**SYLLABUS**

**GE8291 (C311) MOBILE COMPUTING L T P C 3 0 0 3**

**OBJECTIVES:**

The student should be made to:

* Understand the basic concepts of mobile computing.
* Be familiar with the network protocol stack.
* Learn the basics of mobile telecommunication system.
* Be exposed to Ad-Hoc networks.
* Gain knowledge about different mobile platforms and application development.

**UNIT I INTRODUCTION 9**

Mobile Computing – Mobile Computing Vs wireless Networking – Mobile Computing Applications – Characteristics of Mobile computing – Structure of Mobile Computing Application. MAC Protocols – Wireless MAC Issues – Fixed Assignment Schemes – Random Assignment Schemes – Reservation Based Schemes.

**UNIT II MOBILE INTERNET PROTOCOL AND TRANSPORT LAYER 9**

Overview of Mobile IP – Features of Mobile IP – Key Mechanism in Mobile IP – route Optimization. Overview of TCP/IP – Architecture of TCP/IP- Adaptation of tCP Window – Improvement in TCP Performance.

**UNIT III MOBILE TELECOMMUNICATION SYSTEM 9**

Global System for Mobile Communication (GSM) – General Packet Radio Service (GPRS) – Universal Mobile Telecommunication System (UMTS).

**UNIT IV MOBILE AD-HOC NETWORKS 9**

Ad-Hoc Basic Concepts – Characteristics – Applications – Design Issues – Routing – Essential of Traditional Routing Protocols –Popular Routing Protocols – Vehicular Ad Hoc networks ( VANET) – MANET Vs VANET – Security .

**UNIT V MOBILE PLATFORMS AND APPLICATIONS 9**

Mobile Device Operating Systems – Special Constrains & Requirements – Commercial Mobile Operating Systems – Software Development Kit: iOS, Android, BlackBerry, Windows Phone – MCommerce – Structure – Pros & Cons – Mobile Payment System – Security Issues.

**TOTAL: 45 PERIODS**

**OUTCOMES:**

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

C311.1: Explain the basics of mobile telecommunication system

C311.2: Choose the required functionality at each layer for given application

C311.3: Identify solution for each functionality at each layer

C311.4: Use simulator tools and design Ad hoc networks

C311.5: Develop a mobile application.

**TEXT BOOK:**

1. Prasant Kumar Pattnaik, Rajib Mall, “Fundamentals of Mobile Computing”, PHI Learning Pvt. Ltd, New Delhi – 2012.

**REFERENCES:**

1. Jochen H. Schller, “Mobile Communications”, Second Edition, Pearson Education, New Delhi, 2007.
2. Dharma Prakash Agarval, Qing and An Zeng, "Introduction to Wireless and Mobile systems", Thomson Asia Pvt Ltd, 2005.
3. Uwe Hansmann, Lothar Merk, Martin S. Nicklons and Thomas Stober, “Principles of Mobile Computing”, Springer, 2003.
4. William.C.Y.Lee,“Mobile Cellular Telecommunications-Analog and Digital Systems”, Second Edition,Tata Mc Graw Hill Edition ,2006.
5. C.K.Toh, “AdHoc Mobile Wireless Networks”, First Edition, Pearson Education, 2002.
6. Android Developers : http://developer.android.com/index.html
7. Apple Developer : https://developer.apple.com/
8. Windows Phone Dev Center : http://developer.windowsphone.com
9. BlackBerry Developer : http://developer.blackberry.com/

**MAPPING WITH CO AND PO OF THE COURSE**

**PROGRAM OUTCOMES (POs)** *(Defined by Anna University)*

**ENGINEERING GRADUATES WILL BE ABLE TO:**

**PO 1 Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

**PO 2 Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

**PO 3 Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

**PO 4 Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

**PO 5 Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

**PO 6 The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

**PO 7 Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

**PO 8 Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

**PO 9 Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

**PO 10 Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

**PO 11 Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one‘s own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

**PO 12 Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

**PROGRAM SPECIFIC OBJECTIVES (PSOs)** *(Defined by Anna University)*

**PSO 1:** To create, select, and apply appropriate techniques, resources, modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.

**PSO 2:** To manage complex IT projects with consideration of the human, financial, ethical and environmental factors and an understanding of risk management processes, and operational and policy implications.

**CO/PO/PSO MAPPING OF THE COURSE**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 |
| C311.1 | 2 | 3 | 1 | - | 2 | - | - | - | - | - | - | - | - | - |
| C311.2 | 2 | - | - | 3 | - | - | - | - | - | - | - | 1 | 2 | - |
| C311.3 | - | 2 | 3 | 2 | 2 | - | - | - | - | - | - | - | - | 2 |
| C311.4 | 1 | 2 | 3 | - | - | - | - | - | - | - | - | - | - | 1 |
| C311.5 | - | - | - | - | 3 | - | - | - | - | - | - | 2 | - | - |

1: Low 2: Moderate 3: Substantial ‘-‘ : No Relevance

**Faculty in charge HOD**