		Compouent											
4	4-ET-4	Electromagnetic Fields	4	1	0	5	100	80	20				3 Period
4	4-ET-5	Basic Electrical Machines	4	1	2	7	100	80	20	50	25	25	3 Period
		Total	**19**	**5**	**4**	**28**	**500**			**100**			**Total 600**

Sem	Sub.Code	Subject Name	L	T	P	Period .per week	Max marks theory	Paper	College Asses.	Max marks pract	Pract	College Asses.	Paper Duration
5	5-ET-1	Engineering Eco. & Indl. Management	3	1	0	4	100	80	20				3 Period
5	5-ET-2	Linear Electronic Circuits	4	1	2	7	100	80	20	50	25	25	3 Period
5	5-ET-3	Signal And Systems	4	1	0	5	100	80	20				3 Period
5	5-ET-4	Power Electronics	4	1	2	7	100	80	20	50	25	25	3 Period
5	5-ET-5	Microprocessor Interfacing	4	1	2	7	100	80	20	50	25	25	3 Period
		Total	**19**	**5**	**6**	**30**	**500**			**150**			**Total 650**

8.3.d SEMESTER PATTERN – BRANCH : ELECTRONICS AND TELECOMMUNICATION ENGINEERING , Direction No. 4 of 2001

Sem	Sub.Code	Subject Name	L	T	P	Period .per week	Max marks theory	Paper	College Asses.	Max marks pract	Pract	College Asses.	Paper Duration
6	6-ET-1	Fields And Radiating Systems	4	1	0	5	100	80	20				3 Period
6	6-ET-2	Control System Engineering	4	1	2	7	100	80	20	50	25	25	3 Period
6	6-ET-3	Line Communication	4	1	0	5	100	80	20				3 Period
6	6-ET-4	Communication Electronics	4	1	2	7	100	80	20	50	25	25	3 Period
6	6-ET-5	Computer Organization	4	1	0	5	100	80	20				3 Period
6	6-ET-6	Electronic Workshop Practice	0	0	2	2				50	25	25	
		Total	**20**	**5**	**6**	**31**	**500**			**150**			**Total 650**

Sem	Sub.Code	Subject Name	L	T	P	Period .per week	Max marks theory	Paper	College Asses.	Max marks pract	Pract	College Asses.	Paper Duration
7	7-ET-1	Television Engineering	4	1	2	7	100	80	20	50	25	25	3 Period
7	7-ET-2	Advanced Microprocessor & Peripherals	4	1	2	7	100	80	20	50	25	25	3 Period
7	7-ET-3	Digital Signal Processing	4	1	2	7	100	80	20	50	25	25	3 Period
7	7-ET-4	Digital Communication	4	1	0	5	100	80	20				3 Period
7	7-ET-5	Elective-I	4	1	0	5	100	80	20				3 Period
7	7-ET-6	Project Seminar	0	0	3	3				50		50	
		Total	**20**	**5**	**9**	**34**	**500**			**200**			**Total 700**

14/05/18

Sem	Sub.Code	Subject Name	L	T	P	Period .per week	Max marks theory	Paper	College Asses.	Max marks pract	Pract	College Asses.	Paper Duration
8	8-ET-1	Electronic System Design	4	1	2	7	100	80	20	50	25	25	3 Period
8	8-ET-2	UHF And Microwave	4	1	2	7	100	80	20	50	25	25	3 Period
8	8-ET-3	Mobile Communication	4	1	0	5	100	80	20				3 Period
8	8-ET-4	Optical Communication	4	1	0	5	100	80	20				3 Period
8	8-ET-5	Elective-II	4	1	0	5	100	80	20				3 Period
8	8-ET-6	Project	0	0	6	6				150	75	75	
		Total	**20**	**5**	**10**	**35**	**500**			**250**			**Total 750**

14/07/18.

