Academic Course Description

BHARATH UNIVERSITY

Faculty of Engineering and Technology

Department of Electronics and communication Engineering

BCS702- MOBILE AND PERVASIVE COMPUTING

Sixth Semester, 2016-17 (Even Semester)

Course (catalog) description

- This course discuss about knowledge and skills about a new trend in mobile Computing
- Analyze the problems and solutions to cloud application problems.
- Apply principles of best practice in cloud application design and management.
- Identify and define technical challenges for cloud applications and assess their importance.

Compulsory/Elective course : Elective for ECE students

Credit & contact hours : 3 & 45

Course Coordinator : Dr C.Rajabhushanam, Professor

Instructors :

Name of the instructor	Class handling	Office location	Office phone	Email (domain:@ bharathuniv.ac.in	Consultation
Dr C.Rajabhushanam	Final Year	SA 019			9.00-9.50 AM
Ms.Priya	Final Year	SA 020		priyams@yahoo.co.in	12.45-1.15 PM

Relationship to other courses:

Pre –requisites **:** Communication Engineering I

Assumed knowledge : The students will have a electronics and network background obtained at a high school (or Equivalent) level. In particular, working knowledge of networks including Communication systems, computing systems are assumed.

Following courses : Information technology

UNIT I MOBILE NETWORKS **9**

Cellular Wireless Networks – GSM – Architecture – Protocols – connection establishment – Frequency Allocation – Routing – Mobility Management – Security – GPRS.

UNIT II WIRELESS NETWORKS **9**

Wireless LANs and PANs – IEEE 802.11 Standard – Architecture – Services –Network – HiperLAN – BlueTooth- Wi-Fi –WiMAX.

UNIT III ROUTING **9**

Mobile IP – DHCP – AdHoc– Proactive and Reactive Routing Protocols – Multicast Routing.

UNIT IV TRANSPORT AND APPLICATION LAYERS **9**

Mobile TCP– WAP – Architecture – WWW Programming Model– WDP – WTLS – WTP – WSP – WAE – WTAArchitecture – WML – WMLScripts.

UNIT V PERVASIVE COMPUTING **9**

Pervasive computing infrastructure applications- Device Technology - Hardware, Human machine Interfaces, Biometrics, and Operating systems– Device Connectivity – Protocols, Security, and Device Management- pervasive Web Application architecture Access from PCs and PDAs - Access via WAP.

Total: 45 Periods

TEXT BOOKS:

1. Jochen Schiller, "Mobile Communications", PHI, Second Edition, 2003.

2. Jochen Burkhardt, Pervasive Computing: Technology and Architecture of MobileInternet Applications, Addison Wesley Professional; 3rd edition 2007.

REFERENCES:

1. Frank Adelstein, Sandeep KS Gupta, Golden Richard, Fundamentals of Mobile and Pervasive Computing, McGraw-Hill 2005

2. Debashis Saha, Networking Infrastructure for Pervasive Computing: EnablingTechnologies, Kluwer Academic Publisher, Springer; 1st edition, 2002

3. Introduction to Wireless and Mobile Systems by Agrawal and Zeng, Brooks/ Cole(Thomson Learning),1st edition, 2002

4. Uwe Hansmann, Lothar Merk, Martin S. Nicklons and Thomas Stober, Principles OfMobile Computing, Springer, New York, 2003.

5.http://media.techtarget.com/searchMobileComputing/downloads/Mobile_and_pervasive_computing_Ch06.pdf

Computer usage: yes

Professional component

General	-	0%
Basic Sciences	-	0%
Engineering sciences & Technical arts	-	0%
Professional subject	-	100%

Broad area : Instrumentation | Electronics | Transmission Lines and Networks | Biomedical

Test Schedule

S. No.	Test	Tentative Date	Portions	Duration
1	Cycle Test-1	February 1st week	Session 1 to 12	2 Periods
2	Cycle Test-2	March 2nd week	Session 17 to 25	2 Periods
3	Model Test	April 2nd week	Session 1 to 45	3 Hrs
4	University Examination	TBA	All sessions / Units	3 Hrs.

