

CLXXX: INTRODUCTION TO SMART CITIES
B. TECH 4th SEMESTER (CIVIL ENGINEERING)
SMART CITIES SPECIALIZATION COURSE

Credits and Hours:

Teaching Scheme	Theory	Tutorials	Total	Credit
Hours/week	3	2	5	4
Marks	100	0	100	

A. Outline of the course:

Sr. No.	Title of the unit	Minimum number of hours
1	Introduction to Smart cities	04
2	Smart Cities Planning and Development	12
3	Project management in Smart Cities	10
4	Governance in Smart Cities	04
5	Performance Benchmarks of smart cities	10
6	Green building in smart cities	05

Total Hours (Theory): 45

Total Hours (Tutorial): 30

Total Hours: 75

B. Detailed Syllabus:

1	Introduction to Smart cities	04 hrs	9%
1.1	Definition, Introduction to Urban city planning		
1.2	Need of smart cities, stakeholders, trends in developments of smart cities		
2.	Smart Cities Planning and Development	12 hrs	27%
2.1	Understanding smart cities		
2.2	Various aspects of smart cities		
2.3	Smart city planning and development		
2.4	Financing smart cities development		
3.	Project management in Smart Cities	10 hrs	22%
3.1	Phases, Stages of project and work break down Structure		
3.2	Project organization structure, Planning, Scheduling and CPM		
3.3	Project cost analysis, resource allocation & leveling, Line of balancing technique		
3.4	Project monitoring and control, Project risk management		
4.	Governance in Smart Cities	04 hrs	9%
4.1	The importance of city governance in developing smart cities, policy and standards.		
5.	Performance Benchmarks of smart cities	10 hrs	22%
5.1	Need for benchmarking performance		
5.2	Performance Indicators		
5.3	World Standards and Performance Benchmarks, Code of Practice		
6.	Green building in smart cities	05 hrs	11%
6.1	Introduction to green buildings, Rating system		
6.2	Energy saving system		

C. Instructional Method and Pedagogy:

- At the start of course, the course delivery pattern, prerequisite of the subject and pedagogy will be discussed.
- Lectures will be conducted with the aid of multi-media projector, black board, etc.

- Attendance is compulsory in lectures and laboratory.
- Assignments based on above course content will be given to the students at the end of week and will be evaluated at regular intervals.
- Surprise tests/Quizzes/Seminar will be conducted.
- Tutorials related to course content will be carried out in the laboratory.

D. Course Outcomes:

After completing this course, students will be able to:

CO1	Understand the concept of smart city and propose solutions for associated challenges.
CO2	Have knowledge of the innovative technologies used in intelligent building.
CO3	Be aware of process of planning and drafting a plan for smart city.
CO4	Apply the most energy efficient technique

Course Articulation Matrix:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	2	3	2	2	1	1	1	3	-	1	2	-	1	-
CO2	3	3	-	1	3	1	2	1	1	2	2	3	1	3	1
CO3	1	2	-	3	1	3	1	3	3	3	3	3	2	1	2
CO4	2	3	3	2	2	2	3	3	3	3	3	3	2	1	3

1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High) No correlation “-”

E. Recommended Study Material:

❖ Text Books:

1. Anil Kumar, “Introduction to Smart Cities”, ,Pearson, 2010 (ISBN-10: 9353439574)
2. Jo Beall (1997); “A city for all: valuing differences and working with diversity”; Zed book limited, London (ISBN: 1856494772)
3. Arup Mitra; “Insights into inclusive growth, employment and wellbeing in India”; Springer (2013), New Delhi (ISBN: 9788132206552)

4. UN-Habitat; “Inclusive and sustainable urban planning: a guide for municipalities”; Volume 3: Urban Development Planning (2007); United Nations Human Settlements Programme (ISBN: 9789211320244)

❖ **Web Materials:**

1. <https://www.oecd.org/cfe/cities/Smart-cities-measurement-framework-scoping.pdf>
2. <https://www.mdpi.com> -Review of Smart City Assessment Tools

LIST OF TUTORIALS

Tutorial No.	Name of Tutorial
1	Material study used in construction
2	Latest technology adopted in smart city
3	Study on Intelligent Transport Systems
4	Case study of global Smart cities
5	Case study on Smart Cities