Department of City & Regional Planning,
School of Architecture & Planning,
University of Management and Technology

Course Outline – Infrastructure Planning and Management (CRP-327)

UMT Vision:
OUR VISION IS LEARNING!
It defines our existence, inspires all stakeholders associated with us, creates a powerful momentum inside, and responds to the challenges outside. It continues to evolve as present captures new realities and foresight unfolds new possibilities. All in an incessant attempt to help individuals and organizations discover their God-given potentials to achieve Ultimate Success actualizing the highest standards of efficiency, effectiveness, excellence, equity, trusteeship and sustainable development of global human society.

UMT Mission
OUR MISSION IS LEADING
We aspire to become a learning institution and evolve as the leading community for the purpose of integrated development of the society by actualizing strategic partnership with stakeholders, harnessing leadership, generating useful knowledge, fostering enduring values, and projecting sustainable
technologies and practices.

Vision and Mission Statements of the City & Regional Planning Department
The vision statement of the Department of City & Regional Planning is:

- To be a leading City & Regional Planning Department aiming for excellence in learning, research and innovation with integrity and equity.

The mission of the Department of City & Regional Planning is:

- The mission is to establish a very important program concerning the development and management of the built environment. This is entitled as Bachelor of Science in City and Regional Planning. The studies will be focused on needs of the nation in the field of built environment of our regional, urban and rural settlements. The students are required to be equipped with knowledge of advanced skills, latest knowledge and technology used in the planning and management of various settlements. They need to be fully aware of the current world, new trends and direction of the developments in future.

Program Educational Objectives (PEOs)

Five years after graduating, the graduates of the program should be characterized by the following three features:

PEO-1:

The graduates will apply learnt knowledge and skills of spatial, temporal, and physical planning.

PEO- 2:

The graduates will propose and execute appropriate solutions to complex planning and urban issues and adapt recent developments in planning focusing on research, creativity, and innovation.

PEO-3:

The graduates will reflect core ethical values in their professional conduct and become responsible members of society.

Program Learning Outcomes (PLOs) / Graduate Attributes

Graduates of the BS CRP program at UMT are expected to have acquired and developed the following set of knowledge, skills, and personality traits (these are also referred to as graduate attributes)

PLO 1: Planning Knowledge

An ability to demonstrate knowledge of contemporary planning theories and conceptual ideologies and models.

PLO 2: Designing Analysis

An ability to identify and investigate problems, construct theoretical framework through literature review and case studies and synthesize information.

PLO 3: Professional Skills

Apply planning knowledge in design/planning process to synthesize and articulate multi-faceted variables to generate an integrated solution based on societal and environmental considerations.

PLO 4: Usage of IT

An ability to select and apply appropriate techniques and resources, including prediction and modelling, to complex planning activities.

PLO 5: Communication

Convey ideas and solutions of planning/urban problems in verbal, written and graphical modes, effectively.

PLO 6: Leadership

Ability to opt a role for affective coordination within the team & collaboration with the community.

PLO 7: Professional Ethics

An ability to apply ethical principles and professional codes following the social norms to the best interest of the society.

PLO 8: Lifelong Learning

Capable of acquiring knowledge, skill, and information self-reliantly from diverse sources and appreciating new ideas and concepts.

Course Learning outcomes (CLOs)

After studying this course, the learners will be able to:

1. Understanding the infrastructure planning and what are the barriers and constrains in Pakistani cities Understanding of transport surveys, and designing parking spaces
2. Learning Principles and Practices of Infrastructure Planning at National Levels (Transportation, Utility Services, Communications etc.)
3. Understanding of public and local projects and its legal aspects
4. Understand government and private sector roles in basic infrastructure provision

Tittle	Course Learning Outcomes	PLO 1: Planning Knowledge	PLO 2: Designing Analysis	PLO 3: Professional Skills	PLO 4: Usage of IT	PLO 5: Communication	PLO 6: Leadership	PLO 7: Professional Ethics	PLO 8: Lifelong Learning
Infrastructure planning and management	Understanding the infrastructure planning and what are the barriers and constrains in Pakistani cities	✓							
	Learning Principles and Practices of Infrastructure Planning at National Levels (Transportation, Utility Services, Communications etc.)		✓						
	Understanding of public and local projects and its legal aspects	✓							
	Understand government and private sector roles in basic infrastructure provision	✓							

CODE	NAME	CLO	CLO Type
327.1	327.C1	Understanding the infrastructure planning and what are the barriers and constrains in Pakistani cities	C1
327.2	327.C2	Learning Principles and Practices of Infrastructure Planning at National Levels (Transportation, Utility Services, Communications etc.)	P3

327.3	327.C3	Understanding of public and local projects and its legal aspects	A4
327.4	327.C4	Understand government and private sector roles in basic infrastructure provision	C2

