SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS), COIMBATORE – 641 020

B.Sc, PROGRAMME IN ELECTRONICS AND COMMUNICATION SYSTEMS

Under Choice Based Credit System (CBCS) and Outcome Based Education System (OBE)

2018 – 2019 onwards

Program Educational Objectives

PEO1: Provide graduates with a strong foundation in mathematics and science fundamentals to enable them to devise and deliver efficient solutions to challenging problems in the field of Electronics and Communications Systems allied disciplines.

PEO2: Impart analytic and thinking skills to develop initiatives and innovative ideas for R&D, Industry and societal requirements.

PEO3: Provide sound theoretical and practical knowledge in the field of Electronics and Communications Systems, professional and industrial skills to enable students to contribute to the well being of society with a global outlook

PEO4: Inculcate qualities of teamwork as well as social, interpersonal and leadership skills and an ability to adapt to evolving professional environments in the domains of science and engineering.

PEO5: Motivate graduates to become good human beings and responsible citizens for the overall welfare of the society.

Program Outcomes

- Ability to apply the knowledge of Mathematics and Science in Electronics and Communications.
- Ability to Design & Conduct Experiments.
- Ability to design a System, Component, or Process to meet desired needs with in realistic constraints
- An ability to function on multidisciplinary teams.
- Ability to Identify, Formulate & Solve problems in the area of Electronics and Communications Systems.
- An understanding of Professional and Ethical responsibility.
- An ability to communicate effectively.
- A broad education necessary to understand the impact of engineering solutions in a Global, Economic, Environmental, and Societal context.
- A recognition of the need for, and an ability to engage in life-long learning. A knowledge of contemporary issues. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Program Specific Outcomes

- Ability to become on entrepreneur in the field of Electronics.
- Encouraging to higher studies in Electronics and related field of studies.
- Ability to face competitive examination conducted by DRDO, TIFR, BSNL, Indian Army, IA, IAF etc.

SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS AND SCIENCE
(AUTONOMOUS), COIMBATORE – 641 020
B.Sc, PROGRAMME IN ELECTRONICS AND COMMUNICATION SYSTEMS
Under Choice Based Credit System (CBCS) and Outcome Based Education System (OBE)
2018 – 2019 onwards
SCHEME OF EXAMINATION

SEMESTER – I

S. NO.	COURSE CODE	PART	COURSE TITLE	HRS / WK	CREDITS	EXAM HRS	MAX MARKS		
							INT	EXT	TOT
01	18UGC1TA1	I	Tamil – I (AMUTHA TAMIL)	6	3	3	25	75	100
02	18UGC1EN1	II	English – I	6	3	3	25	75	100
03	18UEC1C01	III	Core – 1: Circuit and Network Analysis	4	4	3	25	75	100
04	18UEC1AL1	III	Allied- 1: Mathematics – I	6	5	3	25	75	100
05	18UEC2CP1	III	Core Practical– 1: Circuit and Network Analysis @	3	-	-	-	-	-
06	18UEC2CP2	III	Core Practical - 2: Semiconductor Devices @	3	-	-	-	-	-
07	18UGC1ENS	IV	Environmental Studies *	2	2	3	-	75	75
TOTAL – I				30	17	-	100	375	475

SEMESTER – II

S. NO	COURSE CODE	PART	COURSE TITLE	HRS / WK	CREDITS	EXAM HRS	MAX MARKS		
							INT	EXT	TOT
01	18UGC2TA2	I	Tamil – II (KAVIYA TAMIL)	6	3	3	25	75	100
02	18UGC2EN2	II	English – II	6	3	3	25	75	100
03	18UEC2C02	III	Core - 2: Semiconductor Devices	4	4	3	25	75	100
04	18UEC2AL2	III	Allied -2: Mathematics – II	6	5	3	25	75	100
05	18UEC2CP1	III	Core Practical– 1: Circuit and Network Analysis	3	3	3	40	60	100
06	18UEC2CP2	III	Core Practical - 2: Semiconductor Devices	3	3	3	40	60	100
07	18UGC2VAE	IV	Value Education *	2	2	3	-	75	75
TOTAL – II				30	23	-	180	495	675

SEMESTER – III

S. NO	COURSE CODE	PART	COURSE TITLE	HRS/ WK	CREDITS	EXAM HRS	MAX MARKS		
							INT	EXT	TOT
01	18UEC3C03	III	Core – 3: Electrical Machines and Instruments	4	4	3	25	75	100
02	18UEC3C04	III	Core – 4: Digital Electronics	4	4	3	25	75	100
03	18UEC3C05	III	Core – 5: Principles of communication systems	5	5	3	25	75	100
04	18UEC3AL3	III	Allied- 3: Programming in C	4	4	3	15	60	75
05	18UEC4CP3	III	Core Practical – 3: Electronic Circuits @	3	-	-	-	-	-
06	18UEC4CP4	III	Core Practical – 4: Digital Electronics @	3	-	-	-	-	-
07	18UEC4CP5	III	Core Practical – 5: Electronic Communication @	3	-	-	-	-	-
08	18UEC4AP1	III	Allied Practical 1: Computer Programming in C and C++ @	2	-	-	-	-	-
09	18UEC3NM1 /18UGC3BT1	IV	NME: Java Programming# / BASIC TAMIL - I	2	2	2	-	50	50
TOTAL – III				30	19	-	90	335	425

SEMESTER – IV

S. NO	COURSE CODE	PART	COURSE TITLE	HRS/ WK	CREDITS	EXAM HRS	MAX MARKS		
							INT	EXT	TOT
01	18UEC4C06	III	Core – 6: 8085Microprocessor and Interfacing	4	4	3	25	75	100
02	18UEC4C07	III	Core – 7: Electronic Circuits	4	4	3	25	75	100
03	18UEC4EL1	III	Elective-I: One from Group - I	5	5	3	25	75	100
04	18UEC4AL4	III	Allied- 4: Object Oriented Programming with C++	4	4	3	15	60	75
05	18UEC4CP3	III	Core Practical – 3: Electronic Circuits @	3	3	2	40	60	100
06	18UEC4CP4	III	Core Practical – 4: Digital Electronics @	3	3	3	40	60	100
07	18UEC4CP5	III	Core Practical – 5: Electronic Communication @	3	3	3	40	60	100
08	18UEC4AP1	III	Allied Practical 1: Computer Programming in C & C++	2	2	2	20	30	50
09	**/ 18UCG4BT2	IV	NME – 2** / Basic Tamil-2	2	2	2	-	50	50
10	18UGC4NSS	V	Extension Activities- NSS	-	1	-	25	25	50
	18UGC4NCC		NCC						
	18UGC4SPO		Sports						
TOTAL – IV				30	31	-	275	550	825

SEMESTER – V

S. NO	COURSE CODE	PART	COURSE TITLE	HRS/ WK	CREDITS	EXAM HRS	MAX MARKS		
							INT	EXT	TOT
01	18UEC5C08	III	Core - 8 : Antenna and Wave Propagation	5	5	3	25	75	100
02	18UEC5C09	III	Core - 9: 8051Microcontroller and It's Applications	5	4	3	25	75	100
03	18UEC5C10	III	Core - 10: Linear IC's and its Applications	4	4	3	25	75	100
04	18UEC5CP6	III	Core-11: Basics and Practical Aspects of Electronics (On line Exam)	-	3	3	-	100	100
05	18UEC5EL2	III	Elective-II: One from Group - II	5	5	3	25	75	100
06	18UEC6CP7	III	Core Practical - 7: Linear IC's and Instrumentation @	3	-	-	-	-	-
07	18UEC6CP8	III	Core Practical - 8: Microprocessor and Microcontroller@	3	-	-	-	-	-
08	18UEC6CPR	III	Project Work @	5	-	-	-	-	-
TOTAL –V				30	21	-	100	400	500

SEMESTER – VI

S. NO	COURSE CODE	PART	COURSE TITLE	HRS/ WK	CREDITS	EXAM HRS	MAX MARKS		
							INT	EXT	TOT
01	18UEC6C11	III	Core - 11: Modern Instrumentation	5	5	3	25	75	100
02	18UEC6C12	III	Core - 12: Optical Fiber Communication	5	4	3	25	75	100
03	18UEC6C13	III	Core - 13: Industrial and Power Electronics	4	4	3	25	75	100
04	18UEC6EL3	III	Elective-III: One from Group – III	5	5	3	25	75	100
05	18UEC6CP7	III	Core Practical - 7: Linear IC's and Instrumentation @	3	3	3	40	60	100
06	18UEC6CP8	III	Core Practical - 8: Microprocessor and Microcontroller@	3	3	3	40	60	100
07	18UEC6CPR	III	Project Work	5	5	-	40	60	100
TOTAL –VI				30	29	-	220	480	700

* Common Syllabus Offered by college

@ Exams will be conducted in the even semester

NME Course offered by Computer Science Department

**Open NME Course offered to all the Students

SEMESTER – IV									
S. NO	**COURSE CODE**	**PART**	**COURSE TITLE**	**HRS/ WK**	**CREDITS**	EXAM HRS	**MAX MARKS**		
							INT	**EXT**	**TOT**
01	18UCH4NM2	IV	Health Awareness and Management.	2	2	2	-	50	50
02	18UPCH4NM2	IV	Energy Auditing	2	2	2	-	50	50
03	18UMA4NM2	IV	Quantitative Methods for Competitive Examinations.	2	2	2	-	50	50
04	18UCS4NM2	IV	Web Programming Lab	2	2	2	-	50	50
05	18UCO4NM2	IV	Entrepreneurship development	2	2	2	-	50	50
06	18UEL4NM2	IV	English for Competitive Examinations	2	2	2	-	50	50

Course	**Credits**	**Marks**
Tamil	6	200
English	6	200
Part III: Core & Elective	99	2500
Allied	20	400
Environment Studies	2	75
Non Major Elective	4	100
Value Education	2	75
NSS / NCC / Sports	1	50
Total	140	3600

List of Electives

Group – I

1. Biomedical Instrumentation
2. PCB Design and Fabrication
3. T.V and Satellite Communication

Group – II

1. Robotics and Automation
2. PC Hardware Fundamentals
3. Network Communication

Group – III

1. Embedded system Design

2. Domestic Electric and Electronics Appliances
3. Digital and Mobile Communication

Program: B.Sc Electronics and Communication System

Course title: **Core : Circuit and Network Analysis** Subject Code: 18UEC1C01

Year: I Semester: I Credits: 4 Hrs/Week: 4

Educational Objective:

1. Understand the basic of Electronic components (Resistor, Capacitor and Inductor).
2. Understand the basic theory and mathematical relationships in circuit analysis.
3. Understand basic terms and results from the theory about circuits with resistances, capacitive components, as well as semiconductor components.
4. Have knowledge about typical uses for resistive circuits, simple capacitive and inductive circuits.

