G. VENKATASWAMY NAIDU COLLEGE (AUTONOMOUS)
Reaccredited with 'A' Grade by NAAC
Affiliated to Manonmaniam Sundaranar University, Tirunelveli, Tamil Nadu, India
KOVILPATTI - 628502.

CURRICULUM FOR
B.Sc. ELECTRONICS PROGRAMME
(for those who joined from the Academic year 2023-2024 and onwards)
(under Choice Based Credit System & Outcome Based Education Pattern)

U23EL 0

G.Venkataswamy Naidu College (Autonomous), Kovilpatti-628501
(Re - Accredited With "A" Grade By NAAC)
Department Of Electronics

Vision:

➢ To enrich our students with technical skills in electronics to meet the global challenges.

Mission:

➢ To equip the students compatible with recent trends in Electronic industries.

➢ To educate the students with strong foundations to enable them for continuing education.

Programme Outcomes - (PO) (Aligned with Graduate Attributes)

At the completion of the Undergraduate Programme, the student will be able to accomplish the following outcomes:

PO1	Ability to apply the knowledge of mathematics & technology in solving problems and conduct Electronics experiments to analyze and interpret data.
PO2	Identify, formulate and analyze various aspects of circuit designing in Electronics.
PO3	Build the capacity to rectify the problems in design and manage Electronic systems.
PO4	Ability to use techniques, skills and modern technological and scientific software tools for professional practices.
PO5	Ability to communicate effectively in order to provide solutions for the existing problems and propose electronic system designs.
PO6	Work as a team to identify problems in the areas of communication and embedded systems and provide efficient solutions using modern electronics practices.
PO7	Recognize the need for change and engage students in lifelong learning.

Programme Educational Objectives (PEOs)

The objectives of this Programme is to equip/prepare the students

PEO1	Students acquire an in depth understanding with sound background in the field of Electronics and designing new products and develop novel technology, cost effective and socially acceptable solutions for the welfare of the society.
PEO2	To inculcate in students a desire to be innovative and passionate about excelling in the field of Electronics and transform them to pursue higher studies in the subject.
PEO3	To develop managerial and soft skills so that they become confident and competent enough to take challenging responsibilities and leadership roles in the industry & corporate to prove themselves.

Programme Specific Outcome:

PSO1   Design, implement and test Electronics and Communication systems using analytical knowledge with the available modern hardware and software tools.

PSO2   Develop the skills of students in problem solving techniques and asses the social and environmental issues by embedding the ethics and manage different projects in multidisciplinary areas.

PSO3   Ability to make use of acquired technical knowledge for successful career and qualify for the competitive examinations at the National and Global levels.

Graduates Attributes in B.Sc., Electronics

Graduates Attributes (GAs) form a set of individually assessable outcomes that are the components indicative of the graduate's potential to acquire competence to practice at the appropriate level. The Graduate Attributes of B.Sc. Electronics are listed below:

GA1 Scholarship of Knowledge: Acquire in-depth knowledge of electronics discipline, including wider and global perspective, with an ability to discriminate, evaluate, analyze and synthesize existing and new knowledge.

GA2 Critical Thinking: Provide technological input by focusing on the professional skills and widen their ability through the practical experiments on recent electronics advances and induce their critical and creative skills.

GA3 Problem Solving: Create stronger platform by providing original, conceptual and scientific electronic tools and there by arrive at a feasible optimal solutions in the core areas of expertise to design and manage electronic systems.

GA4 Usage of modern tools: Educate students with the appropriate scientific and technological resources such as Electronic Computer-Aided Design tools, Arduino IDE, etc., to understand, analyse, evaluate and create modern gadgets to solve complex activities in the field of electronics.

GA5 Communication: Build the confidence level of students by creating a productive learning environment to communicate with the society at large, comprehend and design necessary activities for the effective presentation and give/receive accurate information and instructions in the field of Electronics.

GA6 Collaborative and Multidisciplinary work: Build the confidence level of the students by imbibing the moral and societal responsibilities by involving them in group projects and mould them into responsible citizens to create the new inventions in Electronics.

