

**GOVT.POLYTECHNIC NAYAGARH**  
**DEPARTMENT OF MECHANICAL**  
**ENGINEERING LESSON PLAN**

**SUBJECT: THEORY OF MACHINES & MECHANISM (PR-1)**

**SEMESTER: 4TH**

**PERIODS: 4P/WEEK**

**NAME OF FACULTY: SANTOSH KUMAR PATRA, LECTURER STAGE I      GROUP: A & B**

**SEMESTER FROM: 22/12/2025 to 18/04/2026**


**NO. OF WEEKS: 15**

Week	Period	Theory / Practical Topics
1st	1st & 2nd	Exp 1: Study of Quick Return Mechanism of Shaper Machine: Construction & working.
	3rd & 4th	Demonstration of Quick Return Mechanism on Shaper machine
2nd	1st & 2nd	Lab record submission and viva voice.
	3rd & 4th	Exp 2: Study of mechanisms (Any one): Geneva / Ackermann steering / Bicycle freewheel / Foot pump
3rd	1st & 2nd	Demonstration of working models of mechanisms & Viva voice Sketching of selected mechanism with identification of links
	3rd & 4th	Lab record submission and viva voice.
4th	1st & 2nd	Exp 3: Study of construction & working of Eddy Current Dynamometer.
	3rd & 4th	Demonstration of dynamometer and load application.
5th	1st & 2nd	Lab record submission and viva voice.
	3rd & 4th	Exp 4: Determine velocity and acceleration of links by relative velocity method.
6th	1st & 2nd	Practice of velocity and acceleration diagrams.
	3rd & 4th	Lab record submission and viva voice.
7th	1st & 2nd	Exp 5: Determine velocity and acceleration in slider crank mechanism by Klein's construction.
	3rd & 4th	Viva Voce: Slider crank mechanism and piston motion.
8th	1st & 2nd	Exp 6: Drawing of cam profile with knife-edge and roller follower (with offset).
	3rd & 4th	Explanation of displacement diagram of cam.
9th	1st & 2nd	Exp 7: Drawing of cam profile with knife-edge and roller follower (without offset).
	3rd & 4th	Viva Voce: Cams and followers.
10th	1st & 2nd	Exp 8: Study of open and cross belt drive – slip, belt length, angle of contact.
	3rd & 4th	Demonstration of belt drive setup.
11th	1st & 2nd	Exp 9: Calculation of braking torque of shoe brake / disc brake.
	3rd & 4th	Viva Voce: Brakes and braking torque.
12th	1st & 2nd	Exp 10: Assembling and disassembling of different types of clutches.
	3rd & 4th	Study of single plate and multi-plate clutch.

13th	1st & 2nd	Exp 11: Study of governors – measurement of radius and height at different speeds.
	3rd & 4th	Viva Voce: Governors – sensitivity, stability, isochronism.
14th	1st & 2nd	Exp 12: Balancing of rotating unbalanced masses.
	3rd & 4th	Demonstration of static balancing of rotating masses.
15th	1st & 2nd	Revision of all experiments.
	3rd & 4th	Final Lab Record Submission / End Semester Practical Examination.

## REFERENCE

1. Theory of Machines – S.S. Rattan
2. Theory of Machines – R.S. Khurmi & J.K. Gupta
3. Dynamics of Machines – J.B.K. Das

  
**SANTOSH KUMAR PATRA**  
**(LECTURER STAGE 1)**