Course Learning Outcomes:

1. An ability to combine acquired knowledge and skills in mathematics and circuit analysis to analyse electrical circuits.
2. An ability to use basic circuit theory to solve problems in electronics and analyse/design simple circuits.
3. An ability to use laboratory equipment such as volt meter, ampere meter, oscilloscope and signal generator.
4. An ability to use acquired laboratory knowledge for the practical analysis of circuit systems.
5. An ability to use state of the art tools and development circuit boards.

Unit - I: Passive Components

Resistors: Introduction - Classification of Resistors - Fixed Resistors - Variable Resistors - Colour coding of Resistors.

Inductors: Types of Inductors - Inductance of a coil - Energy stored in an Inductor. Capacitors: Factors affecting Capacitance - Types of Capacitors.

Unit - II

DC resistive circuits: Voltage notation-Voltage reference point-Resistance in Series & Parallel -Voltage division rule-Current division rule-Capacitor in series and parallel - Filters using RC circuits: Low pass – High pass – Band pass filters.

Unit - III

AC Circuit: RMS value-Average value-Phasor diagram-AC through R,L&C circuit – AC through RL and RC series circuit-Power factor-Series and Parallel Resonance in RLC circuit - Graphical representation of resonance - Q-Factor of a series and parallel resonance circuit.

Unit - IV

Ohm's Law - Kirchoff's Laws - Star -Delta and Delta-Star Conversion- Mesh analysis-Super mesh analysis-Nodal analysis-Super node analysis.Simple problems in DC circuits.

Unit - V

Network Theorems: Superposition Theorem - Thevenin Theorem - Norton Theorem - Thevenin to Norton Conversion - Millman Theorem - Maximum Power Transfer Theorem - Problems.

Books for Study:

1. R.S.Sedha – "A Text Book of Applied Electronics" – S.Chand & Company Ltd., Reprint, 2010, **(Unit I and II).**
2. Ravish.R.Singh - "Basic Electrical and Electronics Engineering' TMHE PVT, 2010, **(Unit III - V).**

Program: B.Sc Electronics and Communication System

Course title: **Core : Semiconductor Devices** Subject Code: 18UEC2C02

Year: I Semester: II Credits: 4 Hrs/Week: 4

Educational Objective:

1. Introduce the physics of semiconductors and the inner working of semiconductor devices.
2. Provide the insight useful for understanding new semiconductor devices and technologies.

Course Learning Outcomes:

1. An ability to utilize semiconductor models to analyze carrier densities and carrier transport.
2. An ability to understand and utilize the basic governing equations to analyze semiconductor devices.
3. An ability to understand and analyze the inner working of semiconductor p-n diodes, Schottky barrier diodes and new semiconductor devices.

Unit-I

Diode: Construction and Characteristics and Application: Clipping and clamping circuit. Diode breakdown: Zener and Avalanche breakdown. Special diode: Zener diode – Zener diode as a voltage regulator - Varicap - PIN and Tunnel diode.

Unit-II

Transistor: Construction and operation-Amplifying action-CB, CE and CC configuration-Load line analysis-Operating point-Cut off and Saturation point. Transistor Biasing: Self bias-feedback bias and voltage divider bias - Transistor as a switch.

Unit-III

Field Effect transistor: JFET construction-Working and Characteristics.FET biasing: Self bias and Voltage divider bias.FET as an amplifier: CS and CD in small signal model. MOSFET: Construction, Operation and Characteristics-Types of MOSFET - Introduction to CMOS.

Unit-IV

Power Electronics: Introduction - SCR – DIAC - TRAIC – UJT – PUT - SBS – SUS – Construction-Operation and Characteristics-Applications.

Unit-V

Optoelectronic Devices: Types of optical sources-Classifications of optoelectronic devices-LED – LCD - Photo diode - photo transistor – Light activated SCR - Solar cell – LDR – Applications.

Book for study

1. V.K.Metha “Principles of Electronics”, S.Chand & Company Ltd., Ram Nagar, New Delhi-110055, Reprints 1999, (**Unit I to IV).**

2. S.Salivahanan “Electronic devices and circuits”, N.Suresh Kumar, A.Vallavaraj, TMH publishing company Ltd, New Delhi, 2001 (7Th reprints). (**Unit V)**

Program: B.Sc Electronics and Communication System

Course title: **Core Practical: Circuit and Network Analysis** Subject Code: 18UEC2P01

Year: I Semester: II Credits: 3 Hrs/Week: 3

Educational Objective:

1. Provide hands-on experience to the students so that they are able to put theoretical concepts to practice.
2. Understand the concept of circuit laws.
3. Solve the electrical network using mesh and nodal analysis by applying network theorems.
4. Understand the concept of resonance in series and parallel circuits.

Course Learning Outcome:

1. Use basic laboratory equipment and techniques to measure electrical quantities using laboratory test equipment such as multimeters, power supplies, signal generators, and oscilloscopes.
2. Explain the concept of circuit laws and network theorems and apply them to laboratory measurements.

(ANY 18 EXPERIMENTS)

1. Ohm's Law Verification
2. Kirchhoff's Laws Verification
3. Verification of Maximum Power Transfer Theorem
4. Verification of Super Position Theorem
5. Verification of Thevenin's Theorem
6. Verification of Norton's Theorem
7. Verification of Millman's Theorem
8. Study on Transient Response RC Components
9. Impedance and Power Factor of RL Circuits
10. Star to Delta and Delta to Star Transformation
11. Series Resonance Circuit - RLC.
12. Parallel Resonance Circuit – RLC.
13. Study of Transformer Ratio
14. Calibration of Low Range Ammeter - Potentiometer
15. Calibration of Low Range Voltmeter- Potentiometer
16. Calibration of High Range Ammeter - Potentiometer
17. Calibration of High Range Voltmeter- Potentiometer
18. Study of Capacitor Network
19. Study of Resistor Network
20. Measurement of L & C using Bridge
21. Measurement of Resistance - Potentiometer
22. Measurement of Resistance - Wheatstone Network

Program: B.Sc Electronics and Communication System

Course title: **Core Practical: Semiconductor Devices** Subject Code: 18UEC2P02

Year: I Semester: II Credits: 3 Hrs/Week: 3

Educational Objective:

1. An ability to utilize semiconductor models to analyze carrier densities and carrier transport.
2. An ability to understand and utilize the basic governing equations to analyze semiconductor devices.
3. An ability to understand and analyze the inner working of semiconductor p-n diodes, Schottky barrier diodes and new semiconductor devices.

Course Learning Outcome:

1. Apply concepts of semiconductor devices to design and analyze circuits.
2. Apply fundamentals of semiconductor devices in electronics projects and use computer tools in circuit design, evaluation and analysis.

(ANY 18 EXPERIMENTS)

1. Determination of band gap energy of Silicon.
2. Determination of band gap energy of Germanium.
3. PN junction diode characteristics.
4. Zener diode characteristics.
5. Characteristics of CE configuration.
6. Characteristics of CB configuration.
7. Study of self bias circuit.
8. Study of voltage divider bias circuit.
9. FET characteristics.
10. Solar cell characteristics.
11. Photo diode characteristics.
12. Study of Integrator circuits using RC components.
13. Study of Differentiator circuit using RC components.
14. Clipping circuits.
15. Clamping circuits.
16. Low pass filters.
17. High pass filters.
18. Bands pass filters.
19. Band stop filters.
20. Diac characteristics.
21. UJT characteristics.
22. Triac Characteristics.

Program: B.Sc Electronics and Communication System

Course title: **Core: Electrical Machines and Instruments** Subject Code: 18UEC3C03

Year: II Semester: III Credits: 4 Hrs/Week: 4

Educational Objective:

1. To understand the concept of DC motors and generators.
2. To understand the concept of the AC machines.
3. To understand the principles of transformer.
4. To get the knowledge of instruments and meters.

Course Learning Outcomes:

1.Ability to design motors and generators.
2. Acquire the knowledge of stepper motor and servo meter.
3. Knowledge of design and Construct the transformer.
4. Knowledge of using instruments and meters for circuits.

Unit-I DC Machines

DC generators: Principles-Single loop-Practical generator - Types of generator – EMF equation. DC motors: Principle-Comparison of generator and motor-Torque equation-Back EMF-Types of motor-Speed control of DC motor.

Unit-II AC Machines

AC Generator - Induction motor: Principle-Construction-Working. Special machines: Stepper motor-Step angle-Permanent Magnet Stepper motor. Synchronous motor: Types-Applications of synchronous motor. Servo motor: AC and DC servo motor.

Unit-III Transformers

Transformers: Working principle-Construction-Core and Shell type-EMF equation-Transformation ratio-Parts of transformer-Losses and testing- Three phase and Auto transformer.

Unit-IV Instruments

Types of Instruments: D'Arsonal galvanometer-PMMC-Moving Iron-Thermocouple and Rectifier type Instruments. Extension of Instruments: Ammeter shunt and Voltmeter multiplier-Multimeter.

Unit-V Meters

Energy meter: Single phase induction type meter-Poly-phase energy meter. Wattmeter: Power in AC and DC circuit-types of meter-Induction type watt meter-Power measurements in poly phase circuits.

