

Major Elective – 2
(Group – 2)
Railway and Airport Engineering

Course Objectives:

1. To enhance the knowledge of Railway and Airport Engineering in the context of regional mass transportation systems.
2. To provide techniques of planning, modeling and designing the transportation systems along with infrastructures required for Railways and Airports.
3. Also, to make the students aware of the environmental and other impacts impended due to Railway and Airport projects.

Course Contents:

1. Rail Transportation System: Importance of Railway for regional development, Railway Track system & sub-structures, Railway infrastructure, Modernization in track, safety in railways, under-ground railways.
2. Demand analysis and forecasting for passenger and freight traffic costing and pricing principles, project analysis and design; project interdependencies and programming techniques; systems analysis and systems planning; planning strategies for regional context, macroeconomic transportation simulator; case studies and implementation strategies. Environmental and other impacts.
3. Characteristics of Air Transportation, structure and organization, challenges and the issues, Airport Master Plan, Characteristics of the aircraft, Airport Requirements, site selection, layout plan and financial plan, Forecasting air travel demand, Air freight demand
4. Geometric Design of runway, taxiway, aprons, Design of Passenger Terminal, analysis of flow through terminals, Design of air cargo facilities, Airfield pavement and drainage design.
5. Environment impact of Airports. Air traffic control lighting and signing, Airport capacity and configuration, parking configurations and apron facilities

Tutorials:

1. Problems based on forecasting of passenger and freight traffic for railways and airways.
2. Problems based on costing and pricing strategy in railways as well as in airways.
3. Planning and design of railway and airway network, routes and schedules for the actual or hypothetical regional area development.
4. Planning and design of infrastructures required for railways and air ports.

Field Visit:

1. Visit to the Railway station, yards and management office.
2. Visit to the Airport terminal building, structures of terminal area and management office.

References:

1. Khanna S.K., Arora M.G., Jain S.S., *Airport Planning & Design*, Nemchand Bros., Roorkee
2. Horenjeff Robert, *The planning & Design of Airports*, McGraw Hill Book Co.
3. Saxena S.C., *Railway Engineering*, Dhanpat Rai & Sons, 1995.