# 20IT3101 - WIRELESS AND AD HOC NETWORKS

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| Course Category: | Professional Core | Credits: | 3 |
| Course Type: | Theory | Lecture-Tutorial-Practical: | 3-0-0 |
| Prerequisite: | Need to have basics of computer networks | Sessional Evaluation:  Univ. Exam Evaluation:  Total Marks: | 40  60  100 |
| Objectives: | * To make the student understand the concepts of Wireless networks * To make the student take up further research as part of his higher studies | | |

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| Course Outcomes | Upon successful completion of the course, the students will be able to: | |
| CO1 | Understand the basics of wireless networks |
| CO2 | Learn various types of wireless networks |
| CO3 | Study the basics of wireless internet & Ad Hoc wireless networks |
| CO4 | Expose to the Quality of service standards in wireless network |
| CO5 | Deal with energy management issues wireless network |
| CO6 | Have Awareness on Recent Advances in Wireless Networks |
| Course Content | UNIT-I  **Introduction:** RadioPropagation Mechanisms, Characteristics of the Wireless Channel, Modulation Techniques, Multiple Access Techniques, Voice Coding, Computer Network Architecture, IEEE 802 Networking Standards, Wireless Network.  UNIT-II  **Wireless WANS and MANS:** The Cellular Concept, Cellular Architecture, The First-Generation Cellular Systems, The Second-Generation Cellular Systems, The Third-Generation Cellular Systems, Wireless in Local Loop, IEEE 802.16 Standard, HIPERACCESS.  UNIT-III  **Wireless Internet**: What Is Wireless Internet?, Mobile IP, TCP In Wireless Domain, WAP, Optimizing Web Over Wireless.  **Ad Hoc Wireless Networks:** Introduction, Issues in Ad Hoc Wireless Networks, Ad Hoc Wireless Internet.  UNIT-IV  **Quality Of Service In Ad Hoc Wireless Networks:** Introduction, Issues and Challenges in Providing QOS in Ad Hoc Wireless Networks, Classifications of QoS Solutions, MAC Layer Solutions, Network Layer Solutions, QoS Frameworks for Ad Hoc Wireless Networks.  UNIT-V  **Energy Management In Ad Hoc Wireless Networks:** Need for Energy Management in Ad Hoc Wireless Networks, Classification of Energy Management Schemes, Battery Management Schemes, Transmission Power Management Schemes, System Power Management Schemes.  UNIT-VI  **Recent Advances in Wireless Networks**: Ultra-Wide-Band Radio Communication, Wireless Fidelity Systems, Optical Wireless Networks, The Multimode 802.11 – IEEE 802.11a/b/g, The Meghadoot Architecture. | |
| Text Books &  Reference  Books | **TEXT BOOKS:**   1. Ad Hoc Wireless Networks: Architectures and Protocols – C. Siva Ram Murthy and B.S.Manoj, 2014, Pearson Education, Inc.   **REFERENCE BOOKS:**   1. Wireless Ad- hoc and Sensor Networks: Protocols, Performance and Control – Jagannathan Sarangapani, CRC Press. 2. Holger Karl & Andreas Willig, “Protocols and Architectures for Wireless Sensor Networks”, John Wiley, 2005. | |
| E-Resources | 1. <https://nptel.ac.in/courses> 2. <https://www.tutorialspoint.com/Wireless-Networks> | |

**CO-PO Mapping:** 3-High Mapping, 2-Moderate Mapping, 1-Low Mapping, - -Not Mapping

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|  | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **PO11** | **PO12** |
| **CO1** | 2 | 1 | 1 | - | - | - | - | - | - | - | - | - |
| **CO2** | 2 | 1 | 1 | - | - | - | - | - | - | - | - | - |
| **CO3** | 2 | 1 | 1 | - | - | - | - | - | - | - | - | - |
| **CO4** | 2 | 1 | 1 | - | - | - | - | - | - | - | - | - |
| **CO5** | 2 | 1 | 1 | - | - | - | - | - | - | - | - | - |
| **CO6** | 2 | 1 | 1 | - | - | - | - | - | - | - | - | - |