ELECTIVE-I

1] Digital System Design
2] Radar Engineering
3] Satellite Communications

ELECTIVE-II

1] Digital Image Processing
2] Computer Communication & Networks
3] Fuzzy logic and neural network

Elliot: Integrated circuit Fabrication Technology (TMH)
(Practicals as per above syllabus)

B.E. Seventh Semester Electronics & Telecommunication Engineering
Television Engineering

7-ET-1

UNIT I:

Standard scanning sequence, line frequency and frame frequency and frame frequency, Video bandwidth, blanking, synchronizing and equalizing pulses, composite video signal, VSB transmission and reception.

UNIT II:

TV camera tube (Monochrome), the image orthicon, vidicon and plumbicon tubes. Monochrome TV transmitter, I.F. modulation, diplexer, the sound transmitter. TV transmitter and receiving antennas, service area of a TV transmitter.

UNIT III:

TV receiver (Monochrome), Intercarrier sound system, R.F. tuner, Balun, video I.F. Amplifier, video detector and video amplifier, sound I.F. take-off, Keyed AGC, Horizontal and Vertical deflection circuit and EHT generator.

UNIT IV:

Essential of colour TV, compatibility and reverse compatibility, three colour theory, the chromaticity diagram, colour TV camera, production of Luminance and colour difference signals, colour TV picture tubes, delta-Gun, P.I.L. and Trinitron tubes.

UNIT V:

Colour signal transmission and reception, frequency interfacing modulation of colour difference signal PAL colour TV system, choice of colour sub carrier frequency the PAL decoder, PAL colour receiver, comparison of PAL with NTSC and SECAM systems.

UNIT VI:

Remote control circuit, MATV CATV and CCTV systems video tape recording and playback circuit. HD & TV, TV vai satellite.

B.E. VII Semester Electronics & Telecommunication Engineering
Advanced Microprocessor & Peripherals

7-ET-2

UNIT-I:

Introduction to 16 bit microprocessors, 8086/8088 CPU architecture, memory organization, interfacing addressing modes, Instruction set, programming examples, pseudo opcodes, assembler directives.

UNIT-II:

Interfacing of peripherals 8255, 8253 & 8251. Interfacing of ADC & DAC, stepper motor, serial communication standards RS232, I^2 C Bus.

UNIT-III:

Architecture, organization operation & interfacing of 8259, ICWs, OCWS, Cascading 8279- keyboard display mode, sensor matrix mode, command words and programming DTMF transceiver (Mittel 8880), real time clock DS 1307, EEPROM.

UNIT-IV:

8086/88 maximum mode, 8087 architecture, 80386 architecture, real and protected mode, 8237 DMA controller, organization, control words.

UNIT-V:

Introduction to 8051 family architecture, pin diagram, operation, ports, addressing modes, internal & external memory, SFR, flags, organization, counters and timers, serial communication.

UNIT-VI:

8051 instruction set, interrupts, programming exercises for interfaced with keyboard, LED matrix, time delays, serial communications.

Text Books:

1. Intel Reference Manuals, Microprocessors & Microcontrollers: Intel.
2. Programming & Interfacing of 8086/8088, D.V. Hall, TMH.
3. Microcontrollers – Peatman, Mc Graw Hill.]
4. Microcontroller – Ayala, TMH.

Reference Books:

1. Advanced Microprocessors & Peripherals, A.K. Ray, (TMH)
2. Microprocessor 8086/8088 Family Programme Interfacing : Liu & Gibson

(Practicals based on above syllabus.)

B.E. VII Semester Electronics & Telecommunication Engineering
Digital Signal Processing

7-ET-3

UNIT -I:

Discrete time signals & systems: Discrete time signals, Discrete time systems, Linearity, causality, stability, static/dynamic, Time Invariance/Time variance, classification of discrete time system, Linear convolution, Circular convolution Cross Correlation, Autocorrelation. Linear constant coefficient difference equations, sampling theorem & sampling process. Reconstruction of sampling data, convolution.

