

Module Name (Mechanical Engineering)	Total Hours
Advance hydraulics, pneumatics and robotics	50

1	Hydraulics	18 Hrs
	<ul style="list-style-type: none"> (a) Basic fundamentals involved hydraulic system structure. (b) Construction, design feature, working principle of - Pumps, Pressure control valves, Direction control valve, check valve, Flow control valve, accumulator and cylinders. (c) Representation of symbols used in identifying, reading and interpreting basic hydraulic circuit components. (d) Design of circuits using the components of hydraulic system for Drilling, Planning, Shaping, Punching, Press. (e) Selection, fault finding and maintenance of hydraulic components 	
2	Pneumatics	18 Hrs
	<ul style="list-style-type: none"> (a) Fundamentals of compressed air supply: Production, Preparation and distribution. (b) Actuators: Cylinders construction, working and its applications. (c) Valves: Direction control valves identification, construction, design features and operation of other control elements used in circuits. (d) Controls: Position control, Speed control, Logic control, Pressure control, Time-dependent control and counter application. (e) Selection criteria of pneumatic components (f) Basic pneumatic circuits (g) Sequential circuit design using cascade method (h) Installation fault finding and maintenance of pneumatic components 	
3	ROBOTICS	14 Hrs
	<ul style="list-style-type: none"> (a) Basic concepts and definition (b) Robot anatomy and terminology used in robotics (c) Axes nomenclature & basic robot Motions (d) Robot drive system (e) Sensors in Robotics (f) Types of end effectors (g) Various types of grippers –design considerations. (h) Overview of robot programming languages. 	