Faculty of Mechanical Engineering

B.E. Marine 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 Kirchhoff'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 175Ω, 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 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
6.	**Characteristics of BJT** 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

	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 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. Marine Engineering

(R 2021) Semester – III

MV3311 MARINE HYDRAULICS AND FLUID MACHINERY LABORATORY

Sl.No.	Description of Equipment	Required Numbers
1	**Buoyancy Experiment** Cargo Ship Model War Ship Model	 01 01
2	Pitot tube Rotameter Notches	01 01 02 02
3	Venturimeter	02
4	Orifice meter	01
5	Frictional Losses in pipes	01
6	Centrifugal pump	01
7	Multistage Centrifugal Pump	01
8	Impulse Turbine (Pelton)	01
9	Reaction Turbine (Francis)	01
10	Reciprocating pump	01
11	Submersible pump	01
12	Jet pump	01

Faculty of Mechanical Engineering

B.E. Marine Engineering

(R 2021) Semester – III

MV3312 STRENGTH OF MATERIALS AND APPLIED MECHANICS LABORATORY

Sl.No.	Description of Equipment	Required Numbers
1.	UTM (Universal Testing Machine)	01
2.	Compression Testing Machine	01
3.	Deflection Testing Rig	01
4.	Hardness – Vickers, Brinell, Rockwell, Testing Machines	01
5.	Spring Testing Machines – Tension, Compression	01
6.	Impact Testing Machines – (Izod, Charpy)	01
7.	Load Cells	01
8.	Fatigue Testing Machine	01
9.	Crucible furnace	01
10.	Sand Strength Testing Machine	01
11.	Permeability	01
12.	Shear Strength Testing Machine	01
13.	Compression Strength Testing Machine	01
14.	Transfer Strength Testing Machine	01

Faculty of Mechanical Engineering

B.E. Marine Engineering

(R 2021) Semester – IV

MV3411 WELDING TECHNIQUES, LATHE AND SPECIAL MACHINE SHOP

Sl.No.	Description of Equipment	Required Numbers
1.	Light duty Lathe	01
2.	Medium duty Lathe	03
3.	Heavy duty Lathe	04
4.	Shaper	01
5.	Slotter	01
6.	Planner	01
7.	Radial drilling m/c	01
8.	Surface grinder	01
9.	Pedestal grinder	01
10.	Vertical milling m/c	01
11.	Universal milling m/c	03
12.	Tool & cutter grinder	01
13.	Gear hobber	01
14.	CNC Lathe Machine	01
15.	Capstan Lathe	01
16.	Cylindrical grinding m/c	01
17.	Power hacksaw	01
18.	Duplicating Lathe	01

Faculty of Mechanical Engineering

B.E. Marine Engineering

(R 2021) Semester – IV

MV3412 HEAT ENGINES, BOILER CHEMISTRY AND REFRIGERATION LABORATORY

Sl.No.	Description of Equipment	Required Numbers
	HEAT ENGINES	
1.	Orsat Apparatus	02 nos
2.	Steam Turbine	01
3.	Steam Calorimeter	01
4.	Air Blower	01
5.	Air Compressor	02 nos
6.	Vapour Compression Refrigeration test rig	01
7.	Vapour compression Air Conditioning test rig	01
8.	Bomb calorimeter and Junker's calorimeter	01
9.	Crucible Metener Burner, Electric Benser Hot air oven	01
10.	Flash & Fire point – closed cup apparatus	01
11.	Redwood's Viscometer	01
12.	Say bolt's Viscometer	01
	FUELS AND LUBRICATION OIL TESTING EQUIPMENTS	
13.	Redwood Viscometer	01
14.	Saybolt's Viscometer	01
15.	Abel's flash point and fire point apparatus	01
16.	Closed cup apparatus (Pensky)	01
17.	Bomb Calorimeter with Beckman (Digital)	01
18.	Junker's Gas Calorimeter	01
	BOILER CHEMISTRY LAB	
19.	Burette, Pipette, Beaker, Conical Flask, Bunsen Burner	01 each
20.	Burette, Pipette, Conical Flask, STD Flask 100ml	01 each
21.	Burette, Pipette, Conical Flask, STD Flask	01 each
22.	Burette, Pipette, Conical Flask.	01 each
23.	Do Bottle, Burette, Pipette, Conical Flask.	01 each
24.	Wephlo turbidity meter, STD Flask Pipette.	01 each
25.	PH meter, Buffer tablets, beaker.	01 each
26.	Petridish, Hot air Oven, Weighing Balance	01 each
27.	Water Analysis kit.	01 nos
28.	Burner, Silica, Crucible, Electric Bunsen, Petridish Hot air Oven	01 each
29.	Burette, Pipette, Conical Flask, turbidity meter, Bunsen Burner, Beaker, STD Flask	01 each
	THERMAL ENGINEERING	
30.	Internal Combustion Engines Section	01
31.	Fuel and Lubrication Oil Testing Equipments	01
32.	Heat Transfer Equipments	01
33.	Steam Lab. Equipments	01
34.	Refrigeration and Air Conditioning Equipments	01 set
35.	Automobile Components	01
36.	Engine Research Centre	01
37.	Computers with UPS	01