UNIT -II:

Frequency domain representation of discrete time signals and systems, Fourier transform of discrete time signals, properties of discrete time, Fourier transform.

UNIT-III:

The Z-transform: Definition, properties of the region of convergence for the Z-transform, Z-transform properties, Inverse Z-transform using contour integration, complex convolution theorem, Parseval's, unilateral Z-transform, stability interpretation using Jury's array.

UNIT-IV:

Transform analysis of LTI system & structures for discrete-time system: Frequency response of LTI system, relationship between magnitude & phase, all pass systems, minimum phase system. Linear system with generalized linear phase. Block diagram representation & signal flow graph representation of Linear constant. Coefficient difference equations, Basic structures for IIR systems, transposed forms, basic network structures for FIR systems, lattice structures.

UNIT-V:

Filter design Techniques: Design of discrete time IIR filters from continuous time filters, frequency transformations of low pass IIR filters, Design of FIR filters by windowing, FIR filter design by Kaiser window method. Frequency sampling method.

UNIT -VI:

Discrete Fourier Transform: Discrete Fourier series, properties of discrete Fourier series, Discrete Fourier transform, properties of DFT, circular convolution using discrete Fourier transform. Decimation in time FFT algorithm, decimation in frequency FFT, FFT of long sequences using overlap add and overlap save method.

Text Books:

1. Discrete time signal processing 2nd Ed. Alan V. Oppenheim, Ronald W. Schafer & Buch, Pearson.
2. Digital Signal Processing - A Computer based approach. Sanjit K. Mitra.

Reference Books:

1. Digital signal Processing Theory and application. Proakis and Manolakis – 3rd edition PHI Ltd.

Practicals:

Digital Signal Processing**: Suggested experiments are as follows**

1. Signal generation, sampling principles.
2. Convolution.
3. LTI system characteristics
4. DTFT & Properties.
5. Z-transform and applications, solution of difference equation.
6. DFT, FFT linear & circular convolution.
7. Design of IIR filter.
8. Design of FIR filter.
   - Windows method.
   - Kaiser window method.

Note: At least one experiment with C and At least one with MATLAB.

Optional – with DSP kit and Excel.

B.E. VII Semester Electronics & Telecommuication Engineering
Digital Communication

7-ET-4

UNIT- I:

Digital modulation: - PCM systems, Channel capacity, Delta modulation, Adaptive digital waveform coding schemes, matched filter receiver.

Coherent Binary: PSK, FSK, QPSK, MSK, DPSK.

UNIT-II:

Source coding methods: - Review of information theory, Huffman and L-Z encoding algorithm. Rate distortion theory for optimum quantization, scalar and vector quantization.

UNIT-III:

Waveform coding methods, ADPCM, Adaptive sub-band and transform coding, model based speech coding like LP coding , CELP coding. Introduction to Image compression, Review of techniques used in JPEG and MPEG standards.

UNIT- IV:

Advanced modulation methods:-The signal space concept, Gram-Schmitt procedure, Signal space representation of modulated signals, nonlinear modulation methods with memory, Error probability and optimum receivers for AWGN channels.

UNIT-V:
Advanced transmission methods:- Review of channel coding , convolution, encoding and decoding , distance properties, Viterbi algorithm and Fano algorithm. Trellis coded modulation methods.

UNIT-VI:
Spread - Spectrum methods:- Study of PN sequences, direct sequence methods, Frequency hop methods, digital spread spectrum, slow and fast frequency hop, performance analysis, synchronization methods for spread spectrum. Application of spread spectrum, CDMA.

Text Books:
1. Digital communication: John G Prokis (TMG)
2. Digital communication: Simon Haykin (WEP)

Reference Books:
1. Modern Communication systems (Principles and application):Leon W. Couch II (PHI)
2. Digital Communication: Shanmugam

B.E. VII Semester Electronics & Telecommunication Engineering
Digital System Design

7-ET-5DSD

UNIT-I:
Introduction to VHDL, design units, data objects, signal drivers, inertial and transport delays, delta delay, VHDL data types, concurrent and sequential statements.

