

340 - K.L.N.MEMORIAL POLYTECHNIC COLLEGE

LESSON PLAN (2022-2023)	
Discipline	Mechanical engineering
Semester	4 th
Subject	Fluid mechanics and Fluid power
Subject Code	4020410
Name of the faculty	M.MURUGAN - II ND Year A Sec K.MANOJ BALA - II ND Year B Sec
Lesson plan duration	16 weeks
Work load	5 Hours per week
Week	Portion to be covered
1ST	Fluid properties ,Viscosity,Specific weight,Surface tension , Capillarity,Vapour pressure, compressibility,Hydrostatic law
2ND	Pascal law,Application of pascal law,Pressure Measurement
3RD	Differential manometer,Bourdon tube Pressure Gauge,Pressure On Immersed Bodies,Types of flow,Steady and Unsteady Flow
4TH	Continuity Equation,Bernoullis Derivation,Venturimeter derivation,Orificemeter derivation,law of fluid friction
5TH	darcy derivation,Minor losses problem,Hydraulic gradient line,Hydraulic power transmission,Problems on pipes,Impact of jet on fixed plate
6TH	Impact of jet on moving plate,Impact of jet on vanes,Problem on work done, Problem on efficiency, Classification of turbines
7TH	Pelton ,Francis,Kaplan turbine,Draft tube,Surge tank,Cavitation in turbines, Types of casting, Priming
8TH	Manometric head work done,Manometric ,Mechanical efficiency, Overall efficiency problems,Single, double acting reciprocating pump,Discharge
9TH	Discharge, Problems Slip,Negative Slip,Cavitation in air vessel,Indicator Diagram,Fluid Power Layout,Components of Hydraulic systems
10TH	Application of Fluid power System,Advantages of hydraulic system,Symbols of hydraulic system,Vane Pump,Gear Pump,Pressure Reducing valve, DCV Valve
11TH	Sequencing valve,Actuator,Single acting,Rotary actuator,Intensifer,Metering in Circuit-Hydraulic
12TH	Metering Out Circuit,Bleed Off Circuit,Milling,Shaping Circuit-Hydraulic,Pneumatic components,Reciprocating Compressor
13TH	Pressure Control valve, 5/2 dcv Valve,Flow control valve
14TH	Shuttle Valve,Linear actuator,FRL Unit
15TH	Metering In,Out- Pneumatic
16TH	Speed,Sequencing Circuit- Pneumatic

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LESSON PLAN

COURSE : DEPARTMENT OF MECHANICAL ENGINEERING

SUBJECT : MANUFACTURING TECHNOLOGY - II

SEMESTER : IV

SUB. CODE : 4020420

HANDLED BY : Mr. J.K. KUPPUSAMY (II YEAR A SEC)

HANDLED BY : Mr. N.S. MANIKUMAR (II YEAR B SEC)

Weeks	Portion to be covered
1	Theory of Metal Cutting, Single Point cutting tool, Cutting tool material, Cutting fluids
2	Drilling Machines, Drilling Operations, Method of holding Drilling bit
3	Abrasive process, Type of grinders, Types of bonds, Abrasives
4	Reciprocating machines, Planner, Drives-Quick return mechanism, speed mechanism
5	Shaper, Crank and Slotted link - Quick return mechanism, Operations
6	Slotter, Whitworth quick return mechanism, Feed mechanism- types of tools Types of Broaching machines, Broach tool nomenclature-operations
7	Types of Milling machines, Milling operations, Types of milling cutters
8	Generating processes - Gear shaper, Gear hobbing,
9	Burnishing, Shaving, Gear materials
10	Unconventional machining processes- Mechanical Energy Based Process- Abrasive Jet Machining, Water Jet Machining, Ultrasonic Machining,
11	Electrical Energy Based processes - Electrical Discharge Machine, Tool wear Wire cut EDM
12	Thermal Energy Based Processes - Electron Beam Machining, Laser Beam Machining, Plasma Arc Machining, CNC Machines and its components
13	CNC Machines - Working principles of CNC system, Working principles of Turning centre, Coordinate measuring machine
14	Components of CNC Machine- Slide ways, friction Slide ways, Linear motion bearings, tool magazine, tool materials
15	CNC Programming - Cartesian coordinate system, Polar coordinate system, purpose of G and M codes , CNC turning program, CNC milling program

LESSON PLAN

COURSE : DEPARTMENT OF MECHANICAL ENGINEERING

SUBJECT : ELECTRICAL DRIVES AND CONTROL

SUB. CODE : 4020430

SEMESTER : 4

HANDLED BY : M.VEERA KUMAR (II YEAR A SEC)

HANDLED BY : M.R. SURESH LAL (II YEAR B SEC)

Weeks	Portion to be Covered
1	Power supplies, Rectifiers, Filters, Batteries
2	Fuses, Sensor, Contactors,
3	Circuit Breakers, Electrical Safety, Earthing, Causes of Accidents
4	Display Devices: LED, LCD, Logic Gates
5	Universal Gates, PLC, PLC Scan
6	Ladder Logic Diagram, Coils: AND logic, OR logic.
7	Definition: Voltage, current, Ohms Law, Kirchof's Law, Simple Problems.
8	Magnetic field, MMF, Faraday's Law, DC Generator.
9	DC Motor, 3 point Starter, 4 point Starter.
10	Fundamental of AC Voltage, Current, Amplitude power factor, Transformer
11	Losses in Transformer, Alternator, AC Motor.
12	3 phase induction motor, DOL starter, Star/Delta starter
13	PMDC Motor, Stepper motor, AC servo motor, DC servo motor
14	Industrial Drives, Individual drive, Multimotor drive, Frequency drive,
15	Stepper Motor Drive, DC Servo Motor Drive, AC Servo Motor Drive

