

UNIT III AIRPORT PLANNING							
16	Air transport characteristics	T2	1	PPT	L2	CO3	PO1,PO2, PO3
17	Airport classification	T2	1	PPT	L2	CO3	PO1,PO2, PO3
18	ICAO	T2	1	PPT	L2	CO3	PO1,PO2, PO3
19	Airport planning	T2	1	PPT	L2	CO3	PO1,PO2, PO3
20	Site selection typical Airport Layouts	T2	1	PPT	L2	CO3	PO1,PO2, PO3
21	Case studies	T2	1	PPT	L3	CO3	PO1,PO2, PO3
22	Parking and Circulation Area	T2	1	PPT	L2	CO3	PO1,PO2, PO3
Suggested Activity: Seminar (Case studies of airport planning)							
Evaluation method: PPT (5 Marks)							
UNIT IV AIRPORT DESIGN							
23	Runway Design: Introduction	T2	1	PPT	L2	CO4	PO1,PO2, PO3
24	Orientation, Wind Rose Diagram	T2	1	PPT	L2	CO4	PO1,PO2, PO3
25	Problems on basic and Actual Length, Geometric Design	T2	2	PPT	L3	CO4	PO1,PO2, PO3
26	Elements of Taxiway Design	T2	1	PPT	L3	CO4	PO1,PO2, PO3
27	Airport Zones	T2	2	PPT	L3	CO4	PO1,PO2, PO3
28	Passenger Facilities and Services	T2	1	PPT	L3	CO4	PO1,PO2, PO3
29	Runway and Taxiway Markings.	T2	1	PPT	L3	CO4	PO1,PO2, PO3
30	Runway and Taxiway Markings.	T2	1	PPT	L2	CO4	PO1,PO2, PO3
Suggested Activity: MCQ							
Evaluation method: Online Mode (25 Marks)							
UNIT V HARBOUR ENGINEERING							
31	Definition of Basic Terms: Harbour, Port, Satellite Port, Docks, Waves and Tides	T2	1	PPT	L3	CO5	PO1,PO2, PO3
32	Planning and Design of Harbours	T2	1	PPT	L3	CO5	PO1,PO2, PO3
33	Harbour Layout and Terminal Facilities	T2	1	PPT	L3	CO5	PO1,PO2, PO3
34	Coastal Structures: Piers, Break waters	T2	1	PPT	L3	CO5	PO1,PO2, PO3
35	Wharves, Jetties, Quays, Spring Fenders	T2	1	PPT	L3	CO5	PO1,PO2, PO3
36	Dolphins and Floating Landing Stage	T2	1	PPT	L2	CO5	PO1,PO2, PO3
37	Ultimate residue disposal – recent advances.	T2	1	PPT	L3	CO5	PO1,PO2, PO3
38	Inland Water Transport, Wave action on Coastal Structures	T2	2	PPT	L3	CO5	PO1,PO2, PO3
39	Coastal Protection Works – Coastal Regulation Zone, 2011	T2	1	PPT	L3	CO5	PO1,PO2, PO3
Suggested Activity: Assignment (Coastal zone regulation)							
Evaluation method: Paper Based (5 Marks)							
Content Beyond the Syllabus Planned							
1	Planning and Construction of road network and connectivity						
2	Effect of Climatic conditions on coastal structures						
Text Books							
1	Subramanian K.P., Highways, Railways, Airport and Harbour Engineering, V Scitech Publications (India), Chennai, 2010						
2	Saxena Subhash, C.and Satyapal Arora, A Course in Railway Engineering, Dhanapat Rai and Sons, Delhi, 1998						
3	Khanna.S.K. Arora.M.G and Jain.S.S, Airport Planning and Design, Nemachand and Bros, Roorkee, 1994						
Reference Books							
1	Venkatramaiah. C., Transportation Engineering-Vol.2 Railways, Airports, Docks and Harbours, Bridges and Tunnels.,Universities Press (India) Private Limited, Hyderabad, 2015.						
2	Mundrey J S, Railway Track Engineering, McGraw Hill Education (India) Private Ltd, New Delhi, 2013						

Website / URL References

1	https://www.youtube.com/watch?v=37WMS483T7Y
2	https://www.youtube.com/watch?v=LY4gXkUgK_Y
3	https://www.digimat.in/nptel/courses/video/114106025/L01.html

Blooms Level

Level 1 (L1) : Remembering	Lower Order Thinking	Fixed Hour Exams	Level 4 (L4) : Analysing		Higher Order Thinking	Projects / Mini Projects
Level 2 (L2) : Understanding			Level 5 (L5) : Evaluating			
Level 3 (L3) : Applying			Level 6 (L6) : Creating			

Mapping syllabus with Bloom's Taxonomy LOT and HOT

Unit No	Unit Name	L1	L2	L3	L4	L5	L6	LOT	HOT	Total
Unit 1	RAILWAY PLANNING AND CONSTRUCTION		5	5				10		10
Unit 2	RAILWAY CONSTRUCTION AND MAINTENANCE		7	1				8		8
Unit 3	AIRPORT PLANNING		6	1				7		7
Unit 4	AIRPORT DESIGN		3	7				10		10
Unit 5	HARBOUR ENGINEERING		1	9				10		10
Total			22	23				45		45
Total Percentage			48.89	51.11				100.00		100

CO PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	3										2	2
CO2	3	2	3										2	2
CO3	3	2	3										2	2
CO4	3	2											2	2
CO5	3	2	3										2	2
Avg	3.00	2.00	3.00										2.00	2.00

Justification for CO-PO mapping

CO1	PO1: Apply the Engineering knowledge in planning and design of sewerage system, PO2: Problem analysis: Identify and formulate, experiment and analyse data for estimation of sewage PO3: Design / development of solutions for Design of sanitary and storm sewers PO7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts and they will be social and environment responsibility.
CO2	PO1: Apply the Engineering knowledge in selection of primary treatment process PO2: Problem analysis: Identify and formulate, experiment and analyse data for design period PO3: Design / development of solutions for Design of sewage treatment units PO7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts and they will be social and environment responsibility in Construction, Operation and Maintenance aspects.
CO3	PO1: Apply the Engineering knowledge for the selection of secondary Treatment Methods, PO2: Problem analysis: Identify and formulate, experiment and analyse data for Recent Advances in Sewage Treatment, PO3: Design / development of solutions for Design secondary treatment units, PO7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts and they will be social and environment responsibility in Construction, operation and Maintenance aspects.
CO4	PO1: Apply the Engineering knowledge in disposal of sewage, PO2: Problem analysis: Identify and formulate, experiment and analyse data for Self purification of river. PO7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts and they will be social and environment responsibility in Land disposal & Sewage farming.
CO5	PO1: Apply the Engineering knowledge in Sludge treatment & disposal, PO2: Problem analysis: Identify and formulate, experiment and analyse data for Self purification of surface water bodies. PO3: Design / development of solutions for Design Standard rate and High rate digester design, PO7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts and they will be social and environment responsibility in Biogas recovery.

3	High level	2	Moderate level	1	Low level
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Name & Sign of Faculty Incharge :

Name & Sign of Subject Expert :

Head of the Department :