UNIT-II:
Subprograms – Function, Procedures, attributes, generic, generate, package, IEEE std logic library, file I/O, test bench, component declaration, instantiation, configuration.

UNIT-III:
Combinational logic circuit design and VHDL implementation of following circuits – Fast adder, subtractor, decoder, encoder, multiplexer, ALU, barrel shifter, 4 X 4 key board encoder, multiplier, divider, Hamming code encoder and correction circuits.

UNIT-IV:
Synchronous sequential circuit design – Finite state machines, Mealy and Moore, state assignments, design and VHDL implementation of FSMs, Linear feedback shift register (pseudorandom and CRC).

UNIT-V:
Asynchronous sequential circuit design – primitive flow table, concept of race, critical race and hazards, design issues like metastability, synchronizers, clock skew and timing considerations.

UNIT-VI:
Introduction to place & route process, Introduction to ROM, PLA, PAL, Architecture of CPLD (Xilinx / Altera), FPGA architecture (Xilinx / Altera).

Text Books:
1. VHDL – 3rd Edition – Douglas Perry – TMH
2. Fundamentals of Digital Logic with VHDL design – Stephen Brown, Zvonko Vranesic – TMH.
3. Digital Design principles – Fletcher
4. VHDL Synthesis – J. Bhasker
5. VHDL Primer – J .Bhasker – Pearson Education

Reference Books:
1. Digital System Design Using VHDL – Chales H. Roth
2. Digital System Design – John Wakerley
3. VHDL – Zainalabedin Navabbi.
4. VHDL – D. Smith.

(Practicals based on above syllabus)

B.E. VII Semester Electronics & Telecommunication Engineering
Radar Engineering

7-ET-5RE

UNIT-I	RADAR Range Equation, CW and FM modulated RADAR.
UNIT-II	MTI and Pulse Doppler RADAR, Tracking RADAR.
UNIT-III	RADAR transmitter, Magnetron oscillator, Traveling tube amplifier, Klystron amplifier, Modulator.
UNIT IV	RADAR antennas, Parabolic reflector, Scanning field reflector, Lens antennas.
UNIT-V	RADAR Receivers, Displays and Duplexer, Detection of RADAR; signals in noise.
UNIT-VI	RADAR clutter, Effects of weather on RADAR, Detection of targets in Precipitation, synthetic Aperture RADAR, HF over the Horizon RADAR.

BOOKS:-

1. Introduction of RADAR system By Skolnik (McGraw Hill)
2. Principles of RADAR system By Herts & Coates (McGraw Hill)
3. Introduction to RADAR system By Kingslles (McGraw Hill)
4. Navigational Aids By Sen & Bhattacharya.

B.E. VII Semester Electronics & Telecommunication Engineering
Satellite Communication

7-ET-5SC

UNIT-I:

Introduction:- Origin of Satellite communication. Current state of satellite Communication.

Orbital aspect of satellite communication:- Orbital mechanism, equation of orbit, locating satellite in orbit, orbital elements, orbital perturbation .

Space craft subsystem:- Attitude and orbit control system, Telemetry tracking and command power system , communication subsystem.

UNIT-II:

Satellite link design:- System noise temperature and G/T ratio, down link design, domestic satellite system, uplink design, design of satellite link for specified (C/N).

UNIT-III:

Multiple access techniques: - FDMA, FDM/FM/FDMA , effects of intermodulation, companded FDM/FM/FDMA. TDMA, TDMA frame structure and design, TDMA synchronization and timing, code division multiple access, SS transmission and reception applicability of CDMA to commercial system, multiple access on board processing, SCPS system, digital speech interpolation system, DAMA.

