GANPAT UNIVERSITY

FACULTY OF ENGINEERING & TECHNOLOGY

Programme	Bachelor of Science	Branch/Spec.	Nautical Science
Semester	I	Version	1.0.0.0
Effective from Academic Year	2021-2022	Effective for the batch Admitted in	Oct 2021
Subject code	2ES102	Subject Name	Workshop Manufacturing Practice

Teaching scheme						Examination scheme (Marks)			
(Per week)	Lecture (DT)		Practical (Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	0	0	2	0	2	Theory	0	0	0
Hours	0	0	4	0	4	Practical	30	20	50

Pre-requisites:

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Learning Outcome:

On successful completion of the subject, students should be able to

- To acquire measuring skills.
- To acquire practical skills in the trades.
- To provides the knowledge of job materials in various shops.
- To provides the knowledge of core technical subjects for making and working of any type of project.
- Students will be able to analyze the material on the basis of their properties and thus assigning different weight age to their use for technical purposes.
- Understand modern manufacturing operations, including their capabilities, limitations, and how to design economically.
- Gain insight into how designers influence manufacturing schedule and cost, and cost of different components.
- Learn how to analyze products and be able to improve their manufacturability and make the cost effectively.
- The students will be able to assess the working conditions of any machining process and thus calculating the actual forces involved.
- Components like Resistances, Inductances, Capacitances, diodes, transistors and their ratings.
- Students are expected to connect electric circuits, and be able to use electric instruments to perform experiments
- Students are expected to be able to check ratings of commonly used house hold electrical Appliances.
- Students are expected to be able to understand the different wiring schemes used around them like in their homes, shops, college, etc.
- Students are expected to recognize the importance of safety while dealing with electrical Equipment’s.
- Students are expected to be able to identify and solve the small problems occurring in their household devices like fan, iron, washing machine, electric kettle, mixer, etc.

- Students are expected to be able to calculate their energy bill and apply some energy conservation to reduce it.

Syllabus		
Unit	**Content**	**Hrs**
Topics (A) Mechanical		
1	**Instruction and Demonstration:** Instruction should be given for each of following shops which include importance of the shop in engineering, new materials available, use of each tool / equipment, methods of processing any special machines, power required etc.	**02**
2	**Carpentry Shop:** Study of tools & operations and carpentry joints, Simple exercise using jack plane, Simple exercise on woodworking lathe.	**02**
3	**Fitting Shop**: Study of tools & operations, Simple exercises involving fitting work, Make perfect male-female joint, Simple exercises involving drilling/tapping/dieing.	**02**
4	**Smithy Shop:** Study of tools & operations, Simple exercises base on smithy operations such as upsetting, drawing down, punching, bending, fullering & swaging.	**02**
5	**Plumbing Shop:** Study of Tools and Operations, Simple exercises of piping.	**02**
6	**Welding Shop**: Study of tools & operations of Gas welding & Arc welding, Simple butt and Lap welded joints, Oxy-acetylene flame cutting.	**02**
7	**Sheet-metal Shop**: Study of tools & operations, making sheet metal component using 'soldering'. Ex: Funnel, tool-box, tray, electric panel box etc.	**02**
8	**Machine Shop:** Study of machine tools and operations, Demonstrations of basic machine tools like Lathe, Shaper, drilling machine with basic operations etc.	**02**
9	**Foundry Shop:** Study of tools & operations like Pattern making, Mould making with the use of a core. Various Casting processes	**02**
Topics (B) Electrical		
10	**Identification of electrical and electronics components:** Resistors, Capacitors, Inductors, Diodes, Transistors.	**02**
11	**Domestic and Industrial Electrical wiring:** Wiring of different lamp control, Staircase circuits, Cleat wiring and conduit wiring, Working of fluorescent tube light, Compact Fluorescent Light, Electronic Ballast, Connection of table fan and ceiling fan with regulators.	**04**
12	**Operation of Protective & Safety devices:** Fuse, MCB, ELCB, Relay	**02**
13	**Troubleshooting of domestic devices:** Dismantling, Repairing, Assembling and testing of domestic appliance like electric iron, Room heater, Electric toaster, Water heater, Electric kettle, Electric oven, Ceiling fan, Table Fan, Regulators, Alarm bell.	**02**
14	**Electrical Energy meter:** 1-Φ & 3-Φ Energy meter, Measurement & Calculation of Electrical Energy, Calibration of Energy Meter	**02**
15	**Motor:** Demo model of Motor Principle, Assembly & Disassembly of different motors, Basic Troubleshooting of different motors, Voltage, Current, Power & Speed measurement	**02**

