DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

COURSE COVERAGE SUMMARY

FOR

III B.TECH II SEMESTER

(2019 – 20)

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Sponsored by CMR Educational Society)

(Affiliated to JNTU, Hyderabad, Approved by AICTE - Accredited by NBA & NAAC – 'A' Grade - ISO 9001:2008 Certified)

Maisammaguda, Dhulapally (Post Via Hakimpet), Secunderabad – 500100

MICROPROCESSORS & MICROCONTROLLERS

COURSE COVERAGE SUMMARY

UNIT NO.	Title of the unit	Topics of the unit	NAME OF THE TEXT BOOK	CHAPTER no.	Page no
I	**8086 Architecture**	Architecture of 8086, Register Organization, Programming Model, Memory addresses, Memory Segmentation, Physical Memory Organization, Signal descriptions of 8086- Common Function Signals, Minimum and Maximum mode signals, Timing diagrams.	Advanced Microprocessors and peripherals, 3rd edition, Tata Mc Graw-Hill. Authors: KM Bhurchandi, AK Ray	**1**	**1 to 24**
II	**Instruction Set and Assembly Language Programming of 8086**	Instruction formats, Addressing modes, Instruction Set, Assembler Directives, Procedures, Macros, and Simple Programs involving Logical, Branch and Call Instructions, Sorting, Evaluating Arithmetic Expressions, String Manipulations.	Advanced Microprocessors and peripherals, 3rd edition, Tata Mc Graw-Hill. Authors: KM Bhurchandi, AK Ray	**2**	**35 to 75**
III	**I/O Interface**	8255 PPI, Various Modes of Operation and Interfacing to 8086, D/A and A/D Converter, Stepper motor, Interfacing of DMA controller 8257	Advanced Microprocessors and peripherals, 3rd edition, Tata Mc Graw-Hill. Authors: KM Bhurchandi, AK Ray	**5**	**166 to 219, 236 to 252**

	Interfacing with advanced devices	Memory Interfacing to 8086, Interrupt Structure of 8086, Interrupt Vector Table, Interrupt Service Routine, architecture of 8259		**6**	**264 to 274**
	Communication Interface	Serial Communication Standards, Serial Data Transfer Schemes, 8251 USART Architecture and Interfacing.	Advanced Microprocessors and peripherals, 3rd edition, Tata Mc Graw-Hill. Authors: KM Bhurchandi, AK Ray	**7**	**283 to 289**
IV	**Introduction to Microcontrollers**	Overview of 8051 Microcontroller, Architecture, I/O Ports, Memory Organization, Addressing Modes and Instruction set of 8051, Simple Programs, memory interfacing to 8051	Advanced Microprocessors and peripherals, 3rd edition, Tata Mc Graw-Hill. Authors: KM Bhurchandi, AK Ray	**17**	**557 to 580**
V	**8051 Real Time Control**	Programming Timer Interrupts, Programming External Hardware Interrupts, Programming the Serial Communication	Advanced Microprocessors and peripherals, 3rd edition, Tata Mc Graw-Hill. Authors: KM Bhurchandi, AK Ray	**18**	**593 to 640**
	ARM Processor	Fundamentals, Registers, current program status register, pipeline concept.	ARSoftware DeveloperSoftware Designing and Optimizing System Software, Andrew Software,DominSoftware,Chris Wright.	**2**	**21 to 34**