UNIT-IV:

Propagation on satellite:- Earth's path—propagation effects, atmospheric absorption, Scintillation effects. Land and Sea multipath, Rain and ice effects, Rain drop distribution, calculation of Attenuation. Rain effects on Antenna noise temperature. Eliminating propagation effects: - Attenuation, Site diversity, Depolarization.

UNIT-V:

Encoding and forward error correction: Error detection and correction, channel capacity, error detecting codes, linear block codes, error correction with linear block codes, performance of block error correction codes, convolution codes, cyclic codes, BCH codes, error detection on satellite links.

UNIT-VI:

Earth Station technology – Earth Station design antennas tracking, LNA, HPA, RF multiplexing, factors affecting orbit utilization. Tracking, equipment for earth stations.

Text Books:

1. Satellite Communication by T. Pratt
2. Satellite Communication by D.C. Agrawal
3. Satellite Communication by Dennis Roddy
4. Satellite Communication by T.T. Hai

B.E. VIII Semester Electronics & Telecommunication Engineering
Electronic System Design

8-ET-1

UNIT-I:

Design of Power supply system: Unregulated D.C. power supply system with rectifiers and filters. Design of emitter follower regulator, series regulators; overload protection circuits for regulators. Design of SMPS: Step up and step down.

UNIT-II:

Design of class A small signal amplifiers: Emitter follower, Darlington pair amplifiers with and without Bootstrapping, Two stage direct coupled amplifier. Design of class A, Class AB audio power amplifier with drivers.

UNIT -III:

Design of sinusoidal oscillators: OPAMP based Wein Bridge and Phase Shift oscillators with AGC circuits, Transistor based Hartley, Colpitts and Crystal oscillators, Evaluation of figure of merit for all above oscillator circuits.

UNIT-IV:

Design of constant current sources, Design of function generators, Design of tuned amplifiers. Design of Butterworth, Chebyshev filters upto sixth order with VCVS and IGMF configuration.

Text Books:

1. Regulated Power supply Handbook. Texas Instruments.
2. Electronics : BJT's, FETS and Microcircuits – Anielo.
3. Monograph on Electronic circuit Design : Goyal & Khetan.

(Practicals based on above syllabus.)

Note: 50% practicals should be based on SPICE simulation.

B.E. VIII Semester Electronics & Telecommunication Engineering
UHF & Microwave

8-ET-2

UNIT-I:

Causes of failure of conventional tubes at high frequency. Two cavity klystron amplifier, Reflex klystron oscillator.

UNIT- II:

Traveling wave tube, Slow wave structure. Backward wave architecture (Carcinotron)
Magnetron: cylindrical magnetron, parallel plate magnetron, voltage tunable magnetron.

UNIT -III:

Microwave components : Attenuators , Tees , Directional couplers , Circulators ,Isolators, Gyrators, Phase shifter , Cavity resonator, Transmission line resonator.

UNIT -IV:

Scattering matrices: Scattering matrices of transmission lines, microwave junction and tees, directional coupler ,circulator.

UNIT -V:

Microwave filters: Design of microwave filters by Image parameter method, Insertion loss method.
Microwave measurement: microwave power measurement - Bolometer method and Calorimeter method, VSWR measurement, Attenuation measurement, Impedance and Q factor measurement.

UNIT-VI:

Microwave solid state devices : GaAs oscillator, Parametric amplifier ,PIN diode, Detector diode ,MASER.
Strip lines: Microstrip lines, coplanar, shielded, parallel strip lines.

Text Books:

1. Microwave device and circuits: Samuel Y.Lio
2. Foundations of microwave engineering : R.E. Collins.
3. Microwave engineering : R Chatterjee.

Reference books:

1. Microwave communication: Hund
2. Microwave theory and measurement: G. Lance.

(Practicals based on above syllabus.)

B.E. VIII Semester Electronics & Telecommunication Engineering
Mobile Communication

8-ET-3

UNIT-I:

The cellular concept: Evolution of mobile radio communication. Cellular telephone system, frequency reuse, channel assignment and handoff strategies, interference and system capacity, trunking and grade of service, improving capacity in cellular system.