GA7 Ethical Practices and Life-long learning: Recognize the need for, and build the ability to create the life-long learning environment and integrate the professional and intellectual skills, ethics of research and research outcomes on professional practices in the field of Electronics, to contribute to the community for the sustainable development of the society.

G. VENKATASWAMY NAIDU COLLEGE (AUTONOMOUS), KOVILPATTI
Programme Structure for B.Sc., Electronics
(For those admitted from the academic year 2023-24 and onwards)

Category	Course Type	Course Code	Course Title	Contact Hours	Exam Hours	CIA	ESE	Total Marks	Credit
						Marks			
Semester - I									
PART-I	Language	U23TA1L1	Tamil– I	6	3	25	75	100	3
PART-II	English	U23EN1L1	English - I	6	3	25	75	100	3
PART-III	Core-1	U23EL101	Electronics Devices	5	3	25	75	100	5
	Core-2	U23EL1P1	Electronics Devices Lab	3	3	40	60	100	2
	Elective Generic -1	U23EL1A1	C Programming	4	3	25	75	100	3
	Elective Generic – Lab	U23EL1AP	Programming in C Lab	2	3	40	60	100	1
PART-IV	Skill Enhancement Courses SEC1 (NME – I)	U23EL1S1	Computer Hardware	2	-	50	-	50	2
	Foundation Course FC	U23ELFC1	Fundamental of Electronics	2	-	50	-	50	2
TOTAL				30				700	21
Semester - II									
PART-I	Language	U23TA2L2	Tamil– II	6	3	25	75	100	3
PART-II	English	U23EN2L2	English - II	6	3	25	75	100	3
PART-III	Core-3	U23EL202	Digital Electronics	5	3	25	75	100	5
	Core-4	U23EL2P2	Digital Electronics Lab	3	3	40	60	100	2
	Elective Generic -2	U23EL2A2	Python Programming	4	3	25	75	100	3
	Elective Generic – Lab	U23EL2AP	Python Programming – Lab	2	3	40	60	100	1
	Comprehension – 1 (Self Study Course- Online Exam)	U23EL2C1	Comprehension in Electronics – I	-	1	-	50	50	1
PART-IV	Skill Enhancement Courses SEC2 (NME – II)	U23EL2S2	Consumer Electronics	2	-	50	-	50	2
	Skill Enhancement Courses (DS) SEC3	U23EL2S3	MS Office Automation	2	2	-	50	50	2
TOTAL				30				750	22

U23EL 4

I SEMESTER

Part-III B.Sc. Electronics / Semester – I / Core-1:

ELECTRONICDEVICES (U23EL101)

Lecture Hours	**: 70**	**Tutorial Hours**	**: 05**
Practical Hours	**: -**	**No. of Credit**	**:05**
Contact Hours per Semester:75			
Contact hours per Week	**: 05**		
Internal Marks	**: 25**		
External Marks	**: 75**		
Total Marks	**: 100**		

Objectives of the course:

➢ Course provides a comprehensive idea about the Semiconductor physics.

➢ This course also examines the knowledge and fundamentals of Electronic devices.

➢ The student should be able to understand the characteristics, performance and applications of semiconductor devices.

➢ The goal is to develop a solid understanding of the device concepts that will be needed in a broad range of areas from semiconductor to circuit design.

Course Learning Outcomes (for mapping with POs and PSOs)

On successful completion of course, the leaner should be able to

CO1   Explain the structure of the basic electronics devices

CO2   Understand the characteristics and operations of transistors

CO3   Understand the characteristics and operations of FET and UJT

CO4   Understand the characteristics and operations of SCR & MOSFET

CO5   Understand the characteristics and operations of Opto Electronics Devices

CO-PO-PSO Mapping (Course Articulation Matrix)

POs,PSOs / COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
CO1	2	2	3	3	1	2	3	2	2	3
CO2	2	3	3	3	3	3	2	2	3	3
CO3	3	3	2	3	2	3	2	3	3	2
CO4	3	3	3	3	2	3	3	3	3	3
CO5	3	3	3	2	2	2	3	3	3	3
Total Contribution of COs to POs, PSOs	13	14	14	14	10	13	13	13	14	14
Weighted Percentage of COs Contribution to POs, PSOs	86.7	93.3	93.3	93.3	66.7	86.7	86.7	86.7	93.3	93.3

0-No Correlation;   1-Weak;   2-Moderate;   3-Strong

COURSE CONTENT

UNIT-I: Semiconductor and Diodes (L-14hrs; T-1hrs)

Semiconductor-Definition, classification, intrinsic and extrinsic N type & p type – drift current &diffusion current diodes – PN junction diode – forward and reverse bias characteristics.