Books for study

1. D.S.Dhogal, “Basic Electrical Engineering with numerical problem” Vol – I & II

(Unit I to III)

2. A.K.Shawney “A course in Electrical and Electronic Measurement and Instrumentation”

Program: B.Sc Electronics and Communication System

Course title: **Core : Digital Electronics** Subject Code: 18UEC3C04

Year: II Semester: III Credits: 4 Hrs/Week: 4

Educational Objective:

1. To enable the students to know the number systems, codes, methods for simplifying Boolean expressions, logic gates and circuits.
2.To outline the formal procedures for the analysis and design of combinational circuits and sequential circuits. It is also to encourage the students to learn the concepts of A/D, D/A conversions and memories.

Course Learning Outcomes:

1. Realize different logic gates and analyzing the outputs.
2.Demonstrate the knowledge of Boolean algebra including algebraic manipulation/simplification and application of DeMorgan's theorems and Karnaugh map reduction method.
3.Analyze and design the combinational and sequential logic circuits.

Unit-I

Number system: Binary-Decimal-Octal and Hexadecimal numbers. Codes: ASCII-Excess-3-BCD and Gray code. Basic logic gates: NOT, OR, AND, NAND and NOR-Universal logic gates: NOR and NAND. Boolean algebra: Boolean operation-Logic expression-Rules and Laws - DeMargon's theorems - Simplification of Boolean expression - Karnaugh Map.

Unit-II

Arithmetic Circuits: Binary addition, Subtraction, Multiplication and Division- Adders-Parallel Adders-. Data-Processing Circuits: Decoder-Encoder-BCD to Binary conversion-Binary to Gray and Gray to Binary conversion-Multiplexer and Demultiplexer-Parity generator and checker-Comparator.

Unit-III

Flip-Flops: RS and Gated Flip-Flop-D and E triggered Flip-Flop-JK and MS Flip-Flop. Shift Register: Serial In-Serial Out, Serial In-Parallel out types shift registers. Counters: Asynchronous and synchronous counter-Decoding gates-Decade counter - Up-Down counter-Digital clock.

Unit-IV

D/A and A/D Conversion: Variable and Resistor network-Binary ladders-D/A Accuracy and Resolution. A/D conversion: Simultaneous and counter method-Continuous and Dual-Slope conversion method-A/D Accuracy and Resolution.

Unit-V

Memories: Basic terms and ideas-Magnetic memory-Optical memory-Memory addressing-ROMs, PROMs and EPROMs-RAM-Sequential programmable logic devices-Flash memories.

Books for study

1. Thomas L.Floyd, "Digital Fundamentals", Universal Book Stall, New Delhi-100 002. Second edition. (Unit-I-III).
2. Donald P.Leach ,"Digital Principles and Applications", Albert Paul Malvino and Goutam Saha, TMH Publishing Company, New Delhi, Sixth edition, (Unit IV-V)

Program: B.Sc Electronics and Communication System

Course title: **Core : Principles of Communication Systems** **S**ubject Code: 18UEC3C05

Year: II Semester: III Credits: 5 Hrs/Week: 5

Educational Objective:

1. Understand AM and FM communication systems.
2. Apply the essential facts about single sideband modulation for radio communications systems.
3. Design and analyze performance of the Super Heterodyne receiver.

Course Learning Outcomes:

1. Acquire the knowledge of the basic building blocks of communication systems.
2. Analyze the performance of amplitude modulation techniques.
3. Demonstrate Balance Modulator.
4. Ability constructed to AM transmitter and FM transmitter.

UNIT I: AM AND SSB MODULATION:

Noises: External and Internal noise-Noise calculation-Noise figure- Amplitude modulation: frequency spectrum –Representation and Power relations of AM wave. Generation of AM: Basic requirement-Grid modulated class C amplifier-Plate modulated class C amplifier. SSB system: Balanced modulator. SSB generation: filter system – phase shift method.

UNIT II: FM MODULATION

Frequency and phase modulation: Mathematical representation of FM-Frequency spectrum of the FM wave-Phase modulation. Noise and Frequency Modulation: Effect of noise on carrier-Pre-emphasis and de-emphasis-Comparison of wideband and narrowband FM. Generation FM: FM methods-Direct method-AFC-Indirect method– Comparison between FM and AM systems- FM generation: Direct method and indirect method.

UNIT III: PULSE COMMUNICATION

Pulse Modulation: sampling theorem – PAM – PWM – PPM –PCM - Differential PCM – Delta modulation –adaptive delta modulation – FSK – ASK –PSK.

UNIT IV: BROAD BAND COMMUNCATION SYSTEM

Multiplexing – frequency division multiplexing – time division multiplexing – wave length division multiplexing – coaxial cable systems- micro wave links – optical communication systems – submarine cables.

UNIT V: RADIO TRANSMITTER AND RECEIVER

AM transmitter - Super heterodyne receiver: RF amplifier – Local oscillator – Mixer – IF amplifier – AM detector – AGC – Communication receivers – FM transmitter - FM receivers: Amplitude limiter – FM demodulators – Ratio detector - Stereo FM receiver – SSB receiver.

Books for study:

1. George Kennedy – "Electronic communication systems", III Edition, McGraw-hill Book Company. (Unit I & II)
2. Sanjeev Gupta – "Electronic communication systems", Kanna publications, 1992. (Unit III - V)

Books for reference:

1. D.Roddy & J.Coolen – "Electronic communication", PHI, 3rd edition, 1989.

Program: B.Sc Electronics and Communication System

Course title: **Allied: Programming in C** Subject Code: 18UEC3AL3Year: II

Semester: III Credits: 4 Hrs/Week: 4

Educational Objective:

1. To learn in the basic of computers.
2. To enable students to learn about the basic features of C Programming Language.
3. To learn the various decision making and looping statements.
4. To learn how to program using arrays and functions.
5. To learn about structures and pointers.

Course Learning Outcomes:

1. Acquire the working of knowledge of computers and programming.
2. Ability to do and loop algorithms.
3. Illustrate the representation of arrays, strings and usage of string operations.
4. Acquire Knowledge of pointers and dynamic memory allocation.

UNIT-I

Information Technology and Computer basics – Types of data – Representation of characters in computer – Textual data processing – Data processing using Computers – Desktop computer – Computer Software – operating system – Programming Languages – A Classification of Programming Languages – Internet and World Wide Web – LAN – WAN – Internet – E mail – File transfer.

UNIT- II

Computer Algorithms – Developing Algorithms – Programming preliminaries – omitting a program – Input Output Statements – Numeric Constants and Variables – Arithmetic Expressions.

UNIT – III

Conditional Statements – Loops (While – for – Do while) – Arrays – Logical Expressions – Switch, Break, & Continue Statements – Simple programs.

UNIT – IV

Functions – String processing – Enumerated data types – Structure – pointers.

UNIT – V

List and trees – Recursion – Bit level operation files in C

Books for study:

1. V.Rajaraman: ‘Computer Basics and C Programming’ PHI – New Delhi – 2008.

Program: B.Sc Electronics and Communication System

Course title: **Core: 8085 Microprocessor and Interfacing** Subject Code: 18UEC4C06

Year: II Semester: IV Credits: 4 Hrs/Week: 4

Educational Objective:

1. Recall and apply a basic concept of digital fundamentals to Microprocessor based system.
2. Understand the basic concepts and working principles of 8085 Microprocessor.
3. Familiarize with the assembly level programming using 8085 Microprocessor.
4. Formulate appropriate computing solution and apply it to the Microprocessor based real-time applications.

Course Learning Outcomes:

1. Understand the Architecture of microprocessor.
2. Learn the various instructions of 8085.
3. Knowledge of writing assembly language programming.
4. Learn the concept of interfacing.
5. Ability to design small control system devices.

UNIT – I Microprocessor Fundamentals

Introduction – Block diagram – Evolution – CPU – Memory: Cache memory – Memory Hierarchy – Primary & Data Memory – Buses: Architecture – Types – Applications.

UNIT – II Microprocessor Architecture

Introduction – Intel 8085 Architecture: ALU – Timing and control unit – Registers – Data and address bus – Pin Configuration – Instruction word size - Instruction cycle: Fetch operation – Execute operation – Machine cycle and state – Instruction and data flow – Timing diagram: Timing diagram for OP code fetch cycle – Memory read – I/O read – Memory write – I/O write.

UNIT – III Instruction Set

Introduction - Instruction and Data formats - Addressing modes - Intel 8085 instructions – Data transfer group – Arithmetic group – Logical group – Branch group – Stack, I/O and machine Control group.

UNIT – IV Programming

Introduction - Assembly language – High level languages – Stack - subroutines – Delay subroutines - Debugging of problems - simple examples – 8 bit Addition and Subtraction of binary and Decimal numbers – Complements – Shift masking – Finding Maximum and Minimum in an array – Arranging a series of numbers – Multiplication, Division –Block Data transfer.

UNIT – V Interfacing Devices

Address space partitioning – memory and I/O interfacing – Data transfer schemes – 8255 Programmable peripheral interface – 8257 Programmable DMA controller – 8259 Programmable Interrupt controller – 8251 Programmable communication interface – 8253 Programmable interval timer – 8279 Programmable keyboard/Display interface.

Book for Study:

1. B.Ram, "Fundamentals of Microprocessor and Microcontrollers", Dhanpat Rai Publications, Fifth Reprint, 2008.

Books for Reference:

1. Ramesh S.Gaonkar, "Microprocessor Architecture, Programming and Applications with the 8085" Penram International publishing (P) Ltd, Fifth Edition, 1995.

Program: B.Sc Electronics and Communication System

Course title: **Core : Electronic Circuits** Subject Code: 18UEC4C07

Year: II Semester: IV Credits: 4 Hrs/Week: 4

Educational Objective:

1. To enable the students to understand the principles of Electronics and Equipment to design circuits.
2.To Understand the concept of Amplifiers and able to design.
3. To Understand the concept of Oscillators.

Course Learning Outcomes:

1.Design Filter Circuits.
2. Classify the Amplifiers.
3. Design oscillator based on the applications.
4. Design and make use of multivibrator circuits.

Unit - I: Power Supplies

Introduction – Linear mode power supply - Rectifiers: Half and Full Wave Rectifiers - Ripple Factor - Rectification Efficiency - Transformer Utilization Factor - Filters: Inductor Filter- Capacitor Filters - LC Filter - Pi Filter – Introduction to Voltage Regulator.