	of various motors	
16	**Earthing:** Measurement of Earth resistance, Earthing methods, Domestic Earthing.	**02**
17	**Batteries & Cells:** Types of Cells, Charging & Discharging Phenomena of Batteries, Applications of various batteries	**02**

Practical content
Practical's, assignments and tutorials are based on above syllabus.

Text Books	
1.	Work shop technology by Hajra Chaudhary
2.	Elements of Mechanical Engineering by Hajra Chaudhary

Reference Books	
1.	Elements of Mechanical Engineering by Mathur & Mehta.
2.	Work shop technology by Chapmen 5. Electronics principle by A. Malvino
3.	S. L. Uppal , " Electrical wiring, estimating and costing ", Khanna Publication
4.	K. B. Bhatia, " Fundamentals of Maintenance of Electrical Equipments", Khanna Publication
5.	Dr N. K. Jain, " A Text Book of Practicals in Electrical Engineering ", Dhanpat Rai Publishing Company

ICT/MOOCs references	
1	https://www.youtube.com/watch?v=A9m_3onoVV8 (Instruction and Demonstration)
2	https://www.youtube.com/watch?v=uBeBilcSioo (Carpentry Shop)
3	https://www.youtube.com/watch?v=KgQyuCrOKoU (Fitting shop)
4	https://www.youtube.com/watch?v=c-FN4M77qyA (Smithy shop)
5	https://www.youtube.com/watch?v=STWhYHhfYNo (Plumbing Shop)
6	https://www.youtube.com/watch?v=GweENcDLvIE (Welding Shop)
7	https://www.youtube.com/watch?v=BVev9ZYL8-k (Sheet-metal Shop)
8	https://www.youtube.com/watch?v=xMPYLUoGqLY (Machine shop)
9	https://www.youtube.com/watch?v=HzBK98PP1sc (Foundry Shop)
10	https://www.youtube.com/watch?v=6Maq5IyHSuc(Identification of electrical and electronics components)
11	https://www.youtube.com/watch?v=6UTOTgbJ_8E(Identification of electrical and electronics components)
12	https://www.youtube.com/watch?v=hKtedrJKyQs(Domestic and Industrial Electrical wiring)
13	https://www.youtube.com/watch?v=OSwgfdU9q_0(Operation of Protective & Safety devices) https://www.youtube.com/watch?v=otVl5U_bbM0(Operation of Protective & Safety devices)
14	https://www.youtube.com/watch?v=gaRyNiPn26o(Troubleshooting of domestic devices**)**
15	https://www.youtube.com/watch?v=BRJ9azr61OA(Electrical Energy meter)
16	https://www.youtube.com/watch?v=zLW_7TPf310(Earthing)
17	https://www.youtube.com/watch?v=zJL13I1RVXU(Batteries & Cells)
18	https://www.youtube.com/watch?v=EfgDShcgKvM(Batteries & Cells)

Cos	Description
CO1	Learn basics of lasers and optical fibers and their use in some applications.
CO2	Understand theory of semiconductors and their applications in some semiconductor devices.
CO3	Analyze the concept of Thermal physics and Modern physics and its applications in engineering field.
CO4	Understand the properties of dielectric and magnetic material and their applications in electric and magnetic devices.
CO5	Learn the basic principle of Doppler and ultrasound with specific applications in engineering.

Mapping of CO and PO:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	1	2	2	0	3	2	2	1	3	1	3
CO2	3	2	1	2	0	3	2	2	3	2	2	3
CO3	3	1	1	1	0	3	1	2	2	1	1	2
CO4	3	2	1	1	0	3	1	1	2	1	2	3
CO5	3	2	1	1	0	3	1	1	2	1	1	3