**13EC4202-SATELLITE COMMUNICATION**

**(ECE)**

**Lectures/Week:4Hrs. Sessional Marks:40**

**Univ. Exam. Duration:3Hrs Univ Exam.Marks:60**

**UNIT-I**

**Introduction:** The Origin of Satellite Communications, A brief history of Satellite Communications, Frequency allocations for Satellite Services, Applications, Current State of Satellite Communications and Future trends of Satellite Communications.

**Orbital Aspects of Satellite Communication**: Orbital Mechanics, Lock Angle determination, Orbital perturbations, Orbit determination, Launches and Launch Vehicles, Orbital effects in Communication Systems Performance.

**UNIT-II**

**Satellite Subsystems:** Introduction, Attitude and Orbit Control System (AOCS), Telemetry, Tracking, Command and Monitoring (TTC&M), Power Systems, Communication Subsystems, Satellite Antennas, Equipment reliability and Space Qualification.

**UNIT-III**

**Satellite Link Design:** Basic Transmission Theory, System Noise Temperature and G/T ratio, Design of Down Link, Up Link design, Design of Satellite links for specified C/N, System Design examples.

**UNIT-IV**

**Multiple Access:** Frequency Division Multiple Access (FDMA), Time Division Multiple Access (TDMA), Frame Structure and Code Division Multiple Access (CDMA), Spread Spectrum Transmission and Reception.

**UNIT-V**

**Earth Station:** Types of Earth Station, Earth Station Architecture, Earth Station Design Considerations, Earth Station Testing, Earth Station Hardware and Satellite Tracking.

**TEXT BOOKS:**

1. Satellite Communication- Timothy Pratt, Charles Bostian and Jeremy Allnutt, WSE, Wiley Publications, 2nd Edition, 2003.
2. Satellite Communications- Anil K.Maini and Varsha Agarwal, Wiley India Pvt Ltd, 2011.

**REFERENCE BOOKS**

* + - 1. Satellite Communication- D.C Agarwal, Khanna Publications,5th edition
      2. Satellite Communications- Dennis Roddy, McGraw Hill, 4th Edition, 2009.