

ERODE SENGUNTHAR ENGINEERING COLLEGE, ERODE
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
PG:M.E.-Applied Electronics

List of experimental setup in each laboratory /workshop

S.No.	Name of the Laboratory / Workshop	List of experimental setup
1.	19AE107 Real Time Embedded System Laboratory	RS232C Bus Interfacing with PIC Microcontroller LED and Switch Interfacing with Embedded PIC Microcontroller LED interfacing with Embedded PIC Microcontroller LED and Key matrix Interfacing with Embedded PIC Microcontroller EEPROM Interfacing with Embedded PIC Microcontroller (I2C-Communication) LCD Interfacing with Embedded PIC Microcontroller Rolling Display in LCD /LED using Embedded PIC Microcontroller ADC Interfacing with Embedded PIC Microcontroller(I2C-Communication) RTC interfacing with Embedded PIC Microcontroller(I2C-Communication) Study of Convolution Algorithm Implementation using DSP Processor Study of Matrix Multiplication using DSP Processor
2.	19AE204 VLSI laboratory	Design and Simulation of Combinational and sequential circuits using VHDL Design and Simulation of Combinational and sequential circuits using Verilog FPGA Implementation of FFT Computation FPGA Implementation of FIR Filter (Low, High and Band pass) FPGA Implementation of 4 Bit ALU & Power analysis. FPGA Implementation of Real Time Clock & RTL view FPGA Implementation of Adaptive Signal Processing Algorithm Implementation of Image Processing Algorithm using MATLAB.

		Implementation of Neural networks Algorithms using MATLAB. Implementation of Genetic Algorithm and PSO using MATLAB.
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M. Tech Chemical Engineering

S.No.	Name of the Laboratory / Workshop	List of experimental setup
1	19MCH16 - INSTRUMENTAL METHODS OF ANALYSIS LABORATORY	<ol style="list-style-type: none"> 1. Validate Lambert-Beer's law in UV-VIS Spectrophotometer using given sample. 2. Determine the strength and amount of given solution using conductivity meter 3. Determine the amount of ion present in the given solution using Potentiometer. 4. Determine the amount of acid present in the whole of the given sample by using pH meter. 5. Determine the amount of dissolved oxygen in the given sample. 6. Using Flame Photometer, prepare a standard graph of Concentration and Photo-detector value for a given compound. 7. Identify the reactor which works on cavitation principles and carry out the experimental studies. 8. Determine the flash point & fire point of the given sample. 9. Determine the smoke point of the given sample. 10. Determine the viscosity of the lubricating oils by viscometer method.

**M.E INDUSTRIAL SAFETY ENGINEERING
(R2019) SEMESTER - II**

S.No	Name of the laboratory with code	List of experiments
1	19IS206 INDUSTRIAL SAFETY AND ENVIRONMENTAL LABORATORY	<p>NOISE LEVEL MEASUREMENT AND ANALYSIS: Measurement of sound pressure level in dB for Impact, continuous and intermittent sources at various networks, peak and average values.</p> <p>FRICTION TEST: Explosive materials like barium nitrate, gun powder, white powder, amorces composition etc.</p> <p>IMPACT TEST: EXPLOSIVE materials like gun powder, white powder, amerces composition etc. Burst strength test of packaging materials like paper bags, corrugated cartoons, wood etc. Auto ignition temperature test.</p> <p>ENVIRONMENTAL PARAMETER measurement: Dry Bulb Temperature, Wet Bulb Temperature, Determination of relative humidity, wind Flow, Particle size Measurement & Air sampling analysis.</p> <p>TRAINING IN USAGE AND SKILL DEVELOPMENT PERSONAL PROTECTIVE EQUIPMENT: Respiratory and non-respiratory-demonstration-self-contained breathing apparatus. Safety helmet, belt, hand gloves, goggles, safety shoe, gum boots, ankle shoes, face shield, nose mask, ear plug, ear muff, antistatic and conducting plastics/rubber materials, apron and leg guard.</p> <p>FIRE EXTINGUISHERS AND ITS OPERATIONS: Water CO₂, Foam, Carbon dioxide (CO₂), Dry chemical powder.</p> <p>Static charge testing on plastic, rubber, ferrous and non-ferrous materials. Illumination testing - by lux meter and photo meter.</p> <p>ELECTRICAL SAFETY - Insulation resistance for motors and cables, Estimation of earth resistance, Earth continuity test, Sensitivity test for ELCB.</p> <p>SOFTWARE USAGE - Accident Analysis ,Safety Audit Packages, Consequence Analysis (CISCON), Fire, Explosion and Toxicity Index (FETI), Reliability Analysis for Mechanical</p>

		system and Electrical System, Failure Mode Analysis.
		FIRST AID, Road safety signals and symbols.