Unit - II: Amplifiers

Introduction – Classification - Single stage amplifiers: CE, CC and CB amplifiers - Small signal Analysis - FET Amplifiers: CS and CD amplifiers - Multi Stage Amplifier - Coupling Methods - Frequency Response of RC Coupled Amplifier - Transformer Coupled Amplifier - Direct coupled Amplifier - Tuned Amplifier.

Unit - III: Power Amplifiers

Amplifier classification based on biasing condition - Class A large signal amplifier - Transformer coupled class A Audio power amplifier - Efficiency of class A amplifier - Class B amplifier - Efficiency of class B amplifier - Class B Push pull amplifier – Cross over distortion - Class C Amplifier - Introduction to class D and class S amplifiers

Unit - IV: Feedback Amplifiers

Introduction - Basic concept of Feedback - Effect of Negative Feedback - Types of Negative Feedback Configurations - Stability of feed back Amplifiers

Unit - V: Oscillators and Waveform Generators

Introduction - Classification of Oscillators - Condition for Oscillation (Barkhausen criterion) - Hartley Oscillator - Colpitts Oscillator – RC Oscillator (Phase Shift) - Wien Bridge Oscillator - Crystal Oscillator - Frequency Stability of Oscillator - Multivibrators – Schmitt trigger.

Books for Study:

1. S. Salivahanan, N. Suresh Kumar, A. Vallavaraj, “Electronic Devices and Circuits”, TMH Publishing Company Ltd., Seventh Reprint 2001.

Books for Reference:

1. V.K. Mehta, “Principles of Electronics”, S Chand and Company Ltd., 2nd Edition, 2001.
2. R. S. Sedha, “A test book of Applied Electronics”, S Chand and Company Ltd., 2nd Edition, 2001

Program: B.Sc Electronics and Communication System

Course title: **Allied: - Object Oriented Programming with C++** Subject Code:18EC4AL4

Year: II Semester: IV Credits: 4 Hrs/Week: 4

Educational Objective:

1. To inculcate knowledge on Object-Oriented programming concepts using C++.
2.Topics include pointers, classes, overloading, data abstraction, information hiding, encapsulation, inheritance, polymorphism, file processing, templates, exceptions, container classes, and low-level language features.

.

Course Learning Outcomes:

1. Differentiate between structures oriented programming and object oriented programming.
2. Use of object oriented programming language like C++ and associated libraries to develop object oriented programs.
3. Understand and apply various object oriented features like inheritance, data abstraction.

.**Unit - I**

Evolution of Programming Languages - Drawbacks of Classical Methods - Need for Object Orientation - Conventional Programming Versus Object Oriented Programming – Properties - Treatment of Object Class and Association of Objects – Object Oriented Analysis.

Unit - II

Object Oriented Design - Object Oriented Database - Object Oriented Interface - Garbage Collection and Exception Handling - Evolution of C++ - C++ Programming Basics - Data Types - Include Directories - Loop and Decisions – Structures - Function.

Unit - III

Object and Classes – Messages - Access Specifier - Data Encapsulation - Definition and Declaration of Member Functions - Static Class Data - Members and Function - Pointers and References - This Pointer – Strings - New and Delete Operators - Object I/O Streams.

Unit - IV

Polymorphism - Operator Over Loading - Function Overloading - Overloading Unary Operators – Overloading Binary Operators - Data Conversion and Pitfalls of Operator Overloading - Friend Function - Friend Class Specifier - Derived and Base Classes – Static and Dynamic Binding - Virtual Function - Pure Virtual Function - Virtual Base Class - Abstract Class.

Unit - V

Files and Streams - String I/O - Object I/O Stream Class-Error Handling – Redirection - Command Line Arguments - Exception Handling Container Classes – Templates - Simple Templates – Class Templates - Function Templates - Templates Argument.

Book for Study:

1. E. Balagurusamy - 'Object Oriented Programming with C++' Tata McGraw Hill

Books for Reference

1. Bjarne Sroutstrup - 'The C++ Programming Language' 2nd Edition, Addison Wesley 1991.
2. Rambaugh - 'Object Oriented Methods and Design' Prentice Hall of India,1995.
3. Grady Booch - 'Object Oriented Analysis and Design', The Benjamin and Cummins Publications 1993.

Program: B.Sc Electronics and Communication System

Course title: **Core Practical: Electronic Circuits** Subject Code: 18UEC4CP3

Year: II Semester: IV Credits: 3 Hrs/Week: 3

Educational Objective:

1. Learn about biasing of BJTs.
2. Construct amplifiers with active loads.
3. Design and evaluate the power supply, feedback amplifiers, push pull amplifier, oscillators, wave-shapingcircuits and filters.

Course Learning Outcomes:

1. Design rectification and filter circuits.
2. Design Regulated power supply and amplifier circuits.
3. Design and construct all multivibrator circuits.
4. Apply the principle of oscillator in designing various oscillator circuits.

(ANY 18 EXPERIMENTS)

1) Half Wave & Full Wave Rectifier
2) LC & Pi filters
3) Zener diode as a voltage regulator
4) Voltage Doubler & Tripler
5) Common Emitter Amplifier
6) Emitter Follower
7) RC – Coupled Amplifier
8) Feed-Back Amplifier
9) Class A Power Amplifier
10) Class B Power Amplifier
11) UJT – Relaxation Oscillators
12) Hartley Oscillator
13) Colpitts Oscillator
14) Phase Shift Oscillator
15) Wien Bridge Oscillator
16) Free Running Multivibrator
17) Mono-Stable Multivibrator
18) Bistable Multivibrator
19) Crystal Oscillator
20) Schmitt Trigger
21) Blocking Oscillator
22) Clapp Oscillator

Program: B.Sc Electronics and Communication System

Course title: **Core Practical: Digital Electronics** Subject Code: 18UEC4CP4

Year: II Semester: IV Credits: 3 Hrs/Week: 3

Educational Objective:

1. Acquire the fundamental knowledge in basic gates.
2. Design and analyze digital electronic circuits.
3. Apply the fundamentals in digital electronics projects.

Course Learning Outcomes:

1.Verify the logic gates &Demorgan's theorem.
2. Convert the binary and gray code.
3. Design adder and Subtractor circuits.
4. Construct encoder and decoder circuit.

(ANY 18 EXPERIMENTS)

1. Construction of 5VDC Power Supply
2. Digital IC's Characteristics
3. Logic Gates Using IC's
4. Verification of Demorgan's Theorems
5. NAND & NOR as Universal Building Block
6. Code Converters
7. Shift Register & Ring Counter
8. Half Adder & Full Adder
9. Half Subtractor & Full Subtractor
10. Up-Down Counter
11. Encoder & Decoder
12. Study of 7490
13. Decade Counter
14. Multiplexer & Demultiplexers
15. Study of Flip-Flops
16. Analog to Digital Converter
17. Digital to Analog Converter
18. Pulse Generators
19. MOD-Counters
20. Four Bit Binary Adder
21. BCD Adder
22. Parity Generators and Checkers

Program: B.Sc Electronics and Communication System

Course title: **Core Practical: Electronic Communication** Subject Code: 18UEC4CP5

Year: II Semester: IV Credits: 3 Hrs/Week: 3

Educational Objective:

1. Learn about basic knowledge of electronics components
2. To develop the practical knowledge of digital communication.
3. To experiment the operations of amplifiers for audio systems.

Course Learning Outcomes:

1. Learn the concept of Modulation techniques.
2. Understand the knowledge of radio receiver.
3. Understand the digital modulation techniques.

(ANY 18 EXPERIMENTS)

1. AM generation
2. FM generation
3. RF amplifier
4. First IF amplifier
5. Second IF amplifier
6. AM detector
7. Study of FM receiver
8. FM demodulator
9. HF oscillator
10. Study of Yagi-Uda antenna
11. Pulse Amplitude Modulation
12. Pulse Width Modulation
13. Pulse Position Modulation
14. FSK Generation
15. FSK Demodulation
16. ASK Generation
17. ASK Detection
18. PSK Generation
19. PSK Detection
20. Audio power Amplifier using IC TBA810
21. Power audio amplifier using IC LM380
22. Sync separator

Program: B.Sc Electronics and Communication System

Course title: **Core : Basic and Practical Aspect of Electronics**

Subject Code: 18UEC5CP6

Year: III Semester: V Credits: 3 Hrs/Week: 3

Educational Objective:

1. Learn the basic knowledge of electronic components
2. Learn the basic concept of circuit design.
3. Learn the basic concept of communication.

Course Learning Outcomes:

1. Understand and analyse the active and passive components
2. Acquire the knowledge of Semiconductor devices
3. Understand the digital modulation techniques

We have Prepared 500 questions from general electronics course from these questions only 100 multiple choice questions are randomly given as online mode. Questions are in designing and analyzing aspects

Program: B.Sc Electronics and Communication System

Course title: **Allied Practical: Computer Programming in C and C++**Subject Code: 18UEC4AP1

Year: II Semester: IV Credits: 2 Hrs/Week: 2

Educational Objective:

1. To be familiar with programming in C Language.
2. To understand various programs using decision making and looping statements.
3. To understand simple programs using arrays and functions.
4. To understand simple programs in structures and pointers.

Course Learning Outcomes:

1. An understanding of basic programming concepts.
2. An ability to write simple programs using control structures, arrays and functions.
3. An ability to implement simple programs using pointers and file concepts.

.

(ANY 18 PROGRAMS)

C PROGRAMS

1. Binary to gray.
2. Grey to Binary
3. Binary to Decimal.
4. Decimal to Binary.
5. Matrix Addition.
6. Matrix Subtraction.
7. Palindrome.
8. Fibonacci.
9. Mirror no check.
10. Factorial.
11. Biggest of Three Numbers

C ++ PROGRAMS

1. Binary to gray.
2. Grey to Binary
3. Binary to Decimal.
4. Decimal to Binary.
5. Matrix Addition.
6. Matrix Subtraction.
7. Palindrome.
8. Fibonacci.
9. Mirror no check.
10. Factorial.
11. Biggest of Three Numbers

Program: B.Sc Electronics and Communication System

Course title: **Core : Antenna and Wave Propagation** Subject Code: 18UEC5C08

Year: III Semester:V Credits:5 Hrs/Week:5

Educational Objective:

1. Understand the concept of microwaves
2. Understand the concept of propagation
3. To understanding the basic principles of antennas
4. Understand the concept of radar systems

Course Learning Outcomes:

1. Acquire the knowledge of electromagnetic waves
2. Acquire the knowledge of antennas
3. Acquire the knowledge of radar

UNIT I: MICROWAVES

Introduction – Maxwell's Equation – Ampere's law – Faraday's law – Gauss law – Wave Equation – TEM/TE/TM & HE wave equations – Waveguides: Rectangular waveguides – Circular waveguides.

