



GUJARAT TECHNOLOGICAL UNIVERSITY

Minor Degree (BE) : Next Generation Smart Village

Subject Code : 116AD01

Semester - 6

Subject Name : Concepts of Green & Smart Village

Type of course : Compulsory

Prerequisite : Basic Concept of Smart Village and Infrastructural Gap analysis.

Rationale : To develop basic understanding about developing various infrastructure using smart and sustainable technologies.

Teaching and Examination Scheme :

Teaching Scheme			Credits	Examination Marks				Total Marks
L	T	P		Theory Marks		Practical Marks		
			ESE (E)	PA (M)	ESE (V)	PA (I)		
3	0	0	3	70	00	00	00	70

Content :

Sr. No.	Content	Total Hrs
1	Introduction of Green & Smart Village: Importance and Technological Requirements for Green & Smart Village, Objectives & Various application areas, Managerial Implications, Strategies & technologies suggested in SAGY for Adarsh Gram.	02
2	Green & Smart Building Construction: Zero-Energy Buildings, Water & Energy efficient buildings, Waste Reduction, Passive lighting, Passive Heating, Use of local available materials.	03
3	Green & Smart Environment: Green Environment, Green Products, Green Technologies, Environment Spheres.	03
4	Green & Smart Healthcare: Green Hospital Building Design, Energy Management, Water and Waste management, mHealth and pHealth Systems, eLearning for Green Healthcare.	03
5	Climate Change and Village action Plan: Climate change and mitigation, Disaster management practices, Prevention of soil erosion, Agro forestry.	02
6	Green & Smart Education: Advanced Technologies, Smart Learner, Smart Teacher, Smart Pedagogy, Smart Learning Environment.	03



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7	Green & Smart Agriculture: Smart Monitoring, Automation, Smart crop management, Precision farming, Smart Greenhouses, Smart water distribution networks.	04
8	Smart Security: RFID, Wireless Sensor Networks, Cloud Computing, Applications for Securing Application and Transactions.	04
9	Transportation: DRT - Demand Responsive Transport, ISS – Interchange shuttle service, DRS – Dynamic ridesharing service, Strategy & Management, Mobility-as-a-Service (MaaS) Strategy, Use of clean fuels like Bio-fuels and CNG, electric and solar powered vehicles, Use of Non-motorized and Animal drawn vehicles.	05
10	Green & Smart Energy Management: Efficient Distribution and Transmission of Electricity, Waste Heat, Networking Solutions, Routers, Connectivity and Cloud Services.	04
11	Green & Smart Water, Waste water and Solid Waste Management: Smart water distribution grids, Quality and Quantity of Water, Collection of waste: Liquid and Solid, Wet and Dry waste Management, Disposal Vs. Management, Vermicomposting, 4Rs: Refuse, Reduce, Reuse & Recycle.	05

Suggested Specification table with Marks (Theory) :

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
10%	25%	20%	15%	10%	20%

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above Levels (Revised Bloom's Taxonomy)

Note : This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.



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Reference Books :

1. Smart Village Technology: Concepts and Developments By Srikanta Patnaik, Siddhartha Sen, Magdi S. Mahmoud, Springer International Publishing
2. Smart Villages of Tomorrow: The Road to Mori, Solomon Darwin, Independently Published.
3. Green and Smart Technologies for Smart Cities edited by Pradeep Tomar, Gurjit Kaur, CRC Press, Taylor & Francis Group.
4. IoT and Analytics for Agriculture edited by Prasant Kumar Pattnaik, Raghvendra Kumar, Souvik Pal, S. N. Panda.

Course Outcomes :

Sr. No.	CO statement	Marks % weightage
01	Students will learn about concept and need of Green & Smart Village.	20%
02	Students will know and learn about various technologies to develop smart infrastructures in rural areas.	55%
03	Students will recognize importance of waste management while developing smart village.	25%

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