

**Course wise Teaching Plan for Session : Summer 2019****Course : INDUSTRIAL FLUID POWER****Faculty : sanjay.mitkari@raisoni.net - SANJAY GURUSIDHAPPA MITKARI**

Unit	Topic Code	Topic Covered	Date	Course	Section
1	1	Unit I: Introduction to Fluid Power	14/12/2018	BMEL311	A
1	2	Fluid power system: Components, advantages and applications. Transmission of power at static and dynamic states.	19/12/2018	BMEL311	A
1	3	Pascal's law and its applications such as hydraulic press/Jack	20/12/2018	BMEL311	A
1	4	Numerical	21/12/2018	BMEL311	A
1	5	Fluids for hydraulic system: Types, properties, selection. Additives, effect of temperature and Pressure on hydraulic fluid.	02/01/2019	BMEL311	A
1	6	Seals, sealing materials, compatibility of seal with fluids	03/01/2019	BMEL311	A
1	7	Types of pipes, hoses, material, quick acting couplings. Pressure drop in hoses/pipes	04/01/2019	BMEL311	A
1	8	Fluid conditioning through filters, strainers, sources of contamination and contamination control, heat exchangers.	09/01/2019	BMEL311	A
2	9	Unit II:Pumps	10/01/2019	BMEL311	A
2	10	Types, classification, principle of working and constructional details of Vane pumps, gear pumps,	11/01/2019	BMEL311	A
2	11	radial and axial plunger pumps, screw pumps, power	16/01/2019	BMEL311	A
2	12	power and efficiency calculations, characteristics curves, selection of pumps for hydraulic Power transmission.	17/01/2019	BMEL311	A
2	13	Power units and accessories: Types of power units, reservoir assembly, constructional details,	18/01/2019	BMEL311	A
2	14	pressure switches, temperature switches, Temperature switches.	23/01/2019	BMEL311	A
2	15	Accumulators: Types, selection/ design procedure, applications of accumulators. Types of Intensifiers, Pressure switches /sensor, Temperature switches/sensor, Level sensor	24/01/2019	BMEL311	A

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3	16	Unit III: Fluid Power Control	25/01/2019	BMEL311	A
3	17	Symbols for hydraulic and pneumatic circuits. Control of fluid power through different valves such as pressure control valves,	30/01/2019	BMEL311	A
3	18	directional control valves, and flow control valves	31/01/2019	BMEL311	A
3	19	Principle, classification, constructional details, symbols, advantages, disadvantages and applications).	01/02/2019	BMEL311	A
3	20	Flow rate, working pressure, differential pressure Check valve	06/02/2019	BMEL311	A
3	21	Servo valves, Proportional valves and Cartridge valves, cut off Valves.	07/02/2019	BMEL311	A
3	22	Revision	08/02/2019	BMEL311	A
4	23	Unit IV:Hydraulics	13/02/2019	BMEL311	A
4	24	Actuators: (i) Linear and Rotary. (ii) Hydraulic motors- Types- Vane, gear, Piston types, radial piston.	14/02/2019	BMEL311	A
4	25	(iii) Methods of control of acceleration, deceleration. (iv) Types of cylinders and mountings.	15/02/2019	BMEL311	A
4	26	(v) Calculation of piston velocity, thrust under static and dynamic applications, considering friction, inertia loads. (vi) Design considerations for cylinders. Cushioning of cylinders	20/02/2019	BMEL311	A
4	27	Numerical	21/02/2019	BMEL311	A
4	28	Industrial circuits – Simple reciprocating, Regenerative, Speed control (Meter in, Meter out and bleed off),	22/02/2019	BMEL311	A
4	29	Sequencing, Synchronization, transverse and feed, circuit for riveting machine, automatic reciprocating, fail safe circuit	27/02/2019	BMEL311	A
4	30	counter balance circuit, actuator locking, circuit for hydraulic press, unloading circuit (Numerical treatment), motor breaking circuit	28/02/2019	BMEL311	A

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5	31	Unit V:Pneumatics	01/03/2019	BMEL311	A
5	32	Principle of Pneumatics: (i) Laws of compression, types of compressors, selection of compressors. (ii) Comparison of Pneumatics with Hydraulic power transmissions.	06/03/2019	BMEL311	A
5	33	(iii) Types of filters, regulators, lubricators, mufflers, dryers. (iv) Pressure regulating valves,	07/03/2019	BMEL311	A
5	34	(v) Direction control valves, two way, three way, four way valves. Solenoid operated valves, push button, lever control valves. (vi) Speed regulating - Methods used in Pneumatics.	08/03/2019	BMEL311	A
5	35	(vii) Pneumatic actuators-rotary, reciprocating.(viii) Air motors- radial piston, vane, axial piston (ix) Basic pneumatic circuit, selection of components	13/03/2019	BMEL311	A
5	36	Application of pneumatics in low cost Automation and in industrial automation Introduction to vacuum	14/03/2019	BMEL311	A
5	37	and vacuum measurement	15/03/2019	BMEL311	A
5	38	Vacuum pumps, types, introduction to vacuum sensors and valves. Industrial application of vacuum	20/03/2019	BMEL311	A
6	39	Unit VI: System Design Design of hydraulic/pneumatic circuit for practical application	21/03/2019	BMEL311	A
6	40	Selection of different components such as reservoir,	22/03/2019	BMEL311	A
6	41	various valves, actuators, filters, pumps based on design	27/03/2019	BMEL311	A
6	42	Case studies on various circuit designs.	28/03/2019	BMEL311	A
6	43	Case studies on various circuit designs.	29/03/2019	BMEL311	A