UNIT II: RADIO WAVE PROPAGATION

Fundamentals of Electromagnetic Waves– Effect of Environment. Propagation of Waves: Ground waves- Sky wave propagation-Space waves- Tropospheric Scatter Propagation- Exterritorial Communications.

UNIT III: ANTENNAS

Basic considerations –Electromagnetic radiation- Wire radiator in space: Current and Voltage Distribution-Resonant antennas, Radiation Patterns and Length calculation-Nonresonant antenna. Terms and Conditions: Antenna gain and effective Radiated Power-Antenna Resistance-Bandwidth, Beam width and Polarization. Types of antenna: Yagi-Uda antenna- Rhombic antenna-Horn antenna-Lens antenna.

UNIT IV: MICROWAVE TUBES

Microwave Triodes-Multi cavity klystron – Reflex klystron - Magnetron – Traveling wave tube – Backward wave Oscillators – Fundamentals, Operation and Applications.

UNIT V: RADAR SYSTEMS

Radar fundamentals –Radar range equation – Pulsed Radar system: Basic pulsed radar system-Antenna scanning & tracking - Display methods – Moving Target Indicator. Other Radar System: CW Radar –FM Radar-Applications.

Books for study:

1. N.Kulkarni – ‘Microwave and Radar Engineering’, Umesh Publications, Second Edition. (UnitI).
2. George Kennedy ‘Electronic Communication Systems’ TMH Publishing Company Limited, Third Edition.1998.(Unit-II toV)

Book for Reference

3. Dennis Roddy and John Coolen, ‘Electronic Communications’ Pearson, Fourth Edition,2011.

Program: B.Sc Electronics and Communication System

Course title: **Core: 8051Microcontroller and Its Applications** Subject Code: 18UEC5C09

Year: III Semester: V Credits:4 Hrs/Week:5

Educational Objective:

1. Understand the basic blocks of microcontroller
2. Understand the concept of networks
3. Understand the concept of buses

Course Learning Outcomes:

1. Apply knowledge to demonstrate the hardware interfaces
2. Acquire the knowledge of programming

Unit-I Introduction & 8051 architecture:

Microprocessors and microcontrollers- Z80 and the 8051- a microcontroller survey, development-systems for microcontrollers-8051 micro controller hardware- input/output pins- ports- ports and circuits- external memory-counters and timers- serial data i/o- interrupts.

Unit-II 8051 Instruction set & Programming:

Addressing modes- external data moves- code memory read- PUSH and POP opcodes- data exchanges- Byte-level logical operations- bit-level logical operations- rotate and swap operations-Flags- incrementing and decrementing- addition- subtraction- multiplication and division- decimal-arithmetic-Jump and call program range- jumps- calls and subroutines- interrupts and returns.

Unit-III 8051 microcontroller design:

Microcontroller specifications - 8051 micro controller design - testing the design - timing subroutines -look up tables for 8051- serial data transmission.

Unit-IV Serial data communication & Introduction to other microcontrollers and buses:

Network configuration - 8051 data communication modes – I^2C - RS232 - ARM - PIC microcontrollers – CAN – USB - SPI & PCI etc families for buses.

Unit-V Applications:

Matrix Keyboard – LCD - pulse measurements-D/A and A/D conversions - multiple interrupts-RTC through DS1307-EEPROM.

Books for Study:

1. The 8051 Microcontroller - Kenneth J. Ayala - 3rd Editon-2005 – Delmar Learning.

Book for Reference:

1. The 8051 Microcontroller and Embedded Systems - Mazidi & Mazidi(PHI)

Program: B.Sc Electronics and Communication System

Course title: **Core : Linear IC's and Its Applications** Subject Code:18UEC5C10

Year: III Semester V Credits: 4 Hrs/Week:4

Educational Objective:

1. Understand the concept of operational amplifier
2. Understand the concept of waveform generators
3. Study the internal structure of timer ICs

Course Learning Outcomes:

1. Acquire the knowledge to construct amplifiers using operational amplifier
2. Ability to design of oscillators
3. Acquire the knowledge of basic application using op-amp

Unit - I: Operational Amplifiers

Introduction – Block diagram of Operational Amplifiers – Ideal Op-amp – Parameters – Inverting Amplifier – Non-Inverting Amplifier – Voltage follower - Differential Amplifier – CMRR – AC and DC characteristics.

Unit - II: Op-Amp Applications

Scale changer – Summing Amplifier – Subtractor – Instrumentation amplifier – Voltage to current converter – Current to voltage converter – Log and Antilog amplifier – Multiplier and Divider - Differentiator - Integrator — Electronic analog computation.

Unit - III: Comparators and Waveform Generators

Introduction – Comparator – Applications – Schmitt trigger – Square wave generator – Monostable multivibrator – Triangular wave generator – Wien bridge oscillator – Function generator.

Unit - IV: Voltage Regulator

Introduction – Series regulator - IC voltage regulators – Fixed voltage series regulator - IC 723 General purpose regulator - Current limit protection - Current Fold back – Current boosting –Switching regulator.

Unit - V: Timer and Phase-Locked Loops

Introduction - Description of Functional diagram of 555 – Monostable operation – Astable operation – Applications – Schmitt trigger – PLL: Introduction – Basic principles – Phase detector – Comparator – VCO – Low pass filter - PLL Applications.

Books for Study:

1. D.Roy Choudhury, Shail B. Jain, " Linear Integrated Circuits", New Age InternationalPublishers, Third Edition 2007.

Book for Reference:

1. Ramakant A Gayakwad, “Op-Amps and Linear Integrated Circuits”, PHI, 4th edition2004.
2. Botkar K.R, “Integrated Circuits”, Khanna Publishers, 9th Edition 2000.

Program: B.Sc Electronics and Communication System

Course title: **Core : Modern Instrumentation** **S**ubject Code:18UEC6C11

Year: III Semester: VI Credits: 5 Hrs/Week:5

Educational Objective:

1. Understand the concept of bridges
2. Study the internal structure of oscillators
3. Understand the concept of traducers

Course Learning Outcomes:

1. Acquire the knowledge of various bridges and applications
2. Acquire the knowledge of different analysers
3. Acquire the knowledge of traducers and applications

Unit-I Qualities of Measurement

Introduction - Performance Characteristics - Static Characteristics - Errors In Measurement – Types of Static Error – Sources of Error – Dynamic Characteristics- - Statistical Analysis- Standard – Electrical standards – Atomic frequency and time standards.

Unit-II Bridges

Introduction- Wheatstone Bridge- Kelvin's Bridge- Capacitance Comparison Bridge- Wien's Bridge- Schering Bridge - Inductance Comparison Bridge - Maxwell's Bridge - Hay's Bridge.

Unit-III Signal Analysis Instruments

Oscilloscope: Basic principle – CRT features - Block Diagram - Vertical Amplifier - Horizontal Deflection System – CRT connections – Dual trace oscilloscope – Probes for CRO – Applications of oscilloscope – Introduction to Digital Storage Oscilloscope - Basic Wave Analyzer - Frequency Selective Wave Analyzer - Heterodyne Wave Analyzer- Harmonic Distortion Analyzer – Spectrum Analyzer.

Unit-IV Transducer

Introduction - Electrical Transducer – Selection of transducer –Active & Passive transducers - Resistive transducer: Strain gauges – Resistance thermometer – Thermistor - Inductive transducer: LVDT - Capacitive Transducer – Piezoelectric transducer – Photo electric transducer - Photovoltaic cell.

Unit-V Data Acquisition Systems

Introduction - Objective of a DAS-Signal conditioning of the input-Single channel

DAS- Multi channel DAS-Computer Biased DAS - Data Loggers-Sensor based Computer Data Systems-Digital Transducer.

Book for Study:

1. Electronics Instrumentation - H.S. Kalsi, Third Edition, TMH Publishing Company Limited,2010.

Books for Reference:

2. Electronic Instrumentation & Measurement Techniques - W.D.Cooper & A.D.Helfrick
3. Instrumentation Devices & Systems - C S Rangan, G.R. Sharma,V.S.V.Mani

Program: B.Sc Electronics and Communication System

Course title: **Core : Optical Fibre Communication** Subject Code: 18UEC6C12
Year: III Semester: VI Credits: 4 Hrs/Week:5

Educational Objective:

1. Understand the concept of optical fiber
2. Understand the concept of light sources
3. Study fiber fabrication techniques

Course Learning Outcomes:

1. Acquire the knowledge of construction and design of optical fiber
2. Acquire the knowledge of fabrication techniques
3. Learn the concept of couplers and various losses

Unit-I

Introduction - Propagation of light waves in optical fiber-Acceptance angle and Acceptance cone - Numerical Aperture-Classification of Optical fiber-Other latest developed fiber.

Unit-II

Fiber fabrication: Classification of fabrication techniques-External and Internal CVD- Axial vapor deposition-Multi element glasses- Phasil system-Comparison of various methods. Fiber drawing and coating - Cable construction – Strength member - Cable testing - Cable selection criteria – Fiber losses.

Unit-III

Light sources: LED and Laser-Basic construction and Operation. Detector: Classification and Characteristics of Detectors. Couplers: Types and working of couplers. Splicing: Types -Steps involved in splicing - Losses in splicing and Connectors.

Unit-IV

Communication Systems: Introduction- Transmitter for fiber optic communications- High performance Transmitter circuits- Laser Transmitter-Transmitter design- Fiber optic receiver- High performance receiver-Design of fiber optic receiver- Repeaters-Fiber based modems: Transreceiver.

