COURSE HANDOUT

SMART CITY TECHNOLOGIES (COM-802B)

BE-8th SEMESTER

ACADEMIC YEAR (2024-25)

Ms. Gurpreet Kaur

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Dr. Arun K. Gupta Teaching-Learning Centre —————————————— Version 1.1

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Course Code	Course Name	Course Type	Cd	L	T	P	Marks		
							Sessional	Final Exam	Total
COM-802B	Smart City Technologies	PEC	3	3	0	0	50	100	150

COURSE OUTCOMES

	At the end of the course the student will be able to:
CO1	Build a deep understanding of the Smart City concept and the supporting policy framework.
CO2	Evaluate the use of Data Analytics and AI in diverse aspects of smart city management.
CO3	Describe smart transportation systems for smart cities, their design and operational framework.
CO4	Develop competence in applying the IoT Framework to Smart City operations.
CO5	Explain the importance of sustainability w.r.t waste management, green buildings, and water management systems.

Unit-I
Introduction to the Smart Cities: Definition, characteristics and importance of Smart Cities, Overview of Urban Development and challenges in India, Role of Technology in transforming urban spaces, India 100 smart cities policy and mission, Government initiatives and policies for smart city development, Public-private partnerships for implementing smart city projects.

(9 Hrs)

Unit-II
Data Analytics and AI for Smart Cities: Big data analytics for urban planning and management, AI applications in smart cities for decision-making, Machine learning algorithms for urban data analysis.

(11 Hrs)

Unit-III
Smart Transportation and Mobility: Intelligent transportation systems (ITS) for congestion management, Smart public transportation and mobility solutions, Electric vehicles and sustainable transportation options.

(8 Hrs)

Unit- lV
IoT and Sensor Networks: Introduction to IoT and its applications in smart cities, Smart sensors and data collection techniques and Integration of IoT in urban systems and services.

(9 Hrs)

Unit-V
Environmental Sustainability in Smart Cities: Waste Management and recycling strategies, green buildings and sustainable urban development, water management and conservation practices, Renewable energy sources and their integration into urban settings, Smart grids and energy management systems, Building automation and energy efficient technologies.   (8 Hrs)

Textbooks

S.No	Name of the Books	Name of the Author	Publisher Name	Edition (Pub.Yr.)
1	Introduction to Smart Cities Learning	Anil Kumar	Pearson	1st (2019)
2	Smart Cities: Foundations, Principles, and Applications	Houbing Song, Ravi Srinivasan, Tamim Sookoor, Sabina Jeschke	Wiley	1th (2017)

Reference Books

S.No	Name of the Books	Name of the Author	Publisher Name	Edition (Pub.Yr.)
1	The Smart City Transformations: The Revolution of the 21st Century	Amitabh Satyam & Igor Clazada	Bloomsbury Academic	1st (2020)

COURSE PLAN	
Unit-I Introduction to the Smart Cities	

S.No	Topics	Recommended Books
1	Definition, characteristics and importance of Smart Cities	Book 1, Ch.3
2	Overview of Urban Development and challenges in India	Book 1, Ch.2
3	Role of Technology in transforming urban spaces	Book 2, Ch.1
4	India 100 smart cities policy and mission	Book 2, Ch.2
5	Government initiatives and policies for smart city development	Book 1, Ch.3
6	Public-private partnerships for implementing smart city projects	Book 2, Ch.2

Unit-II Data Analytics and AI for Smart Cities	

S.No	Topics	Recommended Books
7	Big data analytics for urban planning and management	Book 2, Ch.2
8	AI applications in smart cities for decision-making	Book 2, Ch.2
9	Machine learning algorithms for urban data analysis	Book 2, Ch.3

Unit- III Smart Transportation and Mobility	

S.No	Topics	Recommended Books
10	Intelligent transportation systems (ITS) for congestion management	Book 2, Ch.4
11	Smart public transportation and mobility solutions	Book 2, Ch.4
12	Electric vehicles and sustainable transportation options	Book 2, Ch.4

Unit-IV IoT and Sensor Networks	

S.No	Topics	Recommended Books
13	Introduction to IoT and its applications in smart cities	Book 1, Ch.7
14	Smart sensors and data collection techniques	Book 1, Ch.7
15	Integration of IoT in urban systems and services	Book 1, Ch.7

Unit-V Environmental Sustainability in Smart Cities	

S.No	Topics	Recommended Books
16	Waste Management and recycling strategies	Book 1, Ch.8
17	Green buildings and sustainable urban development	Book 1, Ch.10
18	Water management and conservation practices	Book 1, Ch.7
19	Renewable energy sources and their integration into urban settings	Book 1, Ch.5
20	Smart grids and energy management systems	Book 1, Ch.5
21	Building automation and energy efficient technologies	Book 1, Ch.10

ADDITIONAL WEB RESOURCES

1.	**MOOC:** https://www.coursera.org/learn/machine-learning
2.	**NPTEL:** https://onlinecourses.nptel.ac.in/noc23_cs18/preview

GRADING AND ASSESSMENT (Summative assessment)

- **Sessional Test**: 20 marks
- **Assignment**: 20 marks
- **Attendance**: 10 marks
- **Final Examination**: 100 marks

COURSE POLICIES

- **Attendance**: Minimum 75% attendance is mandatory to appear in the final examination of the course.
- **Academic Integrity**: MIET's academic integrity policies apply. Plagiarism will not be tolerated.
- **Late Submissions**: Assignments and projects must be submitted by the specified timelines.

FACULTY INFORMATION

- **Office Hours**

  Monday (1:00 PM - 2:00 PM)

- **Contact Information**
  gurpreet.ece@mietjammu.in

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