38.	Miscellaneous Equipments	01
INTERNAL COMBUSTION ENGINES SECTION		
39.	Multi Cylinder Petrol Engine	01
40.	Twin Cylinder Diesel Engine	01
41.	Kirloskar Diesel Engine	01
42.	Greaves Cotton diesel engine	01
43.	Two Stroke Petrol Engine	03 nos
44.	Two Stroke Diesel Engine Model	01
45.	Four Stroke Petrol Engine	01
46.	Four Stroke Diesel Engine Model	01
47.	Two Stroke Petrol Engine Model	01
48.	Multi Cylinder Petrol Engine	01
49.	Four Stroke Single Cylinder Diesel Engine (Anil)	01
50.	MK-12 Petrol Start Kerosene run Engine	01
51.	Battery charger	01
MARINE AC & REFRIGERATION LABORATORY		
52.	Marine Refrigeration Plant (10 ton capacity)	01
53.	Marine Air Conditioning Plant (10 ton capacity)	01
54.	Vapour compression and Vapour Absorption refrigeration test RIG	01 each

Faculty of Mechanical Engineering

B.E. Marine Engineering

(R 2021) Semester – V

MV 3511 ELECTRICAL ENGINEERING, ELECTRONICS AND MICROPROCESSOR LABORATORY

LIST OF EQUIPMENTS FOR A BATCH OF 30 STUDENTS ELECTRICAL ENGINEERING LAB

Sl.No	Name of the Equipment	Required Numbers
01	D. C. Motor Generator Set	02
02	D.C. Compound Motor	04
03	Single Phase Transformer	04
04	Three Phase Squirrel cage and Slip ring Induction Motor	02
05	Single Phase Induction Motor	02
06	Three Phase Alternator Set	02
07	Ammeter A.C and D.C	20
08	Voltmeters A.C and D.C	20
09	Watt meters LPF and UPF	12
10	Resistors & Breadboards	1 set

ELECTRONICS AND MICROPROCESSOR LAB

Sl.No	Name of the Equipment	Required Numbers
01	Cathode Ray Oscilloscopes	04
02	Dual Regulated power supplies	06
03	A.C. Signal Generators	04
04	8085 Microprocessor Trainer kits	10
05	Voltmeters D.C	10
06	Ammeters D.C.	10
07	Resistors, Capacitors, Diodes	1 Set
08	Transistors (BJT, JFET), SCR, Logic Gates	1 Set
09	Stepper Motor, Interface Card and Power Supply	01
10	Breadboards, Probes	1 Set

MV3512 MARINE MACHINERY DRAWING - NIL

Faculty of Mechanical Engineering

B.E. Marine Engineering

(R 2021) Semester – VI

MV3611 FIRE FIGHTING, CONTROLS AND SIMULATOR LABORATORY

LIST OF EQUIPMENTS FOR A BATCH OF 30 STUDENTS

MARINE FIRE FIGHTING LABORATORY

Sl.No	Description of Equipment	Required Numbers
01	Fixed CO2 fire fighting system	01
02	Smoke Detection Unit	01
03	Fire main system	01
04	Fire call point & Gong Bell	01
05	Portable extinguishers (Water, CO2, dry powder, mechanical type extinguishers)	01
06	Non-Portable Extinguisher – Mechanical Extinguisher	01
07	Smoke & Heat detectors	01
08	C.A.B.A	01
09	Bellow type foot pump	01
10	First aid kit and stretcher	01

MARINE CONTROLS LABORATORY

Sl.No	Description of Equipment	Required Numbers
01	Transparent Hydraulic Trainer	01
02	Transparent Pneumatic Trainer	01
03	Electro Hydraulic and Pneumatic Trainer	01
04	PID Trainer – Hydraulic	01
05	PID Trainer – Pneumatic	01
06	PC Interface	01

MARINE SIMULATOR LABORATORY

Sl.No	Description of Equipment	Required Numbers
01	Engine Room Simulation Master Panel	01
02	Engine Room Simulation Trainee Panels	04

Faculty of Mechanical Engineering

B.E. Marine Engineering

(R 2021) Semester – VI

MV3612 MEASUREMENT AND INSTRUMENTATION LABORATORY

LIST OF EQUIPMENTS FOR A BATCH OF 30 STUDENTS

MEASUREMENT LABORATORY

Sl.No	Name of the Equipment	Required Numbers
01	Slip Gauge and Dial gauge	4 set
02	Sine Bar	2 nos
03	Four sphere & Two sphere height gauge	2 nos
04	Bore Dial gauge	1
05	Sphere	2
06	Vernier caliper	6
07	Profile projector	1
08	Tri-square.	2
09	Bevel protractor	2
10	Floating carriage Micrometer	1
11	Pneumatic comparator.	1
12	Optical flat interferometer.	1
13	Gear tester.	1
14	Auto collimator	1
15	Tool Maker's Microscope	1
16	Surface test 301	1

INSTRUMENTATION LABORATORY

SL.NO	NAME OF THE EQUIPMENT	Required Numbers
01	Dead weight type pressure gauge 0-2kgf/cm2	1
02	Bourdon type Pressure gauge 0-400kgf/cm2	1
03	Vacuum pressure gauge – McLeod gauge.	1
04	Thermocouple	4
05	Resistance Temperature Detector	2
06	Proving ring mechanical type	2
07	Speed stroboscope	1
08	Strain gauge	2

09	Linear Variable differential transformer 20mm	2
10	Static torque meters	1
11	Orifice meter, Venturimeter, Rotameter	1