DATA STRUCTURES USING PYTHON

COURSE COVERAGE SUMMARY

UNIT NO.	Title of the unit	Topics of the unit	NAME OF THE TEXT BOOK	CHAPTER no.	Page no
I	**Introduction to python Programming**	Installation and Working with Python, Understanding Python variables Python basic Operators, Understanding python blocks, Python Data Types: Declaring and using Numeric data types: int, float, complex, Using string data type and string operations.	R. Nageswara Rao, "Core Python Programming", dreamtech Publications	**1 to 5**	**1 to 115**
II	**Control Flow**	if, if-elif-else, loops ,For loop using ranges, string ,Use of while loops in python, Loop manipulation using pass, continue, break and else, Programming using Python conditional and loops block, Python arrays.	R. Nageswara Rao, "Core Python Programming", dreamtech Publications	**6 and 7**	**117 to 187**
III	**Functions**	Calling Functions, Passing Arguments, Keyword Arguments, Default Arguments, Variable-length	R. Nageswara Rao, "Core Python Programming", dreamtech Publications	**9**	**237 to 280**

		Anonymous Functions, Fruitful Functions (Function Returning Values), Scope of the Variables in a Function - Global			
IV	**Data Structures**	List Operations, Slicing, Methods; Tuples, Sets, Dictionaries, Sequences. Comprehensions, Dictionary manipulation, list and dictionary in build functions	R. Nageswara Rao, "Core Python Programming", dreamtech Publications	**10 and 11**	**283 to 336**
V	**Sorting**	Sorting: Bubble Sort, Selection Sort, Insertion Sort, Merge sort, Quick sort.	https://www.geeksforgeeks.org/comparison-among-bubble-sort-selection-sort-and-insertion-sort/	**NA**	**NA**
	Data Structures in Python	Linked Lists, Stacks, Queues	R. Nageswara Rao, "Core Python Programming", dreamtech Publications	**19**	**499 to 514**

DIGITAL SIGNAL PROCESSING

COURSE COVERAGE SUMMARY

S.No	Unit No.	Title of the unit	Topics of the Unit	Chapter No	Page No	Title of the Text Book
1	I	Introduction to Digital Signal Processing	Introduction to Digital Signal Processing	1	1-2	DIGITAL SIGNAL PROCESSING - **A. ANAND KUMAR** Second Edition
2			Discrete Time Signals & Sequences	1	3-33	
3			Linear Shift Invariant Systems, Stability, and Causality	1	33-65	
4		Realization of Digital Filters	Solution of Difference Equations Using Z-Transform	3	248-260	
5			Realization of Digital Filters - Direct, Canonic forms	4	277-285 298-309	
6	II	Discrete Fourier Transforms	Introduction to DFT Properties of DFT.	6	427-431 431-438	
7			Linear Convolution of Sequences using DFT.	6	444-448	
8			Computation of DFT: Over-lap Add Method, Over-lap Save Method	6	452-460	
9		Fast Fourier Transforms	Fast Fourier Transforms (FFT) - Radix-2 Decimation-in-Time and Decimation-in-Frequency FFT Algorithms, Inverse FFT.	7	479-522	
10	III	IIR Digital Filters	Analog Filter Approximations – Butterworth and Chebyshev, Design of IIR Digital filters from Analog Filters, Bilinear Transformation Method	8	548-550 565-588 599-617	
11	IV	FIR Digital Filters	Characteristics of FIR Digital Filters, Frequency Response.	9	652-657	
			Design of FIR Filters using Window Techniques, Comparison of IIR & FIR filters.	9	674-712	
12	V	Multi rate Digital Signal Processing	Introduction, Down sampling, Decimation, Upsampling, Interpolation, Sampling Rate Conversion, Applications of Multi Rate Signal Processing	10	746-765 & 796-798	

