

GUJARAT TECHNOLOGICAL UNIVERSITY

BE (CIVIL & INFRASTRUCTURE ENGINEERING)

INFRASTRUCTURE PLANNING AND APPRAISAL

SUBJECT CODE:

6th Semester

Type of course: Core Subject in BE (Civil and Infrastructure Engineering)

Prerequisite: NIL

Rationale:

Infrastructure Planning and Appraisal is providing conceptual understanding of variables involve in planning and evaluation of infrastructure projects. With the help of this knowledge students may be able:

- To provide an overview of Infrastructure scenario in India and their sector specific features
- To provide required knowledge and skills planning and appraising sustainable civil Infrastructure systems and their interactions
- To make student aware of the procurement management process involved in the infrastructure projects

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks					Total Marks	
L	T	P		Theory Marks			Practical Marks			
			ESE	PA(M)		ESE (V)		PA (I)		
PA	ALA	ESE		OEP						
3	1	0	4	70	20	10	30	0	20	150

Contents:

Sr. No	Topics	Hrs.	% Weightage
1	Introduction: Infrastructure scenario in India: Sector wise details, infrastructure players, key issues and government initiatives in transport, power, telecom, urban and rural infrastructure sectors	5	11
2	Infrastructure Project Planning: Players in Infrastructure, Long term planning issues of infrastructure projects, Infrastructure planning process, Multi-criteria analysis for comparison of infrastructure alternatives; Infrastructure delivery methods including PPP, Infrastrucure economics and financial models, Life cycle costing,	15	31

	Project structuring, Project Risks, Risk allocation and management, Integration of infrastructure systems		
3	Infrastructure Project Appraisal: Demand Analysis & Forecasting, Technical Analysis, Economic and Financial Analysis, Environmental Clearance Procedure in India, Environment Impact Assessment: Purpose & Process, EIA Hierarchy, Impact Indicators	14	29
4	Infrastructure Project Management: Project governance, Project management planning and control systems, Stake holder management, Legal and contractual issues, Procurement of infrastructure provider: process, pricing and negotiation, MIS for infrastructure projects	14	29

Suggested Specification table with Marks (Theory):

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
25	25	20	15	15	0

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above

Course Learning Outcomes:

1. Student will have a broad understanding about the key infrastructure sectors and their related planning and management issues
2. Student will be capable of appraising an infrastructure project based on demand, technical and economic point of view
3. The student will be aware of the management process involved in the procurement of infrastructure projects

Reference Books:

1. James Parkin, D. Sharma, Infrastructure Planning, Thomas Telford, 1999
2. W. Ronald Hudson, Waheed Uddin, Ralph C. Haas, Infrastructure Management: Integrating Design, Construction, Maintenance, Rehabilitation and Renovation, McGraw-Hill Professional, 1997.
3. S. Goodman and M. Hastak, Infrastructure planning handbook: Planning, engineering, and economics, McGraw-Hill, New York, 2006.
4. J. D. Finnerty, Project financing - Asset-based financial engineering, John Wiley & Sons, New York, 1996.
5. Rajarshi Majumder, Infrastructure and Development in India, Interlinkages and Policy Issues, Rawat Publications, 2008.
6. P. Chandra, Projects: Planning, analysis, selection, financing, implementation, and review, Tata McGraw-Hill, New Delhi, 2009

List of Open Source Software/learning website: www.nptel.iitm.ac.in/courses/

Active learning Assignments (AL) : Preparation of power-point slides, which include videos, animations, pictures, graphics for better understanding theory and practical work – The faculty will

allocate chapters/ parts of chapters to groups of students so that the entire syllabus to be covered. The Power-point slides should be put up on the web-site of the College/ Institute, along with the names of the students of the group, the name of the faculty, Department and College on the first slide. The best three works should submit to GTU.