Mapping of Instructional Objectives with Program Outcome

To develop problem solving skills and understanding of circuit theory through the application of techniques and principles of electrical circuit analysis to common circuit problems. This course emphasizes:	Correlates to program outcome		
	H	M	L
Explain the concepts and features of mobile networks.	c	a,l	
Explain the working of wireless communication protocols.	c	a	
Compare the routing protocols of mobile networks.	c	h	
Explain the transport and application layer protocols of mobile networks.	c	l	
Outline the basics of pervasive computing.	a	c	

H: high correlation, M: medium correlation, L: low correlation

Draft lecture schedule

Session	Topics	Problem solving (Yes/No)	Text / Chapter
	UNIT I MOBILE NETWORKS		
1.	Cellular Wireless Networks	No	[T1]
2.	GSM – Architecture	No	
3.	Protocols – connection	No	
4.	establishment – Frequency Allocation	No	
5.	Routing – Mobility Management Security	No	
6.	GPRS	No	
	UNIT II WIRELESS NETWORKS		
7.	Wireless LANs and PANs	No	[T1]
8.	IEEE 802.11 Standard – Architecture	No	
9.	Services –Network	No	
10.	HiperLAN – BlueTooth	No	
11.	Wi-Fi	No	
12.	WiMAX	No	
	UNIT III ROUTING		
13.	Mobile IP .	No	[T1]
14.	DHCP – AdHoc	No	
15.	Proactive and Reactive Routing	No	
16.	Protocols	No	
17.	MulticastRouting	No	
18.	Platform Deployment-Global Exchange of Cloud Resources	No	

UNIT IV	**TRANSPORT AND APPLICATION LAYERS**		
19.	Mobile TCP– WAP	No	[T1]
20.	Architecture – WWW Programming .	No	
21.	Model– WDP	No	
22.	WTLS – WTP	No	
23.	WSP – WAE – WTAArchitecture – WML – WMLScripts	No	
UNIT V	**SECURITY IN THE CLOUD**		
24.	Pervasive computing infrastructure applications- Device Technology	No	[T1]
25.	Hardware, Human machine Interfaces, Biometrics,	No	
26.	Operating systems– Device Connectivity – Protocols	No	
27.	Security, and Device Management- pervasive Web Application	No	
28.	architecture Access from PCs and PDAs	No	
29.	Access via WAP	No	

Teaching Strategies

The teaching in this course aims at establishing a good fundamental understanding of the areas covered using:

- Formal face-to-face lectures
- Tutorials, which allow for exercises in problem solving and allow time for students to resolve problems in understanding of lecture material.
- Laboratory sessions, which support the formal lecture material and also provide the student with practical construction, measurement and debugging skills.
- Small periodic quizzes, to enable you to assess your understanding of the concepts.

Evaluation Strategies

Cycle Test – I	-	5%
Cycle Test – II	-	5%
Model Test	-	10%
Assignment /Seminar/online test/quiz	-	5%
Attendance	-	5%
Final exam	-	70%

Prepared by Dr C.Rajabhushanam, Professor . **Dated :**

Addendum

ABET Outcomes expected of graduates of B.Tech / ECE / program by the time that they graduate*:*

a. An ability to apply knowledge of mathematics, science, and engineering

b. An ability to design and conduct experiments, as well as to analyze and interpret data

c. An ability to design a hardware and software system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability

d. An ability to function on multidisciplinary teams

e. An ability to identify, formulate, and solve engineering problems

f. An understanding of professional and ethical responsibility

g. An ability to communicate effectively

h. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context

i. A recognition of the need for, and an ability to engage in life-long learning

j. A knowledge of contemporary issues

k. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Program Educational Objectives

PEO1: PREPARATION

Electronics Engineering graduates are provided with a strong foundation to passionately apply the fundamental principles of mathematics, science, and engineering knowledge to solve technical problems and also to combine fundamental knowledge of engineering principles with modern techniques to solve realistic, unstructured problems that arise in the field of Engineering and non-engineering efficiently and cost effectively.

PEO2: CORE COMPETENCE

Electronics engineering graduates have proficiency to enhance the skills and experience to apply their engineering knowledge, critical thinking and problem solving abilities in professional engineering practice for a wide variety of technical applications, including the design and usage of modern tools for improvement in the field of Electronics and Communication Engineering.

PEO3: PROFESSIONALISM

Electronics Engineering Graduates will be expected to pursue life-long learning by successfully participating in post graduate or any other professional program for continuous improvement which is a requisite for a successful engineer to become a leader in the work force or educational sector.

PEO4: SKILL

Electronics Engineering Graduates will become skilled in soft skills such as proficiency in many languages, technical communication, verbal, logical, analytical, comprehension, team building, interpersonal relationship, group discussion and leadership ability to become a better professional.

PEO5: ETHICS

Electronics Engineering Graduates are morally boosted to make decisions that are ethical, safe and environmentally-responsible and also to innovate continuously for societal improvement.

Course Teacher	Signature
Dr C.Rajabhushanam	

Course Coordinator **HOD/ECE**