UNIT-II:

The mobile radio environment: causes of propagation path loss, causes of fading -long term and short term, definition of sample average, statistical average, probability density function, cumulative probability distribution, level crossing rate and average duration of fade, delay spread, coherence bandwidth, intersymbol interference.

UNIT-III:

Modulation techniques for mobile communication: BPSK, QPSK. Transmission and detection techniques, 4 QPSK transmission and detection techniques. QAM, GMSK.

UNIT-IV:

Equalization, diversity and channel coding: fundamentals of equalization, space polarization, frequency and time diversity techniques, space diversity, polarization diversity, frequency and time diversity, fundamentals of channel coding.

UNIT-V:

Multiple access techniques: Introduction to multiple access, FDMA, TDMA, Spread spectrum multiple access, frequency hopped multiple access (FHMA), code division multiple access (CDMA), space division multiple access (SDMA).

UNIT-VI:

GSM - Global system for mobile: Services and features, GSM system architecture, GSM radio subsystem, GSM channel types, GSM frame structure, signal processing in GSM, introduction to CDMA digital cellular standard.

Text Books:

1. Wireless Communication – Principles and practice by T S. Rappaport.
   (Prentice Hall PTR, upper saddle river, New Jersey.)
2. Mobile Communications – Design fundamentals by William C. Y. Lee, (John Willey)

Reference Books:

1. Wireless digital communication by Kamilo Feher (PHI)
2. Mobile Cellular Communication by W.C.Y.Lee (Mc Graw Hill)

3. The Mobile Radio Propagation channel by J.D. Parson.

B.E. VIII Semester Electronics & Telecommunication Engineering
Optical Communication

8-ET-4

UNIT-I:

Principle of optical communication- Attributes and structures of various fibers such as step index, graded index mode and multi mode fibers. Propagation in fibers-Ray mode, Numerical aperture and multipath dispersion in step index and graded index fibers. Material dispersion and frequency response.

UNIT-II:

Electromagnetic wave equation in step index and graded index fibers Modes and Power flow in fibers. Manufacture of fibers and cables, fiber joints, splices and connectors.

UNIT-III:

Signal degradation in fibers - Attenuation, material dispersion, waveguide dispersion pulse broadening, mode coupling.

UNIT-IV:

Optical sources - LED and LASER. Structures and properties. Source launching and coupling.

UNIT-V:

Photo detector - Pin and Avalanche Photo-detectors. Structures and Properties.
Optical receiver-Operation and performance.

UNIT-VI:

Transmission link - Point to point links, WDM, Data buses, star and T-coupler, NRZ, RZ and block codes. Measurement in optical fibers-Attenuation, dispersion, Refractive index profile and optical source characteristic measurements.

Text Books:

1. Optical fiber communication, principles and practice: John M. Senior (PH International Service).
2. Optical fiber communication : B. Keiser (Mc Graw Hill)
3. Optical communication system : J. Gower (Prentice Hall of India)
4. Optical Fiber System : Kao (Tata Mc Graw Hill)

B.E. VIII Semester Electronics & Telecommunication Engineering
Computer Communication Network

8-ET-5CCN

UNIT-I:

Network & Services: Communication Network, Approaches to network Design, types of Network, Two Stage, Three stage Network, Time Division Switching, Time Multiplexed Switching. Time Multiplexed Time Switching.

UNIT-II:

LAN Network & Medium Access layer : LAN structure, random access, multiple access protocols, IEEE standard 802 for LAN & MAN. High speed LANS, FDDI, Fast Ethernet.

UNIT-III:

Application & Layered Architecture: OSI reference Model, TCP/IP Architecture, TCP/IP protocol, IP packets, IP addressing, subnet addressing, address resolution & reverse resolution, TCP/IP utilities.