Zener diode construction & working Principle-characteristics - zener break down-avalanche break down- zener Diode as a voltage regulator – its applications

UNIT-II: Bipolar Junction Transistor (L-14 hrs; T-1hrs)

Transistor – NPN and PNP transistor – operation-transistor as an amplifier- transistor as a switch – transistor biasing – fixed bias, collector base bias, self-bias – CB,CE,CC configurations – characteristics - comparison between three configurations in terms of input impedance, output impedance, current gain, voltage gain

UNIT-III: FET and UJT (L-14hrs; T-1hrs)

Field Effect Transistor – Classification of FET - construction & working principle of JFET – difference Between JFET and BJT – Construction and operation of JFET – n-channel and p-channel JFET - characteristics of JFET – Applications.

Uni Junction Transistor – construction – equivalent circuit – operation – Characteristics – UJT as a relaxation oscillator

UNIT-IV: SCR & MOSFET (L-14hrs; T-1hrs)

SCR – introduction – working – VI-characteristics -comparison between SCR and transistor – SCR as a switch – SCR Applications.

MOSFET – types & characteristics of N channel MOSFET and P channel MOSFET- Characteristics of enhancement and depletion mode MOSFET

UNIT- V: Opto Electronic Devices (L-14hrs; T-1hrs)

Classification of opto electronic devices – symbols, Characteristics, working of LDR, LED, 7 segment LED and LCD– Photo transistor – Photodiode.

Tutorial Section:

Unit	Topic	Hours
I	Biasing of a PN junction diode	1
II	Characteristics of NPN Transistor	1
III	Characteristics of UJT	1
IV	Characteristics of SCR	1
V	Characteristics of LDR	1

Text Books

1. S.Salivahanan, N.Suresh Kumar, A. Vallavaraj "**ElectronicDevices And Circuits**", 2nd Edition, Tata McGrawHill

2. R.S.Sedha "**A Text Book of Applied Electronics**", Multicolor illustrative edition S.Chand& Company Ltd

Reference Books

1. V.K.Mehta "**Principle of Electronics**", 10th Revised Edition, Tata McGrawHill

2. J.B.Gupta"**Electronic Devices and Circuits**," 5 Edition, S k Kataria & sons

3. Millman, Jacob "**Electronic Devices and Circuits**,"Tata McGrawHill, 2016

Websites for Reference

1. https://www.electronics-tutorials.ws/

2. https://www.electronicshub.org/tutorials/

3. https://www.tutorialspoint.com/basic_electronics/index.htm

4. https://www.electronics-notes.com

Part-III B.Sc. Electronics / Semester – I / Core-2: Electronic Devices Lab (U23EL1P1)

Lecture Hours	**: -**	**Tutorial Hours**	**: -**
Practical Hours	**: 45**	**No. of Credit**	**:02**
Contact Hours per Semester: 45			
Contact hours per Week	**: 03**		
Internal Marks	**: 40**		
External Marks	**: 60**		
Total Marks	**: 100**		

Objectives of the course:

➢ To understand the characteristics of various semiconductor devices

➢ To construct circuits using semiconductor devices

Course Learning Outcomes (for mapping with POs and PSOs)

On successful completion of course, the leaner should be able to

CO1 Learn and recognize the electronics components and examine the VI characteristics of semiconductor devices.

