

SARDAR PATEL UNIVERSITY
Programme & Subject: M.Sc (Instrumentation & Control)
Semester: III
Syllabus with effect from – June - 2016

Paper Code: PS03EINC03	Total Credit: 4
Title Of Paper: Satcom Instrumentation	

Unit	Description in Detail	Weightage (%)
I	Microwave systems, Microwave transmitter & receivers, Microwave repeaters, Diversity – frequency, space & polarization, Microwave system gain, Free space path loss, fade margin, receiver threshold, noise figure	25%
II	Satcom: Basic Principles: General features, frequency allocation for satellite services, properties of satellite communication systems, Satellite Orbits: Introduction, Kepler's laws, orbital dynamics, orbital characteristics, satellite spacing and orbital capacity, angle of elevation, eclipses, launching and positioning, satellite drift and station keeping.	25%
III	Satellite Construction (Space Segment): Introduction; attitude and orbit control system; telemetry, tracking and command; power systems, communication subsystems, antenna subsystem, equipment reliability and space qualification Satellite Links: Introduction, general link design equation, system noise temperature, uplink design, downlink design, complete link design, effects of rain.	25%
IV	Earth Station: Introduction, earth station subsystem, different types of earth stations. The Space Segment Access and Utilization: Introduction, space segment access methods, TDMA, FDMA, CDMA, SDMA, assignment methods. The Role and Application of Satellite Communication.	25%

Basic Text & Reference Books:-

- Advanced Electronics Communication Systems, Wayne Tomasi
- Satellite Communications, Timothy Pratt, Charles W. Bostian, John Wiley & Sons.
- The Satellite Communication Ground Segment and Earth Station Handbook, Bruce R. Elbert
- Satellite Communications, Dennis Roddy, Mc. Graw-Hill International
- Satellite Communication Systems Engineering, W. L. Pritchard, J. A. Sciulli, Prentice-Hall, Inc.
- Satellite Communication Engineering, M. O. Kolawole, Marcel Dekker, Inc. NY.