Content List

- Conceptual Basis of Infrastructure Planning
- General Considerations for the Infrastructure Planning
- Categories of Infrastructure
- Principles and Practices of Infrastructure Planning at Local, Regional and National Levels (Transportation, Utility Services, Communications etc.).
- The Role of Government and Private Interest Groups in the Infrastructure Development Process.
- The Use of Demand Modeling (Infrastructure Requirements with Respect to Population Density).
- Political, Financial, Public Relations, Legal and Environmental Concerns of Various Stakeholders
- Public-Private Partnership in Infrastructure Development Projects.
- An Introduction of Mega Infrastructure Projects in Pakistan and their Benefits
- Design of urban water supply schemes
- Drinking Water Treatment Plant Design
- Calculation of waste water flow and BOD load
- Appropriate methods and technologies to treat municipal and industrial waste Solid and

Practical

- Study on Physical Infrastructure Planning Standards and Implementation.
- Planning and designing of suitable infrastructure for urban and rural dwellers.
- Infrastructure requirements for Residential, Commercial and Industrial Uses.
- In-depth analysis of mega infrastructure planning projects (Case Studies)

Recommended Books

1. Beatley (2014), *Blue Urbanism*, Island press.
2. Tim Marshall (2012), *Planning Major Infrastructure (A Critical Analysis)*, Print ISBN: 9780415669542, eBook ISBN: 9780203112120, Adobe ISBN: 9781136281150, 10.4324/9780203112120.
3. Alvin S. Goodman, MakarandHastak (2006), *Infrastructure Planning Handbook (Planning, Engineering and Economics)*, McGraw-Hill Professional, ASIN: B00F0LCU8Y.
4. Vicki Elmer and Adam Leigland, *Infrastructure Planning and Finance (A Smart and Sustainable Guide)*, Print publication Print ISBN: 9780415693189; eBook ISBN: 9780203552391; Adobe ISBN: 9781135906412 10.4324/9780203552391
5. *Infrastructure Planning Review*, Online ISSN: 1884-8303, Print ISSN: 0913-4034, Japan Society of Civil Engineers, J-Stage Publisher.
6. *Journal of Infrastructure Systems*, ISSN (print): 1076-0342, ISSN (online): 1943-555X, American Society of Civil Engineers.

Weekly course plan

Weeks	CLOs	**Theory**	**Practical**
Week 1	1,3	What is Infrastructure Planning, Categories of Infrastructure (Hard/soft) infrastructure General Considerations for the Infrastructure Planning	List the Institutions dealing with Hard Infrastructure in Pakistan? Conduct a survey of officials to verify the situation
Week 2	1, 2	Role of infrastructure in economic development	
Week 3	1, 3	Categories of Infrastructure Types of infrastructure, street furniture, significance of infrastructure planning	Critically analyze the situation of soft infrastructure in any of Pakistan?
Week 4	2, 3	Infrastructure planning (considering major sectors) Transport, energy, education, telecom, solid waste management etc	Present in detail the infrastructure planning of any country of your choice
Week 5	2, 3	Impact of climate change on infrastructure	Model making (advanced and future cities of Pakistan, showing advanced infrastructure)
Week 6	2, 3	Advanced infrastructure planning	
Week 7	3, 4		
Week 8		Mid term Exams	
Week 9	3,4	Design of urban water supply schemes Drinking Water Treatment Plant Design	Present in detail any project of Pakistan beholding PPP
Week 10	1, 4	Principles and Practices of Infrastructure Planning at National Levels (Transportation, Utility Services, Communications etc.)	Does CEPC and other major projects supporting infrastructure planning in Pakistan?

		Calculation of waste water flow and BOD load	
Week 11	1, 4	Principles and Practices of Infrastructure Planning at Local, Regional and (Transportation, Utility Services, Communications etc.) Appropriate methods and technologies to treat municipal and industrial waste Solid.	Planning and designing of suitable infrastructure for urban and rural dwellers.
Week 12	3, 4	The Role of Government and Private Interest Groups in the Infrastructure Development Process.	Present any infrastructure project that can be implemented in Pakistan.
Week 13	2, 4	Infrastructure planning in international context	
Week 14	2	An Introduction of Mega Infrastructure Projects in Pakistan and their Benefits	Compare and contrast b/w different countries
Week 15	4	The Use of Demand Modeling (Infrastructure Requirements with Respect to Population Density)	In-depth analysis of mega infrastructure planning projects (Case Studies)
Week 16	3	Political, Financial, Public Relations, Legal and Environmental Concerns of Various Stakeholders	

Evaluation Criteria

Marks Evaluation	Marks inpercentage
Projects + Assignments	50%
Mid Term	15%
Quiz	10%
Final exam	25%
Total	**100%**