Unit-V

Measurements: Introduction- Numerical Aperture- Fiber attenuation- Scattering loss- Dispersion loss- Refractive Index- Cut-off wavelength- Bending loss- Mode field diameter.

Book for study

1. Subir Kumar Sarkar, "Optical fibers and fiber optic communication system", S.Chand & Company Ltd, 1997**.**

Book for reference

1. Gerd Keiser " Optical Fiber Communications" 3rd edition Aug 20, 2013.

Program: B.Sc Electronics and Communication System

Course title: **Core: Industrial and Power Electronics** Subject Code: 18UEC6C13

Year: III Semester:VI Credits: 4 Hrs/Week:4

Educational Objective:

1. Understand the concept of thyristor
2. Understand the concept of welding systems
3. Understand the basic concepts and working principles of robotics

Course Learning Outcomes:

1. Acquire the knowledge to construct inverters, converters etc
2. Acquire the knowledge of welding
3. Acquire the knowledge of robotic systems

UNIT I

Principles of single phase inverter, converter, cyclo converter and DC chopper – UPS – HVDC – static circuit breaker – battery charging circuit – SCR current limiting circuit breaker – static AC and DC switches – flasher circuits - time delay circuits – fan regulator using TRIAC – thyristor protection circuits: over current protection – over voltageprotection - gateprotection.

UNIT II

Welding and Heating: resistance welding – types of resistance welding – electronic control in resistance welding: ignitron contractor – heat control – non synchronous timer – synchronous weld timer – sequence timer – energy storage welding systems – induction heating – applications of induction heating – dielectric heating – application of dielectric heating.

UNITIII

Generation of ultrasonic waves – applications of ultrasonic – production of X rays – applications – Measurement of non electrical quantities: pressure measurements – displacement measurements – level measurements – flow measurements – measurement of thickness.

UNITIV

Application in industrial systems: Thermistor control of quench oil temperature – proportional mode pressure control system – strip tension controller – automatic weighing system – control of relative humidity in a textile moistening process – warehouse humidity controller.

UNIT V

Industrial Robotic Systems: Parts of robotic systems – Classifications of robotic systems – robotic system configurations – degrees of freedom of robotic system – programming robotic systems – motions of robotic systems – sensor for robotic

systems – mechanical parts – control systems. Microprocessor based industrial applications: Speed control of DC motor – measurement of physical quantities – water level indicator – firing angle control of thyristor.

TEXT BOOKS

1.Harish C Rai, “Industrial and Power Electronics” 10th edition, Umesh publications2002
2.Timothy J Maloni, “Industrial Solid State Electronic Devices and Circuits” 2nd edition 1986

Program: B.Sc Electronics and Communication System

Course title: **Core Practical: Linear IC's and Instrumentation**

Subject Code: 18UEC6CP7

Year: III Semester: VI Credits: 3 Hrs/Week: 3

(ANY 18 EXPERIMENTS)

USING OPERATIONAL AMPLIFIER

1. Parameters
2. Frequency Response and Gain
3. Input and Output Impedance
4. Adder and Subtractor
5. Integrator and Differentiator
6. Sine, Square and Triangular Wave Generator
7. Wien Bridge Oscillator
8. Phase Shift Oscillator
9. Inverting and Non-Inverting
10. Voltage Follower
11. Voltage Shunt Feed Back
12. Voltage Series Feed Back
13. Current Shunt Feed Back
14. Current Series feed back
15. Hartley Oscillator
16. Colpitts Oscillator
17. Schmitt Trigger Using 741
18. Study o f VCO and PLL
19. Study o f Parameter – IC 555
20. Schmitt Trigger – Using IC 555
21. Instrumentation Amplifiers
22. Voltage Regulator

Program: B.Sc Electronics and Communication System

Course title: CORE Practical: Microprocessor and Microcontroller

Sub Code: 18UEC6CP8 Year: III Semester: VI Credits: 3

Hrs/Week: 3

Any 18 Experiments (9 from 8085 and 9 from 8051)

8085 Microprocessor Experiments:

1.8-Bit Addition and Subtraction

2.16-Bit Addition and Subtraction

3.8-Bit multiplication and Division

4. Block Data transfer
5. Maximum, Minimum Number in an Array
6. Ascending and Descending Order
7. Series Addition
8. Complements
9. DAC Interface
10. ADC interface
11. Stepper motor Interface

8051 Microcontroller Experiments:

1.8-Bit Addition and Subtraction

2.16-Bit Addition and Subtraction

3.8-Bit multiplication and Division

4. Block Data transfer
5. Maximum, Minimum Number in an Array
6. Ascending and Descending Order
7. Series Addition
8. Complements
9. Logical Programs
10. Addition- C programming
11. Ascending and Descending Order- C programming

Program: B.Sc Electronics and Communication System

Course title: **Elective I : Bio Medical Instrumentation** Subject Code: 18UEC4EL1

Year: II	Semester: IV	Credits: 5	Hrs/Week: 5

Educational Objective:

1. To understand basic principles and phenomena in the area of medical diagnostic instrumentation and sensor operations.
2. To acquire the knowledge of bio potential electrodes.
3. To learn the operation of pacemaker and defibrillators circuits.
4. To understanding the basic principles of ECG interpretation.

Course Learning Outcomes:

1. Acquire the knowledge of human anatomy.
2. Learn the various electrodes.
3. Acquire the Knowledge of recording systems of various medical equipments.
4. Learn the concept of diathermy.

Unit - I: Introduction to Biomedical Instrumentation

Biometrics – Introduction to the Man Instrument system - components of the man Instrument system – Physiological system of the body-Problems encountered in measuring a living system – Resting and action potentials – Propagation of action potentials – The Bio-electric potentials.

Unit - II: Transducers & Electrodes

Transducer for Biomedical applications: Force – Pressure – Flow – Temperature. Electrode Theory – Biopotential electrodes: Micro electrodes – Body surface electrodes – Needle electrodes – Biochemical transducers: Reference electrodes – pH electrode – Blood gas electrodes.

Unit - III: Bio-potential Recorders

Introduction – Characteristics of the recording system – Electrocardiography (ECG) – Electroencephalography (EEG) – Electromyography (EMG) – Blood Pressure meters– Blood flow meters – Cardiac output measurements.

Unit - IV: Operation Theatre Equipment

Introduction – Surgical diathermy – Shortwave diathermy – Microwave diathermy – Ultrasonic diathermy – Ventilators – Anesthesia machine – Elements of Intensive care monitoring – Pace maker – Defibrillator – Heart-Lung machine – Kidney machine.

Unit - V: Advances in Biomedical Instrumentation

Introduction – computers in medicine – Lasers in medicine – Endoscope – Cryogenic surgery – Nuclear imaging techniques – Computer tomography – Thermograph – Ultrasonic Imaging systems – Magnetic resonance imaging – Positron emission tomography – Digital subtraction angiography – Bio-feed back instrumentation – Bio materials.

Books for Study:

1. Leslie Cromwell, Fred J.Weibell, Erich A. Pfeiffer, “Biomedical Instrumentation and measurements”, Prentice hall of India Pvt Limited, Second edition 1995, (Unit I - II).

2. Dr. M. Arumugam, “Biomedical Instrumentation”, Anuradha agencies, Publishers, First edition 1993 (Unit III - V)

Books for Reference:

1. R.S.Khandpur, “Handbook of Biomedical Instrumentation”, Tata McGraw Hill Publishing co. Ltd, second edition 2003.

Program: B.Sc Electronics and Communication System

Course title: **Elective-I: PCB Design and Fabrication** Subject Code: 18UEC4EL1Year: II
Semester: IV Credits: 5 Hrs/Week: 5

Educational Objective:

1. Understand the design and fabrication techniques.
2. Understand preparation PCB layers.
3. Understand the concept of film preparation.
4. Understand soldering techniques.

Course Learning Outcomes:

1.Ability to design simple PCB.
2. Acquire the Knowledge of film preparation in dark room.
3. Ability to made simple soldering.

Unit - I

Types of PCB –Single, Double, Multi-layer PCB'S-Flexible PCB-Contact between sides of PCB'S (clinched wires, rivets, placed though holes, via-holes, no plated holes) - PCB sizes-Layout approaches-Procedures-Documentation-Layout check. Resistance of printed conductors- Capacitance between printed conductors-Inductance of printed conductors-Spacing of conductors- Width of signal, supply and ground lines-Component placing, mounting and package density.

Unit - II

General consideration-Basic methods-Ink drawing-Black taping- Two layer, three layer artwork -Red/Blue taping - Diazo films- Cut & Strip Method-General artwork rules-Artwork check and inspection..Film master preparation - Emulsion parameters - Dimensional stability of film masters - Temperature and humidity.

Unit - III

Camera Tubes - Dark room considerations - Film processing photo-resists - Coating of Wet filmresists – Processing - Dry film resists. Etching methods and machines – Etching - Ferric chloride.

Unit - IV

Copper Clad Laminates – Manufacture - Properties Electrical, Physical, Bond - Types of Laminates - Resins – Classification. Reflections - TTL, CMOS & ECL IC's - Matching with additional elements - Cross talks - Ground and supply line noise - Electromagnetic interference.

Unit - V

Solders and soldering techniques: Introduction - Principles of solder connections - Solder alloys - Soldering fluxes - Soldering techniques - Solder mask - Reflow soldering practice - Testing and quality control - Safety, Health and MEDICAL aspects IN soldering practice. Component assembly techniques: Preparation and mounting of components - Organization of non - Automatic PCB assembly - Lead cutting and soldering - PCB cleaning after soldering.

Books for Study:

1. Walter.C.Boshart - Printed Circuit Boards - Design and Technology - Tata McGraw Hill.

Program: B.Sc Electronics and Communication System

Course title: **Elective I: TV and Satellite Communication**

Subject Code: 18UEC4EL1Year: II Semester: IV Credits: 5 Hrs/Week: 5

Educational Objective:

1. Understand the basic of television systems.
2. Study the internal structure of TV circuit board.
3. Understand the concept of colour television.
4. Understand the concept of satellite communications.