UNIT-IV:

Physical Layer & Data Link Layer: Transmission media, wireless Transmission, X.25 network, Narrow band & Broadband ISDN, ATM. Data link Layer design, Error detection & correction Elementary data link protocols, sliding window protocols.

UNIT-V:

Network Layer & Transport Layer : Network layer design, Routing, congestion, Internetworking Transport layer design issues, Transport services primitives, Internet transport protocol, wireless TCP and UDP.

UNIT-VI:

Application Layer : Network security cryptography , secret key, public-key digital signature, Domain Name system, Electronic Mail system, Multimedia, Real Time Transport protocol.

Text Books:

1. Telecommunication Switching systems & Networks by Vishwanathan
2. Communication Networks by Leon- Gracia, Indra Widjaja
3. Computer Communication by W. Stanlling.
4. Computer Networks - Tanenbaum.

B.E. VIII Semester Electronics & Telecommunication Engineering
Fuzzy Logic & Neural Network

7-ET-5FLNN

UNIT-I:

Introducion:

1. Fuzzy sets, relations, approximate reasoning, Representing set of rules. 2. Fuzzy knowledge based (FKBC) parameters. Introduction rule and data base inference engine choice of fuzzification and defuzzification processes.

UNIT- II:

Nonlinear Fuzzy Control: Introduction, Control Problem, FKBC as nonlinear transfer element, Types of FKBC.

UNIT -III:

Adaptive Fuzzy Control: Introduction, design and performance evaluation, main approach to design.

UNIT -IV:

Fundamental concepts of ANN. Model of artificial Neural Network (ANN), Learning and adaptation learning rules. Feed forward Networks: Classification Model, features and decision, regions, Minimum distance classification, perceptron, Delta learning rules for multiperceptron layer, generalized learning rules, back propagation Algorithm; back propagation training, learning factors.

UNIT V:

Recurrent Networks: Mathematical foundation of discrete time & gradient type Hopfield networks, Transient Response and relaxation modeling.

UNIT VI:

Associative Memories & self organizing Networks: Basic concepts and performance analysis of recurrent associative memory, Bidirectional associative memory. Hamming net and MAXNET, Unsupervised learning of clusters, counter propagation network, feature mapping, self organizing feature maps, cluster discovery network (ART1).

Text Books:

1. Introduction of Artificial Neural Networks, Jacek Zurada (JPH)
2. Neural Network and Fuzzy Systems, Bart Kosko (PHI)
3. Neural Networks: A comprehensive Foundation, Simon Haykin (Maxwell) Macmillan Canada Inc).

Reference Books:

1. An Introduction to Fuzzy Control, D. Driankov, Norsa.
2. Fuzzy sets: Uncertainty & information, Klir and Folger (PHI)
3. Digital Image processing (AWPC) By Gonzalez

B.E. VIII Semester Electronics & Telecommunication Engineering
Digital Image Processing

8-ET-5DIP

UNIT- I:

Digital image representation, elements of digital image processing systems, sampling and quantization, simple image model, basic relationships between pixels and image geometry.

UNIT – II:

Image transforms – Introduction to Fourier transform, DFT, properties of 2- dimensional DFT, FFT, Others separable image transforms – DCT, DST, Walsh, Haar, start transforms.

UNIT -III:

Image enhancement - Basic gray level transformations, Histogram processing enhancement using arithmetic/logic operations, spatial filtering, smoothing and sharpening filters, smoothing frequency domain filters, sharpening frequency domain filters.

UNIT –IV:

Image Compression - Fundamentals, image compression modules, information theory, error - free compression, lossy compression, image compression standards.

Unit- V:

Image Segmentation - Detection of discontinuities, Edge linking and boundary detection, thresholding region based segmentation.

UNIT – VI:

Representation & Description – Representation, boundary descriptors, regional descriptors.

Text Books:

1. Digital image processing, R.C. Gonzaalez, R.E. Woods, Pearson Edition, 2nd Edition.
2. Fundamentals of Digital Image Processing, A.K. Jain (PHI)