# Academic Course Description

SRM University
Faculty of Engineering and Technology
Department of Electronics and Communication Engineering

## EM2106 Wireless and Mobile Communications

**Second Semester, 2013-14 (Even semester)**

**Course (catalog) description:** To introduce the concepts of mobile wireless communication systems.

**Compulsory/Elective course:** Elective for M. Tech Embedded System Technology students

**Credit hours:** 3 credits

**Course coordinator:** Dr. B. Ramachandran**,** Professor, Department of ECE.

**Instructor(s)**

| Name of the instructor | Class handling | Office location | Office phone | Email | Consultation |
|---|---|---|---|---|---|
| Mrs. V. Nithya | A | TP12S7 | 2052 | nithya.v@ktr.srmuniv.ac.in | 12.30-1.30 pm |
| Dr. B. Ramachandran | B | TP10S2 | 2054 | ramachandran.b@ktr.srmuniv.ac.in | 12.30-1.30 pm |

**Relationship to other courses**

*Pre-requisites* : Nil
*Assumed knowledge* : Basic knowledge in Wireless communication and Communication Systems.
*Following courses* : *EM2104 Communication Network Processors*

**References**

1. Kaveh Pahlavan and Prasanth Krishnamoorthy," Principles of Wireless Networks", PHI/Pearson Education,2003.
2. Jochen Schller, "Mobile Communications", PHI/Pearson Education, Second Edition, 2003.
3. William Stallings, "Wireless Communications and Networks", PHI/Pearson Education,2002.

4. Uwe Hansmann, Lothar Merk, Martin S. Nicklons and Thomas Stober, "Principles of Mobile Computing", Springer, New York,2003.
5. C.K. Toh, "Adhoc mobile wireless networks", PHI, 2002.
6. C. E. Perkins, "Adhoc Networking", Addison-Wesley, 2001.

**Class schedule:** Four 50 minutes Lecture sessions per week, for 12 weeks

| Section | Schedule |
|---|---|
| A | Day 3 Hours 2 & 3<br>Day 4 1st Hour<br>Day 5 7th Hour |
| B | Day 1 6th Hour<br>Day 4 4th an d 5th hours<br>Day 5 2nd Hour |

**Professional component**

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

**Broad area: Communication** | Signal Processing | Electronics | VLSI | Embedded

**Test Schedule - Theory**

| S. No. | Test | Portions | Duration |
|---|---|---|---|
| 1 | Cycle Test | Hours 1 to 17 | 1 hr 40 min |
| 2 | Model Exam | Hours 18 to 45 | 3 hrs |

**Course objectives**

- To make the student learn fundamentals of wireless communications.
- To learn about the systems which operate on wireless principles.

**Weekly teaching plan**

| Hours | Content | Reference Books |
|---|---|---|
| 1 | Wireless Transmission Medium and Wireless Communication Networks – Introduction | 1,2,3 |
| 2-3 | Propagation (Models)- Path loss, Multipath environment (Fading) | 1,2,3 |
| 4-6 | Modulation, Multiplexing, Coding, Spread Spectrum and other Physical layer alternatives | 1,2,3 |

| | | |
|---|---|---|
| 7-8 | Wireless medium access | 1,2 |
| 9-10 | Satellite Networks and Capacity Allocation | 2,3 |
| 11 | Cellular Networks- Basics | 1,2,3 |
| 12-15 | GSM- System and Protocol Architecture | 1,2,3 |
| 16-17 | GPRS | 1 |
| 18 | Wireless LAN- Basics | 1,2,3 |
| 19-21 | IEEE 802.11 Standard | 1,2,3 |
| 22-23 | Hiper LAN | 1,2 |
| 24-26 | Bluetooth (Adhoc)/ WPAN (802.15) | 1,2,3 |
| 27 | Routing – Basics | 1,2,3 |
| 28-30 | Mobile IP | 2,3 |
| 31 | DHCP | 2 |
| 32 | Adhoc Networks – Basics | 2,5,6 |
| 33 | Proactive and Reactive routing- DSDV Routing Protocol | 2,5,6 |
| 34-36 | AODV Routing Protocol - Unicasting and Multicasting | 5,6 |
| 37 | DSR Protocol | 2,5,6 |
| 38-39 | TCP over Wireless Networks | 2 |
| 40 | TCP over Adhoc Networks | 5 |
| 41-43 | WAP Architecture | 2,3 |
| 44 | WWW and WML | 2,3 |
| 45 | WTA | 2,3 |

**Evaluation methods**

| | | |
|---|---|---|
| Cycle Test | - | 20% |
| Model Test | - | 20% |
| Surprise Test | - | 5% |
| Assignment | - | 5% |
| Final exam | - | 50% |

**Prepared by:** Dr. B. Ramachandran, Professor, Department of ECE

Mrs. V. Nithya, Assistant Professor (Senior Grade), Department of ECE

**Dated:** 20th December 2013 **Revision No.:** 00 **Date of revision:** NA

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