CO2 Calculate various device parameters values from their iv characteristics

CO3 Extract important information from the graphical plots of device characteristics

CO4 Interpret the experimental data to understand the behavior of the device

CO5 Implement the circuits using the concepts of semiconductor devices

CO-PO-PSO Mapping (Course Articulation Matrix)

POs,PSOs / COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
CO1	2	2	3	3	2	2	3	2	2	3
CO2	3	3	2	3	3	3	2	3	3	2
CO3	2	3	2	3	2	2	2	2	3	2
CO4	3	2	3	3	3	3	3	3	2	3
CO5	3	2	3	2	3	2	3	3	2	3
Total Contribution of COs to POs, PSOs	13	12	13	14	13	12	13	13	12	13
Weighted Percentage of COs Contribution to POs, PSOs	86.7	80	86.7	93.3	86.7	80	86.7	86.7	80	86.7

0-No Correlation;   **1-Weak;**   **2-Moderate;**   **3-Strong**

List of Experiments

(Minimum 10 Experiments to be carried out)

1. Study V-I characteristics of p-n junction diode in forward and reverse bias configurations.

2. Study V-I characteristics of Zener diodes in forward and reverse bias configurations.

3. Find the Band Gap Energy of Silicon & Germanium Diode

4. Study input and output V-I characteristics of common emitter transistor configurations.

5. Study input and output V-I characteristics of common base transistor configurations.

6. Study input and output V-I characteristics of common Collector transistor configurations.

7. Study the V-I Characteristics of the UJT.

8. Study the V-I Characteristics of MOSFET

9. Study the Self Bias configuration for transistor.

10. Study the Fixed Bias configuration for transistor.

11. Study the V-I characteristics of JFET.

12. Study the Characteristics of LDR.

13. Construct the Voltage regulator circuit using Zener diode.

14. Study the Characteristics of Photo Diode.

15. Study the Characteristics of Photo Transistor.

Part-III B.Sc. Electronics / Semester – I / Elective Generic- 1:
C PROGRAMMING (U23EL1A1)

Lecture Hours	: 55	**Tutorial Hours**	: 05
Practical Hours	: -	**No. of Credit**	: 03
Contact Hours per Semester: 60			
Contact hours per Week	: 04		
Internal Marks	: 25		
External Marks	: 75		
Total Marks	: 100		

Objectives of the course:

➢ This course provides the basic Structure of the C-language,

➢ To declaration and usage of variables operators, conditional, branching, iterative statements and recursion arrays, string and functions (modular programming)

➢ The Pointers to access arrays, strings and functions, input/output statement and library functions (math and string related functions).

Course Learning Outcomes (for mapping with POs and PSOs)

On successful completion of course, the leaner should be able to

CO1   Understand the concept of data types

CO2   Understand the concept of arrays, pointers and structures

CO3   Use concept of modular programming by writing functions and using them to form a complete program

CO4   Implement conditional branching, iteration and recursion

CO5   Develop algorithms for arithmetic and logical problems

CO-PO-PSO Mapping (Course Articulation Matrix)

POs, PSOs / COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
CO1	2	1	1	3	2	2	2	2	1	2
CO2	2	2	3	2	2	2	3	2	2	3
CO3	3	2	2	2	3	2	2	3	2	2
CO4	2	3	2	3	2	2	2	2	3	2
CO5	2	3	3	2	2	2	1	2	3	3
Total Contribution of COs to POs, PSOs	11	11	11	12	11	10	10	11	11	12
Weighted Percentage of COs Contribution to POs, PSOs	73.3	73.3	73.3	80	73.3	66.7	66.7	73.3	73.3	80

0-No Correlation;   1-Weak;   2-Moderate;   3-Strong

COURSE CONTENT

Unit-I: Data types & Operators (L-11hrs; T-1hr)

Introduction - Data types- Constant - variables - Assignment of variables - initialization. Operators: arithmetic assignment, relational, logical, bitwise, conditional, compound assignment unary and other operators - Order of precedence and associativity of operations.

Unit-II: Program Control Constructs (L-11hrs; T-1 hr)

Program Control Constructs : Conditional & multiple branching iteration, jump constructs- Console - input and output : console I/0 functions – getch, putch, getchar, putchar, gets, puts, scan and print functions - formatted I/0 . Functions: definition - prototype - recursion - simple programs.

Unit-III: Arrays (L-11hrs; T-1hr)

Arrays: Initializations — multidimensional arrays — dynamic arrays, pointers: declaration and initialization of pointer variables pointers and functions — pointers and arrays — pointers and strings — arrays of pointers and pointer to an array - command line arguments dynamic memory allocation.