M.E., MANUFACTURING ENGINEERING (R2019) SEMESTER - I		
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S.No	Name of the laboratory with code	List of experiments
1	19MF105 CAD/CAM LABORATORY	Exercise on CNC Lathe: Plain Turning, Step turning, Taper turning, Threading, Grooving canned cycle
		Exercise on CNC Milling Machine: Profile Milling, Mirroring, Scaling & canned cycle. Study of Sensors, Transducers & PLC: Hall-effect sensor, Pressure sensors, Strain gauge, PLC, LVDT, Load cell, Angular potentiometer, Torque, Temperature & Optical Transducers.
		2D modeling and 3D modeling of components such as 1. Bearing 2. Couplings 3. Gears 4. Sheet metal components 5. Jigs, Fixtures and Die assemblies.

SEMESTER - II		
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2	19ME205 AUTOMATION AND METAL FORMING LABORATORY	Determination of strain hardening exponent
		Determination of strain rate sensitivity index
		Construction of formability limit diagram
		Determination of efficiency in water hammer forming
		Determination of interface friction factor
		Determination of extrusion load
		Study on two high rolling process
		Simulation of single and double acting cylinder

		circuits
		Simulation of Hydraulic circuit
		Simulation of electro pneumatic circuits
		Simulation of electro hydraulic circuits
		Simulation of PLC circuits
		Software simulation of fluid power circuits using Automation studio.

S.No	Name of the Laboratory / Workshop	List of experimental setup
Sem 1	PX5111 - Power Electronics Circuits Lab	<ul style="list-style-type: none"> • Study of switching characteristics of Power electronic switches with and without Snubber (i) IGBT (ii) MOSFET • Modeling and system simulation of basic electric circuits using MATLABSIMULINK/ SCILAB • DC source fed resistive load and Resistive-inductive load • DC source fed RLC load for different damping conditions • DC source fed DC motor load • Modeling and System simulation of basic power electronic circuits using MATLAB-SIMULINK/SCILAB • AC Source with Single Diode fed Resistive and Resistive-Inductive Load • AC source with Single SCR fed Resistive and Resistive-Inductive Load • Modeling and System Simulation of SCR based full converter with different types of load using MATLAB-Simulink/SCILAB • Full converter fed resistive load • Full converter fed Resistive-Back Emf (RE) load at different firing angles • Full Converter fed Resistive-Inductive Load at different firing angles • Full converter fed DC motor load at different firing angles • Circuit Simulation of Voltage Source Inverter and study of spectrum analysis with and without filter using MATLAB/SCILAB

		<ul style="list-style-type: none"> • Single phase square wave inverter • Three phase sine PWM inverter • Generation of PWM gate pulses with duty cycle control using PWM peripheral of microcontroller (TI-C2000 family/ PIC18) • Duty cycle control from IDE • Duty Cycle control using a POT connected to ADC peripheral in a standalone mode • Generation of Sine-PWM pulses for a three phase Voltage Source Inverter with control of modulation index using PWM peripheral of microcontroller (TI C2000 family/PIC 18) • Design of Driver Circuit using IR2110 • Design and testing of signal conditioning circuit to interface voltage/current sensor with microcontroller (TI-C2000 family/ PIC18) • Interface Hall effect current sensor with microcontroller and display the current waveform in the IDE and validate with actual waveform in DSO • Interface Hall effect Voltage sensor with microcontroller and display the current waveform in the IDE and validate with actual waveform in DSO • Design of PI controller using OP-AMP • Construction and testing of 500 W, 220 V IGBT based Buck converter with control circuit and its performance Evaluation • Measurement of Efficiency at different duty cycle with a resistive load • Measurement of Efficiency at different duty cycle with a resistive-inductive load • PCB design and fabrication of DC power supply using any PCB design software (open source- KiCAD/students version)
Sem 2	PX5211 - Electrical Drives Laboratory	<ul style="list-style-type: none"> • Speed control of Converter fed DC motor. • Speed control of Chopper fed DC motor. • V/f control of three-phase induction motor. • Micro controller based speed control of Stepper motor. • Speed control of BLDC motor. • DSP based speed control of SRM motor.

		<ul style="list-style-type: none">• Voltage Regulation of three-phase Synchronous Generator.• Cycloconverter fed Induction motor drives• Single phase Multi Level Inverter based induction motor drive• Study of power quality analyzer
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