

SEMESTER - VIII

OPEN ELECTIVE - II

PROFESSIONAL ELECTIVE - II

PROFESSIONAL ELECTIVE - III

EC 1801 - DIGITAL HARDWARE DESIGN

(3-1-0)

IEEE Logic symbol: Mixed logic representation: review of POS and SOP minimization: multi output function: variable entered mapping: CAD tools for minimizing functions of more than six variables: ED-CR canonic forms and minimization.

Iterative arrays - time and space iteration: examples of arithmetic and code conversion circuits: Wired logic: practical consideration - fan in, fan - out and delay: partitioning functions.

Sequential Machines: Mealy and Moore machines: Counter design examples: State reduction and next state decoders: Multimode counters: Shift register sequencers: timing and triggering: Clock skew.

System controllers: functional partition and flow diagram development: state specification; state assignment and next state decoder: output decoders: use of MSI decoders, multiplexer ROMs and PLAs in system controllers: Programmable controllers - use of shift registers and counters: Controllers with fixed and variable instruction sets: Control sequencers: RTL description of simple machines: design from RTL descriptions.

Interfacing with microprocessors: Using custom PLAs and ROMs for interfacing: Displays: Floppy disk storage:

Asynchronous and synchronous serial data communication.

Asynchronous machines-analysis and design: races and hazards.

Suggested Text books &References

- Fletcher, W.I., "An Engineering Approach to Digital Design", Prantice Hall of India (1990).
- Hall D.V., "Microprocessors & Interfacing", Tata McGraw Hill 1986.
- Hill, F.J. & Peterson, G.R., "Digital Logic & Microprocessors", Wiley 1984.

EC 1802 – SATELLITE COMMUNICATION

(3-1-0)

Introduction

Origin and brief history of satellite communication; Elements of a satellite communication link; Current status of satellite communication.

Orbital Mechanism and Launching of satellite

Equation of orbit, describing the orbit, locating the satellite in the orbit, locating the satellite with respect to earth, orbital elements, look angle determination, Elevation and Azimuth calculation, Geostationary and other orbits, orbital perturbations, orbit determination, Mechanics of launching a synchronous satellite, selecting a launch vehicle.

Space craft

Satellite subsystems, Altitude and orbit control system (AOCS), Telemetry, Tracking and Command (TT & C), Communication systems, Transponders, Spacecraft antennas, Frequency re-use antennas.

Satellite Channel and Link Design

Basic transmission theory, noise temperature, calculation of system noise temperature, noise figure, G/T ratio of earth stations, design of down links and uplinks using C/N ratio, FM improvement factor for multichannel signals, Link Design for FDM/FM, TV signals and Digital Signals.

Multiple Access Techniques

Frequency Division Multiple Access (FDMA), FDM/FM/FDMA, Time Division Multiple Access, Frame structure and Synchronization, Code Division Multiple Access, Random Access.

Earth Station Technology

Earth station design, basic antenna theory, antenna noise temperature; Tracking; Design of small earth station antennas, low noise amplifiers; High power amplifiers, FDM and TDM systems.

Operational Satellites

INTELSAT, INMARSAT and INSAT systems, Applications of INSAT, Satellite Television Receivers, Direct Broadcast Satellites, Direct Reception system for television and other applications.

Suggested Text books &References

- Pratt, T & Bostian, C.W., "Satellite Telecommunication", John Wiley & Sons, 1986.
- Roddy, D., "Satellite Communication", Prentice Hall, 1989.

Note: The Institutions can frame Syllabi of Professional Electives and Open electives to be offered by them in the particular area.

PRACTICAL / DRAWING / DESIGN

EC 1803 - P PROJECT - II

(0-0-12)

HS 1808 - P GENERAL PROFICIENCY - VIII

(0-0-0)