Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058-India
(Autonomous Institute Affiliated to University of Mumbai)

Course Code	Course Name	Teaching Scheme (Hrs/week)			Credits Assigned			
		L	T	P	L	T	P	Total
ITC7056	Ubiquitous Computing	04	-	-	04	-	-	04
		Examination Scheme						
		ISE	MSE		ESE			
		10	30		100 (60%Weightage)			

Pre-requisite Course Codes		
After successful completion of the course, student will be able to:		
Course Outcomes	CO1	Explain objectives and the historical development of the field of ubiquitous computing.
	CO2	Describe fundamentals of sensor technology and sensor networks
	CO3	Apply middleware techniques to implement ubiquitous computing systems
	CO4	Design of new (often embedded) interactive artifacts
	CO5	Compare the usability of alternative design of interactions for specific ubiquitous computing systems

Module No.	Topics	Ref.	Hrs.
1	**Introduction to Ubiquitous Computing** Definition, Advantage, Application and Scope. Properties of Ubiquitous Computing, Ubiquitous System Environment Interaction. Architectural Design for UbiCom Systems: Smart DEI Model.	1,2	04
2	**Smart Devices and Services** Introduction to Smart Devices: Users, Mobiles, Cards And Device Networks. Service Architecture Models. Service Provision Life-Cycle. Virtual Machines and Operating Systems Mobile Computers and Communicator Devices.	1,2	08
3	**Sensing and Controlling** Tagging the Physical World. Sensors and Sensor Networks. Micro Actuation and Sensing: Micro-Electro-Mechanical Systems (MEMS). Embedded Systems and Real-Time Systems. Control Systems for Physical World Tasks. Robots	1,2	08
4	**Context-Aware Systems** Introduction to Context-Aware Computing, Context-Aware Systems, Context-Aware Applications, Designing and Implementing	2,3	08

	Context-Aware Applications, Issues for building Context-Aware Applications.		
5	**Human–Computer Interaction** User Interfaces and Interaction for Four Widely Used Devices. Hidden UIVia Basic Smart Devices. Hidden UIVia Wearable and Implanted Devices. Human-Centered Design (HCD).User Models: Acquisition and Representation. iHCIDesign	3,4	10
6	**Ubiquitous Communication** Data Networks. Audio Networks. Wireless Data Networks. Universal and Transparent Audio, Video and Alphanumeric Data. Ubiquitous Networks. Network Design Issues. Human Intelligence Versus Machine Intelligence. Challenges in Ubiquitous System, Social Issues: Promise Versus Peril.	3,4	10
	Total hours of instructions		48

References:
1. Stefan Poslad, "*Ubiquitous Computing: Smart Devices , Environments and Interactions*", Wiley Publication.
2. John Krumm, "*Ubiquitous Computing Fundamentals*", CRC Press.
3. Yin-Leng Thengand Henry B.L.Duh," *Ubiquitous Computing: Design, Implementation and Usability*",IGI Global.
4. Adam Greenfield," *Every ware the Drawing age of Ubiquitous Computing",* Published in Association with AIGA.
5. *"Mobile and Ubiquitous Computing*", Georgia Tech, 2003.