ANTENNA & WAVE PROPAGATION

COURSE COVERAGE SUMMARY

III B.TECH II SEM

UNIT NO.	TITLE OF UNIT	TOPICS OF THE UNIT	TITLE OF TEXT BOOK	CHAPTER NO	PAGE NO.
1	**Antenna Basics-Thin Linear Wire Antennas**	Introduction, Basic Antenna Parameters – Patterns, Beam Area, Radiation Intensity, Beam Efficiency, Directivity-Gain-Resolution, Antenna Apertures, Illustrative Problems. Fields from Oscillating Dipole, Field Zones, Front - to-back Ratio, Antenna Theorems, Radiation, Retarded Potentials – Helmholtz Theorem. Thin Linear Wire Antennas – Radiation from Small Electric Dipole, Quarter Wave Monopole and Half Wave Dipole – Current Distributions, Field Components, Radiated Power, Radiation Resistance, Beam Width, Directivity, Effective Area, Effective Height, Natural Current Distributions, Far Fields and Patterns of Thin Linear Centre-fed Antennas of Different Lengths, Illustrative Problems.	ANTENNAS & WAVE PROPAGATION -JOHN D KRAUS	CHAPTER NO.1,2,6	PAGE NO-1-44,156-189
2	**1.VHF, UHF and Microwave Antennas-I 2.VHF, UHF and Microwave Antennas - II**	Point Sources – Definition, Patterns, arrays of 2 Isotropic Sources - Different Cases, Principle of Pattern Multiplication, Uniform Linear Arrays – Broadside Arrays, Endfire Arrays, EFA with Increased Directivity, Derivation of their Characteristics and Comparison, BSAs with Non-uniform Amplitude Distributions – General Considerations and Binomial Arrays, Illustrative Problems.Introduction, Concepts - Reciprocity, Near and Far Fields, Coordinate System Patterns to be Measured, Pattern Measurement Arrangement, Directivity Measurement,	ANTENNAS & WAVE PROPAGATION -JOHN D KRAUS	CHAPTER-3,7,8,9,10,14	PAGE NO.53-66,246-286,297-323,399-409,368-395,500

		Gain Measurements (by Comparison, Absolute and 3- Antenna Methods)			
3	**1.Antenna Arrays** **2.Antenna Measurements**	Introduction, Definitions, Categorizations and General Classifications, Different Modes of Wave Propagation, Ray/Mode Concepts, Ground Wave Propagation (Qualitative Treatment) – Introduction, Plane Earth Reflections, Space and Surface Waves, Wave Tilt, Curved Earth Reflections. Space Wave Propagation –	ANTENNAS & WAVE PROPAGATION -JOHN D KRAUS	CHAPTER-5,21	PAGE NO.86-115,715
4	**Wave Propagation – I**	Introduction, Field Strength Variation with Distance and Height, Effect of Earth‘s Curvature, Absorption, Super Refraction, M-Curves and Duct Propagation, Scattering Phenomena, Tropospheric Propagation.	ANTENNAS & WAVE PROPAGATION -JOHN D KRAUS	CHAPTER-22 ,23	PAGE NO.771, 782
5	**Wave Propagation – II**	Sky Wave Propagation – Introduction, Structure of Ionosphere, Refraction and Reflection of Sky Waves by Ionosphere, Ray Path, Critical Frequency, MUF, LUF, OF, Virtual Height and Skip Distance, Relation between MUF and Skip Distance, Multihop Propagation.	ANTENNAS & WAVE PROPAGATION -JOHN D KRAUS	CHAPTER-24,25	PAGE NO.799, 815

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING
III Year II Semester
Digital Communications Course Coverage

