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| MONO | **DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**  **NATIONAL INSTITUTE OF TECHNOLOGY PATNA**  Ashok Raj Path, PATNA 800 005 (Bihar), India |
| Phone No.: 0612 – 2372715, 2370419, 2370843, 2371929, 2371930, 2371715 Fax – 0612- 2670631 Website: [www.nitp.ac.in](http://www.nitp.ac.in/) |

***CSX461 Wireless Networks***

**L-T-P-Cr: 3-0-0-3**

**Pre-requisites:** Fundamentals of Computer Networks

**Objectives/Overview:**

* To study the evolving wireless technologies and standards.
* To understand the architectures of various access technologies.
* To understand various protocols and services provided by next generation networks.

**Course Outcomes:**

At the end of the course, a student should have:

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| **Sl. No.** | **Outcome** | **Mapping to POs** |
|  | Learning latest wireless technologies and trends in the communication field. | PO1, PO5 |
|  | Understanding the transmission of voice and data through various networks. | PO1, PO3 |

**UNIT I: Lectures: 8**

Introduction to Wireless Networking, Overview of 802.11 Networks, 802.11 MAC Fundamentals, 802.11 Framing in detail.

**UNIT II: Lectures: 12**

Introduction to WEP, User authentication with 802.1x, 802.11i: Robust Security Networks, TKIP, and CCMP, Management operations, Contention free service with PCF.

**UNIT III: Lectures: 12**

Physical layer, The Frequency-Hopping (FH) PHY, The Direct Sequence PHYs: DSSS and HR/DSSS (802.11b), 802.11a and 802.11j: 5-GHz OFDM PHY, 802.11g: The Extended-Rate PHY (ERP), A Peek Ahead at 802.11n: MIMO-OFDM, 802.11 Hardware, Using 802.11 on Windows, Macintosh, Linux, Using 802.11 Access Points, Logical Wireless Network Architecture.

**UNIT IV: Lectures: 10**

Security Architecture, Site Planning and Project Management, 802.11 Network Analysis, 802.11 Performance Tuning.

**Text/ Reference Books:**

1. Wireless Communication Networks and Systems, by Cory Beard and William Stallings
2. Fundamentals of Wireless Communication [T & V], by David Tse and Pramod Viswanath (available online).
3. Computer Networks: A Systems Approach, third edition, by Larry Peterson and Bruce Davie.
4. Computer Networking: A Top-Down Approach Featuring the Internet, 3rd edition, by James F. Kurose and Keith W. Ross.