Course Learning Outcomes:

1. Acquire the Knowledge of scanning techniques.
2. Knowledge RF, IF, audio and video section.
3. Acquire the Knowledge of satellite transmission and reception.

Unit - I

Scanning - Flicker - Vertical Resolution - Kell Factor - Horizontal Resolution - Interlaced Scanning - Video Signal Components - Horizontal & Vertical Synchronous & Blanking standards - Complete Channel Bandwidth - Vestigial Sideband - Composite Video Signal Camera Tubes - Plumbicon - Vidicon - Block Diagram of TV Transmitter.

Unit - II

Monochrome Receivers – Quarter wave matching section - balun - Receiver block diagram – Vestigial Sideband Correction - Choice of IF - Sound Separation - VHF Tuner Block diagram - Video IF Section - block diagram - Block Diagram of Vertical deflection system - Block Diagram of Horizontal deflection system

Unit - III

ESSENTIAL OF COLOUR TELEVISION: Compatibility- Frequency Interleaving Colour Perception-Three Colour Theory-Tri stimulus Value of Spectral Colour-Luminance, hue, saturation-colour TV camera -production of colour difference signal - Modulation of Color difference signal values of luminance and polarity of colour difference signals.

Unit - IV

COLOUR TV TRANSMISSION AND RECEPTION: Colour burst – PAL system of colour TV transmission and reception – cancellation of phase error – PAL encoder – PAL decoder – PAL D colour receiver – colour picture tubes: Delta gun colour picture tube – precision in line colour picture tube –Trinitron colour picture tube.

Unit -V

PRINCIPLES OF SATELLITE COMMUNICATION: Orbital aspects – height of geostationary orbit –geostationary satellite –communication satellite – station keeping – satellite frequency plans and allocation –satellite uplinks –satellite downlinks –satellite transponders Satellite access: frequency division multiple access –time division multiple access – demand access systems

Book for Study:

2. R.R. Gulati - Monochrome and Color Television, Wiley Eastern Ltd, 1984. (Unit I – II)
3. J.S.Chitode "Communication engineering", Technical Publications, Pune, Second Revised Edition, 2004. (Unit-III - V)

Books for Reference:

1. A.M.Dhake - Television and Video Engineering, Tata McGraw Hill, 1999.

Program: B.Sc Electronics and Communication System

Course title: **Elective-II: PC Hardware Fundamentals** Subject Code: 18UEC5EL2

Year: III Semester:V Credits:5 Hrs/Week:5

Educational Objective:

1. Understand the basic of computer systems
2. Study the I/O devices of computer systems
3. Understand the concept of floppy disk and hard disk devices

Course Learning Outcomes:

1. Acquire the knowledge of personal computer
2. Ability to assemble the PC
3. Acquire the knowledge of installation and troubleshooting

Unit - I

Evolution of PC – Specifications – PC System – I/O ports – Mother Board – BIOS- Bus Stand– SMPS – PC Memory Organization – Memory Package.

Unit - II

Magnetic Storage Fundamentals – Diskette Basics – Data Recoding Formats – Disk Organization in Dos – Floppy Disk Drive – Floppy Disk – Controller – Installation and Configuration – Hard Disk Drive Sub-Assemblies – Hard Disk Controller – Interface Types.

Unit - III

I/O Devices: Key Board – Mouse – Scanner – Digitizer – Digital Camera – Video Basics – VGAMonitors – Display Controller – Display Adaptors.

Unit - IV

CD-Rom Disk & Drive – Sound Blaster – Video on the PC – Dot Matrix Printer – Plotter – Printer controller – Laser printer – Inkjet Printer.

Unit - V

Computer Installation & Maintenance – Room Preparation Power supply – PC Installation – Post – Troubleshooting of Mother Board, Keyboard, Floppy/Hard Disk Devices & Printers – Diagnostic Software's – Data Security.

Book for Study:

1. D. Balasubaramanian – Computer Installation and Service – Tata McGraw Hill.

Book for Reference:

1. Peter Norton – Inside the PC – Prentice Hall ofIndia.

Program: B.Sc Electronics and Communication System

Course title: **Elective-II: Robotics and Automation** Subject Code: 18UEC5EL2

Year: III Semester:V Credits:5 Hrs/Week:5

Educational Objective:

1. Understand the concept of robotic systems
2. Understand the concept of sensors
3. Understand the concept of PLC

Course Learning Outcomes:

1. Learn the concept robotic system
2. Acquire the knowledge of PLC
3. Acquire the knowledge of computer numerical control

UNIT I CLASSIFICATION OF ROBOTIC SYSTEMS

Basic structure of a robot - Classification of robots: Cartesian, Cylindrical, Spherical, Articulated, SCARA. Accuracy, resolution and repeatability of robots. Robot application in manufacturing: Material transfers - Machine loading and unloading - Processing operations - Assembly and inspection.

DRIVES AND CONTROL SYSTEMS: Hydraulic and Pneumatic systems: cylinders, control valves, hydro motor. Types of mechanical power drive, rotary to linear motion conversion mechanisms. Robot end effectors. Servomotors – operation, stepper motors - control loops using current and voltage amplifier. Robot controllers - configuration of robot controller.

UNIT II SENSORS AND VISION SYSTEMS

Types of sensors, tactile sensors, proximity sensors and speed sensors – Encoder, resolvers. Vision systems: Image processing and analysis, Segmentation, Feature extraction, Object Recognition.

UNIT III ROBOT PROGRAMMING & AUTOMATION

Lead through programming - Textual programming, programming examples - Social and Economical Aspects of Robots - Typical layouts of robots in Industries. **AUTOMATION:** Advantages of automation, building blocks of automation. Automatic feeding lines, material- handling devices, ASRS, transfer lines, automatic inspection, intelligent automation.

UNIT IV PROGRAMMABLE LOGIC CONTROLLERS (PLC)

Basics of PLC, Architecture of PLC, Advantages, Types of PLC, Types of

Programming - Simple process control program's using Relay Ladder Logic. Introduction to PLC networking. Introduction to HMI, DCS and SCADA systems.

UNIT V COMPUTER NUMERICAL CONTROL(CNC)

Block diagram of a CNC control system, Advantages, Power supply, CPU. CNC and PLC interfacing, Control loops. Feedback devices in CNC machine, analog and digital CNC systems. Introduction to FMS.

TEXT BOOK

1. Michel P. Grover, "Automation Production systems and Computer Integrated manufacturing", Prentice-Hall India, New Delhi, 1987. / Pearson Education, New Delhi.

REFERENCES

1. W. Bolton, "Mechatronics", Pearson Education Asia,2002.
2. K.S. Fu, R.C. Gonzalez and C S G Lee, "Robotics: Control, Sensing, Vision and Intelligence", McGraw Hill, New Delhi,1987.
3. Michel P. Grover, "Industrial Robotics - Technology, Programming and Applications", McGraw Hill, New Delhi,1986.

Program: B.Sc Electronics and Communication System

Course title: **Elective-II: Network Communications** Subject Code: 18UEC5EL2

Year: III Semester:V Credits:5 Hrs/Week:5

Educational Objective:

1. Understand the basic of networking concepts
2. Understand the concept of local area network
3. Understand the concept of wireless network

Course Learning Outcomes:

1. Acquire the knowledge of network layers
2. Acquire the knowledge of network protocols
3. Acquire the knowledge of using LAN

Unit: I Networking Concepts

Structure of the communication networks - Networks topologies - Telephone networking – Fundamentals of communication theory – Connecting the analog and digital world – Advantages of digital systems – Signal conversion - Synchronizing network components - classification of communication protocols.

Unit: II Components and network distributed architecture

Layering: Physical layer - Data link layer - Network layer - Transparent layer - Session layer-presentation layer - Application layer - Modems**:** Modulation techniques- other modems –Advances in modems - **Switching:** circuit switching – Message switching – Packet switching.

Unit: III Communication Networks and protocols

Asynchronous transfer mode- ATM logic connections-ATM cells –ATM service categories –protocols –Need for a protocols architecture-TCP/IP protocols architecture–Internet protocols architecture-CDMA.

Unit: IV Local Area Network

Introduction- LAN definition –Usage – Major components of LAN-LAN protocols – IEEE standards –CSMA CD –Token ring –Token bus – MAN-Fiber distribution data interface (FDDI)-Logical link control-other LAN (Ethernet, IBM, Token ring).

Unit V:

Wireless network and wireless LAN overview - Wireless LAN requirements – Wireless LAN technology – IEEE 802 architecture – IEEE 802.11 architecture and services – IEEE 802.11 MAC – IEEE 802.11 physical layer – Wireless local loop – IEEE 802.16

Books for Study:

1. Uyless Black," Computer networks" PHI, IIedition,1999
2. Uyless Black, "Data communication and distributed networks", PHI III edition,1993.

Program: B.Sc Electronics and Communication System

Elective-III: EMBEDDED SYSTEMS DESIGN Subject Code: 18UEC6EL3

Year: III Semester: VI Credits:5 Hrs/Week:5

Educational Objective:

1. Understand the basic of embedded systems
2. Understand the basic of RTOS
3. Understand the basic of firmware

Course Learning Outcomes:

1. Acquire the knowledge of principles in embedded systems
2. Acquire the knowledge of RTOS

UNIT -I: Introduction to Embedded Systems

Definition of Embedded System-Embedded Systems Vs General Computing Systems- History of Embedded Systems-Classification-Major Application Areas-Purpose of Embedded Systems-Characteristics and Quality Attributes of Embedded Systems.

UNIT -II: Typical Embedded System: Core of the Embedded System:

General Purpose and Domain Specific Processors-ASICs-PLDs-Commercial Off-The-Shelf Components (COTS)-Memory: ROM-RAM-Memory according to the type of Interface- Memory Shadowing-Memory selection for Embedded Systems-Sensors and Actuators- Communication Interface: Onboard and External Communication Interfaces.

UNIT -III: Embedded Firmware

Reset Circuit-Brown-out Protection Circuit-Oscillator Unit-Real Time Clock-Watchdog Timer-Embedded Firmware Design Approaches and Development Languages.

UNIT -IV: RTOS Based Embedded System Design

Operating System Basics-Types of Operating Systems-Tasks-ProcessandThreads- Multiprocessing and Multitasking-TaskScheduling.

