

GUJARAT TECHNOLOGICAL UNIVERSITY

M.E

Communication Engineering

Subject Name : **Satellite communication**

Sr.No	Course content
1	Introduction, Kepler's First, second and third Law, Definitions of Terms for Earth-orbiting Satellites, Orbital Elements, Apogee and Perigee Heights, Orbital Perturbations, Effects of a Non spherical Earth, Atmospheric Drag, Inclined Orbits, Calendars, Universal Time, Julian Dates, Sidereal Time, The Orbital Plane,
2	Antenna Look Angels, The Polar Mount Antenna, Limits of Visibility, Near Geostationary Orbits, Earth Eclipse of Satellite, Sun Transit Outage, Launching Orbits, Attitude Control, Spinning Satellite Stabilization, Momentum Wheel Stabilization, Station Keeping, Thermal Control, TT&C Subsystem, Transponders, Demultiplexer Power Amplifier, Antenna Subsystem.
3	Receive-Only Home TV Systems, Master Antenna TV System Community Antenna TV System, Transmit-Receive Earth Stations, Equivalent Isotropic Radiated Power, Transmission Losses, Free-Space Transmission, Feeder Losses, Antenna Misalignment Losses, Fixed Atmospheric and Ionospheric Losses, Link Power Budget Equation, Overall System Noise Temperature, Carrier-to-Noise Ratio, Input Back Off, Combined C/N .
4	Pre assigned FDMA, Demand-Assigned FDMA, SPADE System. Bandwidth-limited a Power-limited TWT amplifier operation, FDMA downlink analysis. TDMA : Reference Burst; Preamble and Postamble, Carrier recovery, Network synchronization, unique word detection, On-board signal Processing, Satellite switched TDMA.
5	Introduction, Orbital Spacings, Power Rating and Number of Transponders, Frequencies and Polarization, Transponder Capacity, Bit Rates for Digital Television

Reference Books:

1. Timothy Pratt – Charles Bostian & Jeremy Allmuti, Satellite Comm. , John Willy & Sons (Asia) Pvt. Ltd. 2004.
2. Dennis Roddy, Satellite Communications, McGraw-Hill Publication
3. Third edition 2001.
4. Wilbur L. Pritchards Henri G.Suyder Hond Robert A.Nelson,
5. Satellite Comm. Systems Engg., Pearson Edu.Ltd., 2nd edition 2003.
6. Richharia : Satellite Communication Systems (Design Principles Macmillan Press Ltd. Second Edition 2003.