LESSON PLAN

COURSE : DEPARTMENT OF MECHANICAL ENGINEERING

SUBJECT : PRODUCTION AND QUALITY MANAGEMENT

SEMESTER : 4

SUB. CODE : 4020440

HANDLED BY : T. VIMAL ROJ (II YEAR A SEC)

HANDLED BY : M. SELVA GANAPATHY (II YEAR B SEC)

Weeks	Portion to be covered
1	Types of Production, Break Even Analysis.
2	Generated process planning, value Engineering, Line balancing.
3	Selection of machinery, Jigs and fixtures
4	TQM (Pillars, Elements, Benefits), Brainstorming.
5	Quality Council, Strategic Planning.
6	Deming Philosophy, Juran's Trilogy, PDCA Cycle.
7	Check sheet, Pareto Diagram, Cause and Effect Diagram, Control chart.
8	Quality Circle, Zero Defect Concept, Affinity and Tree Diagram
9	Matrix Diagram, Arrow Diagram, Construction of the above Diagram
10	Mean, Median, Mode, Sampling Process, Collection of Data.
11	Concept of Six Sigma, Types of Control Chart.
12	Construction of P, np, C, U Charts.
13	Concept of 5S, House Keeping.
14	Bench Marking, Just In Time concept.
15	Implementation of TPM, Lean Six Sigma, DMAIC, DMADV

340 - K.L.N.MEMORIAL POLYTECHNIC COLLEGE

LESSON PLAN

Discipline	Mechanical engineering
Semester	4 th
Subject	Strength of materials and Fluid Mechanics Pratical
Subject Code	4020450
Name of the faculty	M.MURUGAN - II ND Year A Sec
	K.MANOJ BALA - II ND Year B Sec
Lesson plan duration	16 weeks
Work load	5 Hours per week
Week	Portion to be covered
1ST	Introduction to Strength of materials and FM lab
2 ND	Test on ductile materials
3 RD	Hardness test
4 TH	Torsion test
5 TH	Impact test
6 TH	Test on spring of circular section
7 TH	Shear test
8 TH	verify of bernoullis theorem
9 TH	Coefficient of Discharge by mouth piece
10 TH	Coefficient of Discharge by Venturimeter
11TH	Friction Factor In a pipe
12TH	performance test on reciprocating pump
13 TH	performance test on Impulse Turbine
14 TH	Repeat cycle
15 TH	Repeat cycle
16 TH	Repeat cycle

LESSON PLAN

COURSE : DEPARTMENT OF MECHANICAL ENGINEERING
SUBJECT : MANUFACTURING TECHNOLOGY- II PRACTICAL
SEMESTER : IV SUB CODE : 4020469
HANDLED BY : Mr. T. VIMAL ROJ (II YEAR -A- SEC)
HANDLED BY : Mr. N.S. MANIKUMAR (II YEAR - B- SEC)

Weeks	Portion to be covered
1	Identify a milling machine and its parts , Cylindrical grinder, Shaper , Slotter and Tool and Cutter grinder
2	Study the components of CNC Machine
3	Machine a component using different machine tools
4	Calculate the Indexing for a work
5	Make 'V' Block using shaping machine
6	Make dovetail using shaping machine
7	Make groove cut using slotting machine
8	Make round to hexagon in milling machine
9	Make Spur Gear using milling machine
10	Make Helical Gear using milling machine
11	Make slot cut using milling machine
12	Make Progressive type Plug gauge using Cylindrical Grinding machine
13	Make a turning tool using Tool and Cutter Grinder
14	Make plain surfaces (four surfaces) using Surface Grinder
15	Make the component in the CNC Turning Centre
16	Make the component in the CNC Milling Centre

LESSON PLAN

COURSE : DEPARTMENT OF MECHANICAL ENGINEERING

SUBJECT : ELECTRICAL DRIVES AND CONTROL PRACTICAL

SEMESTER : 4

SUB. CODE : 4020470

HANDLED BY : M. VEERA KUMAR (II YEAR A SEC)

HANDLED BY : M.R. SURESH LAL (II YEAR B SEC)

Weeks	Portion to be covered
1	Introduction: DC & AC Motor
2	OHM's Law
3	DC Shunt Motor
4	Single phase Induction Motor
5	3 Phase Induction Motor
6	Testing of Relays contacts, Push button, Switch
7	Testing of MCB, ELCB
8	Introduction Rectifiers, Logic Gates
9	Half wave, Full wave Rectifier
10	IC Voltage Regulator using IC7805
11	Verification of Logic Gates
12	Verification of Universal Gates NAND
13	Verification of Universal Gates NOR
14	Testing of Display Devices, LED, 7 segment, Laser Diode
15	Testing of Stepper Motor Drive
16	Testing of Servo Motor Drive