder and Subtractor</b></p> <ol style="list-style-type: none"> <li>1. AND Gate IC 7408</li> <li>2. X-OR Gate IC 7486</li> <li>3. NOT Gate IC 7404</li> <li>4. OR Gate IC 7432</li> <li>5.. IC Trainer Kit</li> <li>6. Patch Chords</li> </ol>	<p>1 1 1 1 1 As Required</p>

**Faculty of Mechanical Engineering**

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**(R 2021) Semester – III**

**AS3361-THERMODYNAMICS AND STRENGTH OF MATERIALS LABORATORY**

Requirements for a batch of 30 students

<b>Sl. No.</b>	<b>Description of Equipment</b>	<b>Required numbers</b>
1	Universal Tensile Testing machine with double 1 shear attachment –40TonCapacity	1
2	Torsion Testing Machine(60 NM Capacity)	1
3	Impact Testing Machine (300J Capacity)	1
4	Brinell Hardness Testing Machine	1
5	Rockwell Hardness Testing Machine	1
6	Spring Testing Machine for tensile and compressive loads (2500N)	1
7	Metallurgical Microscopes	3
8	Muffle Furnace(800C)	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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**(R 2021) Semester – III**

**CE3362 FLUID MECHANICS AND MACHINERY LABORATORY**

<b>Sl. No.</b>	<b>Description of Equipment</b>	<b>Required numbers</b>
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

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**(R 2021) Semester – IV**

**AS3411-LOW AND HIGH SPEED AERODYNAMICS LABORATORY**

Requirements for a batch of 30 students

<b>Sl. No.</b>	<b>Description of Equipment</b>	<b>Required numbers</b>
1	Sub Sonic Wind Tunnel	1 No.
2	Models (Smooth cylinder , Rough cylinder model, Symmetrical ,cambered aerofoils, thin airfoil model) with pressure tapings	1 each
3	Pitch changing mechanism	1 No.
4	Multitube Manometer (64 ports)	1 No
5	U-Tube Manometer	1 No.
6	Pitot-Static Tube & fine Pitot-Static Tube	1 No
7	Flat plate model	1 No
8	Wind Tunnel balances (3 or 6 components)	1 No
9	Pressure Transducers with digital display	1 No
10	Hele-Shaw apparatus/Smoke Tunnel/ Water flow channel	1 No
11	Supersonic Wind tunnel with accessories	1 No
12	Wooden models of cone, wedge and blunt body configurations of suitable size for flow visualization in a supersonic wind tunnel test section	1 No
13	Schlieren System	1 No

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**(R 2021) Semester – IV**  
**AS3412-AEROSPACE STRUCTURES LABORATORY**

Requirements for a batch of 30 students

<b>Sl. No.</b>	<b>Description of Equipment</b>	<b>Required numbers</b>
1	Beam Test set –up	2
2	Unsymmetrical sections like 'Z' sections	2
3	Channel section, angle section and closed section	2
4	Dial gauges	12
5	Weights 1 Kg	10
6	Weights 2 Kg	10
7	Strain indicator and strain gauges	One set
8	Photo – elastic apparatus with models (circular disc and beams)	1
9	Amplifier	2
10	Exciter	2
11	Pick – up	2
12	Oscilloscope	2
13	Wagner beam	1
14	Hydraulic Jack	1

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**(R 2021) Semester – V**  
**AS3511-SPACE PROPULSION LABORATORY**

Requirements for a batch of 30 students

<b>Sl. No.</b>	<b>Description of Equipment</b>	<b>Required numbers</b>
1	Subsonic Wind Tunnel	1
2	Supersonic Wind Tunnel	1
3	Propeller Blade	1
4	Pressure Probe Rack	1
5	Multi-tube Manometers	3 Sets
6	Pressure Scanner	2 Sets
7	High Resolution CCD Camera for Flow Visualization	1
8	Schlieren system	1
9	2D/3D Traversing Mechanism with Pressure Probe holder	1
10	Single Expansion Ramp Nozzle with wall pressure tappings	1
11	Pressure Scanner/Pressure Transducer	1
12	Subsonic diffuser models (atleast for two different angles)	1
13	High Speed Jet Test facility (with secondary injection and wall jet provisions)	1
14	Turbine blade setup with provision to change incidence angle	1
15	Ramjet duct	1
16	Blower set up	1
17	C-D Nozzle with wall pressure tapings	1
18	Supersonic inlet model ( either spike or ramp type)	1

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**(R 2021) Semester – VI**

**AE3581-CAD LABORATORY**

Requirements for a batch of 30 students

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



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**(R 2021) Semester – VII**

**AS3711-AVIONICS LABORATORY**

Requirements for a batch of 30 students

<b>Sl. No</b>	<b>Description of Equipment</b>	<b>Required numbers</b>
1	MATLAB Software/SCILAB	30 user
2	Microprocessor 8085 Kit	10
3	Computers	10
4	Analog to Digital Converter	10
5	MIL-Std – 1553 Data Bus	5

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**(R 2021) Semester – VII**

**AS3712-FLIGHT SYSTEMS LABORATORY**

Requirements for a batch of 30 students

<b>Sl. No</b>	<b>Description of Equipment</b>	<b>Required numbers</b>
1	Serviceable Flight 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