



GOVERNMENT POLYTECHNIC DARLIPALI, SUNDARGARH

ସରକାରୀ ବହୁବୃତ୍ତି ଅନୁଷ୍ଠାନ ଦରଲିପାଲି, ସୁନ୍ଦରଗଡ଼

GOVERNMENT OF ODISHA | ଓଡ଼ିଶା ସରକାର

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A/ P: Darlipali, NTPC Darlipali, Dist.: Sundargarh, Odisha- 758001

LESSON PLAN

Discipline: Mechatronics Engg.			Semester: 4th		Name of the Teaching faculty: Dusmanta Bariha (Sr. Lecturer in Mechanical Engg.)	
Subject: Mechatronic system design Subject Code: MEPC202 TH:1			No of Days/Week class allotted: 3		Semester from Date: 22/12/2025 to 18/04/2026 No. of Periods available: 47	
Month	Week	No of periods available	Class Day	Unit	Theory topics to be covered	
DECEMBER	1st	3P	1	I	Electrical Systems - Mathematical modeling of Electromechanical Systems, RLC Circuits	
			2	I	Active and passive electrical circuits,	
			3	I	PMDC Motor	
JANUARY	2nd	3P	1	I	Stepper motor,	
			2	I	three phase squirrel cage induction motor	
			3	I	Three phase permanent magnet synchronous motor,	
	3rd	3P	1	I	servo motor	
			2	I	Assessment and review of unit-I	
			3	II	Mechanical Systems - Introduction to various systems of units, mathematical modeling of mechanical systems,	
	4th	3P	1	II	Newton's laws, Moment of inertia	
			2	II	forced response and natural response,	
			3	II	rotational systems	
5th	3P	1	II	Spring mass system, free vibration		
		2	II	spring mass damper system		
		3	II	Mechanical systems with dry friction, work energy and power		
FEBRUARY	6th	3P	1	II	Passive elements and active elements an energy method for deriving equations of motion	
			2	II	Energy and power transformers,	
			3	II	review/assessment of unit-2	
	7th	3P	1	III	Fluid and Thermal systems - Mathematical modeling of liquid level system	
			2	III	Resistance and capacitance	
			3	III	Mathematical modeling of pneumatic systems: Resistance and capacitance,	
	8th	3P	1	III	linearization of non-linear systems	
			2	III	Mathematical modeling of hydraulic systems: Hydraulic circuits	
			3	III	hydraulic servo-meter	
	9th	3P	1	III	Mathematical model of hydraulic servo motor dashpots	
			2	III	Mathematical modeling of thermal systems:	
			3	III	Thermal resistance and thermal capacitance	
MARCH	10th	3P	1	III	review/assessment of unit-3	
			2	IV	Design of Mechanical Elements - Phases of design, design considerations,	
			3	IV	codes and standards, optimum design process	
	11th	3P	1	IV	Design variables, cost functions, design constraints, optimum design. Springs, rolling contact bearing	
			2	IV	Journal bearing, Spur and helical gear, bevel and worm gears	
			3	IV	Shafts, axes and spindles,	
	12th	3P	1	IV	Flexible Mechanical Elements, Belts	
			2	IV	Timing belts, chain and sprocket,	
			3	IV	flexible shafts	
	13th	3P	1	IV	Brakes,	
			2	IV	clutches, cams	
			3	IV	Four bar mechanism	
APRIL	14th	3P	1	IV	review/assessment of unit-4	
			2	V	Design of Hydraulic System - Hydraulic circuit design, Actuator design	
			3	V	Selection of pumps,	
	15th	3P	1	V	selection of valves	
			2	V	Design of control circuits	
			3	V	review/assessment of unit-5	
	16th	2P	1		Revision and previous year questions discussion	
			2		Revision and previous year questions discussion	

Dusmanta Bariha

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(HOD I/C Mechatronics)

Principal