Department of Computer Science and Engineering
National Institute of Technology Tiruchirappalli

1. Course Outline			
Course Title	Mobile Computing and Communication		
Course Code	CSPE11		
Department	CSE	**No. of Credits**	3
Pre-requisites Course Code	CSPC27	**Faculty Name**	Dr.B.Nithya
E-mail	nithya@nitt.edu	**Telephone No.**	0431 – 2503214
Course Type	Elective		

2.Course Overview
This course emphasizes the basics of mobile communication, functionalities of layers in wireless communication and various wireless networks.

3. Course Objectives

- ✹ To understand the fundamentals of mobile communication.
- ✹ To understand the architecture of various wireless communication networks.
- ✹ To understand the significance of different layers in mobile system.

4. Course Outcomes (CO)

- ✹ Ability to develop a strong grounding in the fundamentals of mobile networks
- ✹ Ability to apply knowledge in MAC, Network and Transport layer protocols of wireless network.
- ✹ Ability to comprehend, design and develop a lightweight network stack.

5. Course Outcome (CO)	Aligned Programme Outcome (PO)							
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
Ability to develop a strong grounding in the fundamentals of mobile networks	S	S	S	M	S	M	M	B
Ability to apply knowledge in MAC, Network and Transport layer protocols of wireless network.	S	S	S	M	M	M	B	M
Ability to comprehend, design and develop a lightweight network stack.	S	S	S	S	M	S	B	M

S = 0.6　　　　　　　M = 0.4　　　　　　　B = 0.0

6. Course Teaching and Learning Activities

L.No	Title	Type		Mode of delivery			
		L	T	C&T	PPT	VL/VC	DEMO
UNIT I							
1.	Introduction	√		√			
2.	Simplified Reference model, Frequency, Antennas	√		√			
3.	Signal propagation effects	√		√			
4.	Multiplexing techniques	√		√			
5.	Modulation and demodulation techniques	√		√			
6.	Spread spectrum techniques	√		√			
7.	MAC: Reason for specified MAC	√		√			
8.	SDMA, FDMA, TDMA, MACA	√		√			
9.	Multiple Access Control Techniques	√					
10.	Problems related with CDMA		√	√			
UNIT II							
11.	Introduction to WLAN	√		√			
12.	WLAN- Physical layer	√			√		
13.	WLAN- MAC layer	√			√		
14.	DCF and PCF functions	√			√		
15.	MAC Management Functions	√			√		
16.	HIPERLAN : Architecture	√		√			
17.	HIPERLAN : Protocol Stack	√		√			
18.	Bluetooth : Architecture	√		√			
19.	Bluetooth: Protocol Stack	√		√			
20.	Security Mechanisms in HIPERLAN and Bluetooth	√		√			
UNIT III							
21.	GSM Network, Service	√		√			
22.	GSM Network Architecture	√		√			
23.	GSM Protocol Stack	√		√			
24.	MOC and MTC	√		√			
25.	Handoffs in GSM	√		√			
26.	Security Mechanisms in GSM	√		√			
27.	DECT : Architecture & Protocol	√		√			
28.	UMTS : Architecture & Protocol		√	√			
UNIT IV							
29.	Cellular Systems, Frequency allocation	√		√			
30.	Interference types	√		√			
31.	Problems		√	√			
32.	Channel allocation techniques	√		√			

33.	Capacity improving techniques	√		√			
34.	Problems		√	√			
UNIT V							
35.	Mobile IP- IP Packet delivery	√		√			
36.	Agent discovery process, Encapsulation	√		√			
37.	Optimization, Reverse tunneling	√		√			
38.	Mobile Transport Layer: ITCP, STCP, MTCP	√		√			
39.	Fast retransmit, timeout freezing, T-TCP	√		√			
40.	WAP Models and WAP Protocols	√		√			

7. Course Assessment Methods

Sl. No.	Mode of Assessment	Week/Date	Duration	Marks
1	Cycle Test	After completion of first 2 units	1 hour	15
2	Quiz	After completion of 4 units	1 hour	15
3	Mini Project	Last week of Aug, Sep and Oct : 3 Demos		20
4	End Semester Exam	As Per Academic Schedule	3 hours	50
			Total	100

8. Essential Readings (Textbooks, Reference books, Websites, Journals, etc.)

Text Books

1. Jochen Schiller, "Mobile Communication", 2nd Edition, Pearson Education, 2008.
2. Theodore and S. Rappaport, "Wireless Communications, Principles, Practice", 2nd Edition, PHI, 2002.

Ref Books:

1.William Stallings, "Wireless Communications and Networks", 2nd Edition, Pearson Education, 2004
2.C. Siva Ram Murthy and B.S. Manoj, "Adhoc Wireless Networks: Architecture and Protocols", 2nd Edition, Pearson Education, 2008.
3. Vijay. K. Garg, " Wireless communication and Networking", Morgan Kaufmann Publishers, 2017.

9. Course Exit Survey

* Feedbacks are collected from the student before end semester examination through MIS.
* Suggestions from the students are incorporated for making the course more understanding and interesting.
* Students, through their Class Representatives, may give their feedback at any time to the course faculty which will be duly addresses.
* The students may also give their feedback during Class Committee Meeting.

10. Course Policy (including plagiarism, academic honesty, attendance, etc.)
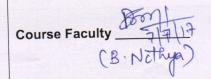
Attendance: Minimum 75% is mandatory to write the end semester examination. Students having attendance 65% to 74% are eligible for the end semester exam only after attending the extra classes and submitting assignments. Students have to redo the course, if they have less than 65% of attendance.

Medical Certificate/ On Duty Certificate should be submitted immediately after rejoining.

11. Additional Course Information

The students can get their doubts clarified at any time with their faculty member with prior appointment.

FOR SENATE'S CONSIDERATION

Course Faculty _____ 7/7/17

(B. Nithya)

CC-Chairperson _____

HOD _____