S.No	Unit No.	Title of the Unit	Topics of the Unit	Title of Text Book	Chapter & Page Numbers
1	UNIT-I	Pulse Digital Modulation & Delta Modulation	**Pulse Digital Modulation:** Elements of digital communication systems, advantages of digital communication systems, Elements of PCM: Sampling, Quantization & Coding, Quantization error, Companding in PCM systems. Differential PCM systems (DPCM). Time Division Multiplexing & Demultiplexing	Digital Communication By J.S.Chitode.First Edition(2007-2008)	**Chapter 1: (1-63 to 1-92), (1-98) & (1-103) to (1-106)**
			Delta Modulation: Delta modulation, its draw backs, adaptive delta modulation, comparison of PCM and DM systems, Noise in PCM and DM systems. Illustrative Problems		**Chapter 2: (2-1) to (2-21)**
2	UNIT-II	Digital Modulation Techniques & Data Transmission	**Digital Modulation Techniques:** Introduction, ASK modulator, Coherent and Non-Coherent ASK detector, FSK modulator, Spectrum of FSK, coherent reception, non-coherent detection of FSK. BPSK transmitter, Coherent reception of BPSK, DPSK, QPSK.	Digital Communication By J.S.Chitode.First Edition(2007-2008)& **For DPSK, QPSK- Advanced Electronic Communication Systems 6thEdition,Wayne Tomasi**	**Chapter 3:(3-3) to (3-13), (3-54) to(3-58),(3-83) & (3-84), Chapter 2: DPSK (Pg 91 & 92),QPSK(Pg 65 to Pg 71)**
			Data Transmission: Base band signal receiver, probability of error, The optimum filter, Matched filter, probability of error using matched filter. Optimum filters using correlator. Probability of error of ASK, FSK, BPSK and QPSK. Illustrative Problems	Principle Of Communication Systems, 3rd reprint 2008,Tata Mc Graw Hill	**Chapter 11: Page no 550 to 568**
3	UNIT-III	Information Theory & Source Coding	**Information Theory:** Discrete messages, Concept of amount of information and its properties. Average information, Entropy and its properties. Information rate, Mutual information and its properties, Illustrative Problems	Digital Communication By J.S.Chitode.First Edition(2007-2008)	**Chapter 5: (5-1)to (5-17)& (5-43)**
			Source Coding: Introduction, Advantages, Hartley Shannon's theorem, bandwidth –S/N trade off, Shanon- Fano coding, Huffman coding, Illustrative Problems		**Chapter 6: (6-1),(6-2),(6-9) to (6-12), (6-35) & (6-36)**
4	UNIT-IV	Linear Block Codes & Cyclic Codes	**Linear Block Codes:** Introduction, Matrix description of Linear Block codes, Error detection and error correction capabilities of linear block codes, Hamming codes.	Digital Communication By J.S.Chitode.First Edition(2007-2008)	**Chapter 7: (7-6 to 7-24) & (7-29)**
			Cyclic Codes: Encoding, Syndrome Calculation, Decoding,		**Chapter 7: (7-62)to (7-87)**
5	UNIT-V	Convolutional Codes	**Convolutional Codes**: Introduction, encoding of convolution codes, time domain approach, transform domain approach. Graphical approach: State, Tree and Trellis diagram. Decoding using Viterbi algorithm Illustrative Problems.	Digital Communication By J.S.Chitode.First Edition(2007-2008)	**Chapter 8: (8-1)to (8-16),(8-34)& (8-57)**

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

(An Autonomous Institution-UGC, Govt. Of India, Affiliated to JNTU, Hyderabad, Approved by AICTE - NBA)

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Core Elective-II

FIBER OPTICAL COMMUNICATIONS(R17A0418)

COURSE COVERAGE SUMMARY

UNIT NO.	TITLE OF THE UNIT	TOPICS OF THE UNIT	TITLE OF THE TEXT BOOK	CHAPTER NO. IN TEXT BOOK	PAGE NOS.
I	**OVERVIEW OF OPTICAL FIBER COMMUNICATION**	Introduction	Optical Fiber Communications – Gerd Keiser, Tata Mc Graw-Hill International edition, 4th Edition, 2008	1	2 to 7
		The general Optical Fiber communication system, advantages of optical fiber communications	Optical Fiber Communications – Gerd Keiser, Tata Mc Graw-Hill International edition, 4th Edition, 2008	1	18 to 23
		Introduction, Ray theory transmission, Total Internal Reflection, Acceptance angle, Numerical Aperture, Skew rays	Optical Fiber Communications – Gerd Keiser, Tata Mc Graw-Hill International edition, 4th Edition, 2008	2	29 to 39
		Cylindrical fibers- Modes Classification of Optical Fibers: Single mode fibers, Graded Index fibers	Optical Fiber Communications – Gerd Keiser, Tata Mc Graw-Hill International	2	40 to 66

