

PANIPAT INSTITUTE OF TECHNOLOGY, SAMALKHA, PANTPAT

Department of Civil Engineering

Lecture Delivery Schedule

Name of Faculty: Khyati Saggu

Sem.: 8th

2020-21

Subject Code: CE-404N
Engineering

Section:

Session:

Subject Name: Railway & Airport

UNIT NO.	TOPIC	No. of Lect. Reqd.	Scheduled Dates
1	Rail transportation and its importance in India, Permanent way: Requirements and Components. Gauges in India and abroad. Selection of gauge, Coning of wheels. Adzing of sleepers. Rails: functions, composition of rail steel, types of rail sections.	01	
	Requirements of an ideal rail section, length of rails. Defects in rails. Creep of rails. Long welded rails and continuously welded rails	01	
	Sleepers: functions, requirements of an ideal sleeper. Types of sleepers: Wooden, cast iron, steel and concrete sleepers.	01	
	Sleeper density, Fastenings for various types of sleepers, fish plates, spikes, bolts.	01	
	Bearing plates, keys, chairs, jaws, tie bars.	01	
	Elastic fastenings. Ballast: functions, Requirements, types of ballast and their suitability	01	
2	Necessity. Turnout: various components, working principle Switch: components, types	01	
	Switch: components, types, Crossing: components and types	01	
	Design elements of a turnout, design of a simple turnout	01	
	Layout plan of track junctions: crossovers, diamond crossing, single-Double slips.	01	
	Signals: objects, types and classification, Semaphore signal: components, working principle.	01	
	Requirements / principles of a good interlocking system. Brief introduction to devices used in interlocking.	01	

	Absolute block system, automatic block system, throw switch, turn table, triangle.	01	
3	Gradients, grade compensation.	01	
	Centralized train control and automatic train control systems	01	
	Super elevation, cant deficiency, negative super elevation.	01	
	Maximum permissible speed on curves. Tractive resistances, types.	01	
	Hauling capacity of a locomotive. Stations: functions and classification Junction, non-junction.	01	
	Terminal stations, Yards: functions, types, Marshalling yard: functions, types.	01	
	Maintenance of railway track: necessity, types of maintenance.	01	
	Brief introduction to mechanized maintenance, M.S.P and D.T.M.	01	
4	Air transportation, its importance and characteristics, status in India.	01	
	Layout plan of an airport and its basic elements, terminal area, apron, taxiway, runway, hanger.	02	
	Aircraft characteristics, elements of an airport. Effect of Aircraft characteristics on elements of an airport.	01	
	Site selection of an airport. Classification of airports, Runway orientation.	01	
	Wind Rose diagram I, Wind Rose diagram II, Basic runway length, Corrections to basic runway length.	01	
	Difference between highway and runway pavement. Runway patterns.	01	

Text Book(s):

1. A text book of Railway Engineering by S.C.Saxena and S.P.Arora, Dhanpat Rai Publicatios, New Delhi.
2. Airport Planning and Design by S.K.Khanna, M.G.Arora, Nem Chand Bros., Roorkee.
3. Railway Track Engg. By J.S.Mundray, Tata McGraw-Hill Publishing Co. Ltd. N.Delhi.

Textbooks recommended by faculty

1. A text book of Railway Engineering by S.C.Saxena and S.P.Arora, Dhanpat Rai Publicatios, New Delhi.

2. Airport Planning and Design by S.K.Khanna, M.G.Arora, Nem Chand Bros., Roorkee.