COURSE CODE	COURSE TITLE	L	T	P	C
1152CS105	UBIQUITOUS COMPUTING	3	0	0	3

Course Category: Program Elective

A. Preamble :

The course aims at providing a sound conceptual foundation in the area of Pervasive Computing aspects. The course attempts to provide a balanced treatment of the mechanisms and environments of pervasive computing and initiateCS students to the state-of-the-art in the area. At the end of this course, studentsbe able to conceptualize, analyze and design pervasive computing systems

B. Prerequisite Courses:

Sl. No	Course Code	Course Name
1	1150CS201	Problem Solving using C
2	1151CS101	Concrete mathematics

C. Related Courses:

Sl. No	Course Code	Course Name
1	1151CS103	Programming in Java
2	1151CS117	Java Programming
3	1151CS111	Computer Networks

D. Course Educational Objectives :

Learners are exposed to

- understand the basics of UbiquitousComputing
- know the concepts of web application
- know the aspects of voice technology
- develop pervasive application

E. Course Outcomes :

Upon the successful completion of the course, students will be able to:

CO No's	Course Outcomes	Knowledge Level (Based on revised Bloom's Taxonomy)
CO1	Explain the basic concepts of UbiquitousComputing	K2
CO2	Illustrate web application concepts in Ubiquitous Computing	K2
CO3	Summarize speech recognition and its standards	K2
CO4	Develop pervasive application	K3
CO5	Utilize WAP functionality to establish connected devices	K3

F. Correlation of Cos with Pos :

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	**M**												L		
CO2	**M**		M		M			L							
CO3	**M**		M	M	M							L		M	M
CO4	**H**	**M**	M	M	M	**L**	**L**	L	M	L	M	L		M	M
CO5	**H**	**M**	M	M	M	**L**		L	M		M			M	M

G. Course Content:

UNIT I – INTRODUCTION 9

Past, present, future; the pervasive computing market, m-Business, Challenges and future of Pervasive Computing- Application Examples of Pervasive Computing: Retail, Airline Check-in and booking, Sales force automation, Healthcare, Tracking, Car Information Systems, Email Access via WAP and voice–DeviceTechnology for PervasiveComputing : Hardware, Human-machine interfaces, Biometrics, Operating Systems, Java for pervasivedevices, Outlook- Device Connectivity: Protocols, Security, Device Management

UNIT II - WEB APPLICATION CONCEPTS 9

History, WWW architecture, Protocols, Trans-coding, Client Authentication via the Internet for pervasive computing- WAP and beyond: Introduction, Components of the WAP architecture, WAP infrastructure, WAP security issues, Wireless Markup Language, WAP push, Products, i-Mode, Outlook

UNIT III – COMPUTING TECHNOLOGY 9

Voice Technology: Basics of Speech Recognition, Voice standards, Speech Applications, Speech and Pervasive Computing, Security – Personal Digital Assistants: History, Device Categories, Personal Digital Assistant Operating Systems, Device Characteristics, Software Components, Standards, Mobile applications, Personal Digital Assistant Browsers- Server-side programming (Java) for pervasive computing: Java 2 Enterprise Edition (Overview), Servlets, Enterprise Java Beans, Java Server Pages, Extensible Markup Language, Web Services, Model-View-Controller pattern

UNIT IV – WEB APPLICATION ARCHITECTURE 9

Background, Scalability & Availability, Development of pervasive computing Web Applications, Pervasive Application Architecture- Example, Pervasive Application: Introduction, User Interface Overview, Architecture, Implementation- Access from PCs: Smart-card authentication via the Internet, Ordering goods

UNIT V – WAP FUNCTIONALITY 9

Access via WAP: WAP functionality, Implementation- Access from Personal Digital Assistants: Extending the example application to personal digital assistants, Implementation for synchronized devices, Implementation for connected devices- Access via Voice: Extending the example application to voice access, Implementation

TOTAL: 45 Hours

H. Learning Resources

i.Text Books:

1. JochenBurkhardt, Horst Henn, Stefan Hepper, Thomas Schaec& Klaus Rindtorff: Pervasive Computing: Technology and Architecture of Mobile Internet Applications, Pearson Education, New Delhi, 2006.

ii.Reference Books:

1. StefenPoslad: Ubiquitous Computing: Smart Devices, Environments and Interactions, Wiley, Student Edition, 2010.
2. Frank Adelstein, S K S Gupta, GG Richard & L Schwiebert: Fundamentals of Mobile and Pervasive Computing, Tata McGraw-Hill, New Delhi, 2005.

1. Online resources

1. http://cis.k.hosei.ac.jp/~jianhua/course/ubi/Lecture01.pdf
2. http://ocw.metu.edu.tr/pluginfile.php/1177/mod_resource/content/0/Schedule/se705_week14.pdf