			edition, 4th Edition, 2008		
		Fiber materials	Optical Fiber Communications – Gerd Keiser, Tata Mc Graw-Hill International edition, 4th Edition, 2008	2	67 to 69
		Fiber fabrication techniques, fiber optic cables	Optical Fiber Communications – Gerd Keiser, Tata Mc Graw-Hill International edition, 4th Edition, 2008	2	70 to 80
II	**SIGNAL DISTORTION IN OPTICAL FIBERS**	Attenuation, Absorption, Scattering and Bending losses, Core and Cladding losses	Optical Fiber Communications – Gerd Keiser, Tata Mc Graw-Hill International edition, 4th Edition, 2008	3	90 to 100
		Information capacity determination, Group delay, Types of Dispersion - Material dispersion, Wave-guide dispersion, Polarization mode dispersion, Intermodal dispersion	Optical Fiber Communications – Gerd Keiser, Tata Mc Graw-Hill International edition, 4th Edition, 2008	3	101 to 112
		Optical fiber Connectors- Connector types, Single mode fiber connectors, Connector return loss	Optical Fiber Communications – Gerd Keiser, Tata Mc Graw-Hill International edition, 4th Edition, 2008	5	212 to 215
		Introduction to Optical Fibers splicing	Optical Fiber Communications – Gerd Keiser, Tata Mc Graw-Hill International edition, 4th	5	210 to 212

			Edition, 2008		
III	**OPTICAL SOURCES**	Intrinsic and extrinsic material-direct and indirect band gaps	Optical Fiber Communications – Gerd Keiser, Tata Mc Graw-Hill International edition, 4th Edition, 2008	4	134 to 139
		LED-LED structures-surface emitting LED-Edge emitting LED-quantum efficiency and LED power-light source materials-modulation of LED	Optical Fiber Communications – Gerd Keiser, Tata Mc Graw-Hill International edition, 4th Edition, 2008	4	140 to 151
		LASER diodes- modes and threshold conditions-Rate equations-external quantum efficiency-resonant frequencies-structures and radiation patterns-single mode laser-external modulation-temperature effects	Optical Fiber Communications – Gerd Keiser, Tata Mc Graw-Hill International edition, 4th Edition, 2008	4	152 to 175
IV	**OPTICAL DETECTORS AND RECEIVERS**	Physical principles of PIN and APD	Optical Fiber Communications – Gerd Keiser, Tata Mc Graw-Hill International edition, 4th Edition, 2008	6	223 to 230
		Detector response time	Optical Fiber Communications – Gerd Keiser, Tata Mc Graw-Hill International edition, 4th Edition, 2008	6	235 to 238
		Temperature effect on Avalanche gain, Comparison of Photo detectors.	Optical Fiber Communications – Gerd Keiser, Tata Mc Graw-Hill International	6	243 to 245

			edition, 4th Edition, 2008		
		Optical receiver operation- Fundamental receiver operation, Digital signal transmission, error sources, Receiver configuration	Optical Fiber Communications – Gerd Keiser, Tata Mc Graw-Hill International edition, 4th Edition, 2008	7	249 to 254
V	**OPTICAL SYSTEM DESIGN**	Point-to- point links, System considerations, Link power budget with examples. Rise time budget with examples	Optical Fiber Communications – Gerd Keiser, Tata Mc Graw-Hill International edition, 4th Edition, 2008	8	283 to 292
		WDM –Passive DWDM Components	Optical Fiber Communications – Gerd Keiser, Tata Mc Graw-Hill International edition, 4th Edition, 2008	10	340 to 344
		Elements of optical networks- SONET/SDH	Optical Fiber Communications – Gerd Keiser, Tata Mc Graw-Hill International edition, 4th Edition, 2008	13	467 to 475