UNIT -V: Task Communication:

Shared Memory-Message Passing-Remote Procedure Call and Sockets-Task Synchronization: Task Communication/Synchronization Issues-Task Synchronization Techniques-Device Drivers-How to Choose anRTOS.

TEXT BOOKS:

1. Introduction to Embedded Systems - Shibu K.V, Mc Graw Hill. Second reprint-2010

REFERENCE BOOKS:

1. Embedded Systems - Raj Kamal,TMH.

2. Embedded System Design - Frank Vahid, TonyGivargis

Program: B.Sc Electronics and Communication System

Elective-III: Domestic Electric and Electronics Appliances Subject Code: 18UEC6EL3

Year: III Semester:VI Credits:5 Hrs/Week:5

Educational Objective:

1. Understand the basic of wiring systems
2. Understand the concept of indicating systems
3. Understand the concept of audio and video

Course Learning Outcomes:

1. Acquire the knowledge of electrical wiring
2. Acquire the knowledge of indicating system
3. Acquire the knowledge of audio and video systems.

Unit – I Indicating System

DC bell – AC bell – Buzzer – Two tone chime- Design and construction of bell circuits – Bell circuits with indicating system – Fire alarm system: Block diagram – Detectors – Manipulating circuit using SCR – Water level indicator: Block diagram – Level detectors.

Unit – II Electric Wiring

Introduction to power distribution system Symbols for electrical installations – Electrical accessories: Switches – Wires – Cables – Holders – Electrical lighting circuits – Protection circuits: Fuse – Fuse rating – Earthing system – Magnetic circuit breakers.

Unit – III Audio System

Tape Recorder: Mechanism – Block diagram of circuits – Maintenance Procedures – Public addressing system: Functional components – Block diagram – Typical PAS installation planning: Public meeting – Auditorium – Debating chamber – Foot ball stadium.

Unit – IV Video System

VCP &VCR Block diagram – Mechanism – Video Disk system – Closed circuit television: Block diagram – Camera installation procedure – Television set - Introduction to cable TV – MP3 Player – CD & DVD player.

Unit – V Domestic Appliances

Electronic clock – Grinder – Mixing machine – Washing machine – Electric oven – Microwave oven – Stabilizer – Refrigerator – Iron Box – Air cooler – Air conditioner – Mobile phone – UPS.

Books for Study:

1. P.P.Gupta, “Electrical Equipments”, Dhanpat Rai & Sons, Second Edition,1993.
2. R.G.Gupta, “Audio and Video systems”, TMH Publishing Ltd, Eighth Edition, 2000.
3. Robert L. Goodman, “Maintaining & Repairing Video Cassette Recorders”, BPB Publications, First Edition,1984.
4. R.C.Vijay, “Servicing Cassette Recorders and Two-in-one”, BPB Publications, Second Edition,1990.

Books for Reference:

1. Ru.Van Wesel, Gordon J.King, “Video Hand Book”, Newness Technical Books, Second Edition,1983.

Program: B.Sc Electronics and Communication System

Elective-III: Digital and Mobile Communication Subject Code: 18UEC6EL3

Year: III Semester:VI Credits:5 Hrs/Week:5

Educational Objective:

1. Understand the concept of sampling theorems
2. Understand the concept of modulation techniques
3. Understand the concept of multiple access schemes.

Course Learning Outcomes:

1. Acquire the knowledge of pulse modulation techniques
2. Acquire the knowledge of multiple access schemes.
3. Acquire the knowledge of mobile communications.

Unit - I

Introduction - Historical Developments - Sources & Signals - Basic Signal Processing operations in Digital Communications - Channels for Digital communications - Uncertainty, Information and Entropy - Source Coding Theorem - Huffman Coding - Discrete Memory less Channels - Mutual Information - Channel Capacity - Channel Coding Theorem - Differential Entropy and Mutual Information for Continuous Ensembles - Channel Capacity Theorem.

Unit - II

Sampling Theorem - Quadrature Sampling of Band Pass signals - Reconstruction of a Message Process from its Samples - Signal Distortion in Sampling - Practical Aspects of Sampling and Signal Recovery - Pulse Amplitude Modulation - Time Division Multiplexing.

Unit - III

Pulse Code Modulation - Channel Noise and Error Probability - Quantization noise and Signal to noise ratio - Robust Quantization - Differential Pulse code Modulation - Delta Modulation - Coding Speech at Low Bit Rates - Applications - Discrete PAM Signals - Power Spectra of Discrete PAM Signals – Inter symbol Interference - Nyquist's Criterion for Distortion less Baseband Binary Transmission - Correlative Coding - Eye Pattern - Baseband M-ary PAM Systems - Adaptive Equalization for Data Transmission.

Unit - IV

Digital Modulation Formats - Coherent Binary Modulation Techniques - Coherent Quadrature - Modulation Techniques - Noncoherent Binary Modulation Techniques - Comparison of Binary and Quaternary Modulation Techniques - M-ary Modulation Techniques - Power Spectra - Bandwidth Efficiency - M-ary Modulation Formats Viewed in the Light of the channels capacity theorem - Effect of Inter symbol Interference - Bit Versus Symbol

Error Probabilities - Synchronization –Applications.

Unit - V:

Introduction to Mobile Communications - Introduction to Cellular Systems - GSM Architecture - Layer Modeling - Transmission - Data Service - Multiple Access Scheme - Channel Coding Interleaving - Radio resource management - Mobility management – Communication management - Network management - TDMA Architecture - Transmission and Modulation - CDMA – Terms of CDMA - Call Processing - Hand over Procedures.

Book for Study:

1. Simon Haykin - Digital Communications, John Wiley & sons, 2005 (Unit – I-IV)
2. William C.Y. Lee - Mobile Cellular Telecommunication, McGraw Hill Publications, 1995 (Unit -V)

Program: B.Sc Computer Science

NME-1: PC Hardware Fundamentals Subject Code: 18UCS3NM1

Year: II Semester: III Credits: 2 Hrs/Week: 2

Educational Objective:

1. Understand the basic of computer systems.
2. Study the I/O devices of computer systems.
3. Understand the concept of floppy disk and hard disk devices.

Course Learning Outcomes:

1. Acquire the Knowledge of personal computer.
2. Ability to assemble the PC.
3. Acquire the Knowledge of PC installation and troubleshooting.

Unit - I

Evolution of PC – Specifications – PC System – I/O ports – Mother Board – BIOS-Bus Stand – SMPS – PC Memory Organization – Memory Package - Hard Disk Drive Sub-Assemblies – Hard Disk Controller.

Unit – II

I/O Devices: Key Board – Mouse – Scanner – Digitizer – Digital Camera – VGA Monitors – Display Controller – Display Adaptors - CD-Rom Disk & Drive – Sound Blaster – Video on the PC – Dot Matrix Printer – Plotter – Printer controller – Laser printer – Inkjet Printer.

Unit - III

Computer Installation & Maintenance – Room Preparation - Power supply – PC Installation – Post-Troubleshooting of Mother Board, Keyboard, Floppy/Hard Disk Devices & Printers – Diagnostic Software's – Data Security.

Book for Study:

1. D. Balasubaramanian – Computer Installation and Service – Tata McGraw Hill.

Book for Reference:

1. Peter Norton – Inside the PC – Prentice Hall of India.

Open Choice Elective

NME-2: Maintenance of Domestic Appliances Subject Code: 18UEC4NM2

Year: II Semester: IV Credits: 2 Hrs/Week: 2

Educational Objective:

1. Understand the basic of wiring systems.
2. Understand the concept of DC and AC.
3. Understand the concept of audio and video systems.

Course Learning Outcomes:

1. Ability to identify AC and DC sources
2. Acquire the knowledge of earthing system.
2. Acquire the knowledge of indicating system.
3. Acquire the knowledge of Audio and Video Systems.

Unit – I Basics of DC, AC and Wiring Systems

Sources of DC and AC - Introduction to power distribution system Symbols for electrical installations – Electrical accessories: Switches – Wires – Cables – Holders – Electrical lighting circuits – Protection circuits: Fuse – Fuse rating – Earthing system – Magnetic circuit breakers.

Unit – II Indicating System

DC bell – AC bell – Buzzer – Two tone chime- Design and construction of bell circuits – Bell circuits with indicating system – Fire alarm system: Block diagram – Detectors – Manipulating circuit using SCR – Water level indicator: Block diagram – Level detectors.

Unit – III Domestic Appliances

Audio and Video Systems; Closed circuit Television (Basics) - Electronic clock – Grinder – Mixing machine – Washing machine – Electric oven – Microwave oven – Stabilizer – Refrigerator – Iron Box – Electric Fan - Air cooler – Air conditioner – Mobile phone – UPS.

Books for Study:

1. P.P.Gupta, “Electrical Equipments”, Dhanpat Rai & Sons, Second Edition, 1993.
2. R.G.Gupta, “Audio and Video systems”, TMH Publishing Ltd, Eighth Edition, 2000.
3. Robert L. Goodman, “Maintaining & Repairing Video Cassette Recorders”, BPB Publications, First Edition, 1984.
4. R.C.Vijay, “Servicing Cassette Recorders and Two-in-one”, BPB Publications, Second Edition, 1990.

Books for Reference:

1. Ru.Van Wesel, Gordon J.King, “Video Hand Book”, Newness Technical Books, Second Edition, 1983.

Program: B.Sc Electronics and Communication System

Course title: **PROJECT WORK** Subject Code: 18UEC6CPR

Year: III Semester: VI Credits: 4

Educational Objective:

- To acquire basic knowledge of Electronics components and soldering techniques for electronics circuit design.
- To acquire skill and knowledge of current information, technological tools and techniques specific to the selected project field.
- To develop Electronic Hardware working model suitable for real practical environment.

Course Learning Outcomes:

- Understand the project characteristics and various stages of a project.
- Demonstrate a sound technical knowledge of their selected project topic.
- Develop Electronic Hardware working model suitable for real time applications.

Develop Electronic Hardware working model suitable for real practical environment by implementing the theoretical and practical knowledge gained through the curriculum.