Unit- IV: Structures & unions (L-11hrs; T-1hr)

Structures & unions : Definition a structure-Declaring structure variables - structure Initialization- array of structures - array of pointers structures- pointer and structures - structures to functions - unions-bit fields.

Unit –V: Files (L-11hrs; T-1hr)

Files: File structure - opening & closing of files - characters functions- line I/O functions- Formatted I/O functions - Block I/O functions, Preprocessor : macro substitution ,file inclusion, compiler control Directives.

Tutorial Section:

Unit	Topic	Hours
I	Order of precedence and associativity of operations	1
II	Conditional & multiple branching iteration	1
III	multidimensional arrays	1
IV	pointer and structures	1
V	opening & closing of files	1

Text Book:

1. E.Balagurusamy, **"Programming in ANSI C"**5th Edition, Tata McGraw Hill, 2010.

Reference Books:

1. Byron s. Gottfrioed, **"Schaum's outlines Programming with C"**2nd Edition, Tata McGraw – Hill publishing company Limited.

2. Herbert Schildt, **"The complete Reference C"**, 4thEdition, Tata McGraw-HillPublishing Company limited.

3. Asok N. Kamthane, **"Programming with ANSI and Turbo C"**, Pearson Educations.

Websites for Reference:

1. http://www.cprogrammingnotes.com/

2. https://www.eskimo.com/~scs/cclass/notes/top.html

3. https://www.geeksforgeeks.org/c-programming-language/

Part-III B.Sc. Electronics / Semester – I / Elective Generic Lab: Programming in C Lab (U23EL1AP)

Lecture Hours	: -	**Tutorial Hours**	: -
Practical Hours	: 30	**No. of Credit**	: 01
Contact Hours per Semester: 30			
Contact hours per Week	: 02		
Internal Marks	: 40		
External Marks	: 60		
Total Marks	: 100		

Objectives of the course:

➢ The course is designed to provide an introduction to the c programming language.

➢ The focus of the course is to provide students with an introduction to programming, I/O and visualization using the c programming language.

Course Learning Outcomes (for mapping with POs and PSOs)

On successful completion of course, the leaner should be able to

CO1   Understand the concept of compiler and interpreter

CO2   Read, understand and trace the execution of programs written in c language

CO3   Implement programs with pointers and arrays, perform pointer arithmetic and use the pre-processor

CO4   Write programs that perform operations using derived data types

CO5   Develop confidence for self-education and ability for life-long learning needed for computer language

CO-PO-PSO Mapping (Course Articulation Matrix)

POs, PSOs / COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
CO1	2	1	2	2	2	2	3	2	1	2
CO2	2	2	3	2	3	2	2	2	2	3
CO3	2	2	2	2	2	2	2	2	2	2
CO4	3	3	2	2	2	3	3	3	3	2
CO5	2	3	3	2	1	2	2	2	3	3
Total Contribution of COs to POs, PSOs	11	11	12	10	10	11	12	11	11	12
Weighted Percentage of COs Contribution to POs, PSOs	73.3	73.3	80	66.7	66.7	73.3	80	73.3	73.3	80

0-No Correlation;   1-Weak;   2-Moderate;   3-Strong

LIST OF PRACTICALS

(Minimum 12 Experiments to be carried out)

1. Write a C program to find the largest among the three given numbers.

2. Write a C program to print the given FIVE digit number in reverse order.

3. Write a C program to print first 50 terms of Fibonacci sequence.

4. Write a C program to find the smallest number in the given set of N numbers

5. Write a C program to find the given word is palindrome or not

6. Write a C program to sort the given set of N numbers in ascending order.

7. Write a C program to find the addition and subtraction of the given two square matrices.

8. Write a C program to find the multiplication of the given two square Matrices.

9. Write a C program to check the given number is prime or not.

10. Write a program to calculate simple Interest and Compound Interest.

11. Write a C program to find the value of 13+23+53+………+253using do… while statement.

12. Write a C program to print the grade of a student using switch… case statement.

13. Write a C program for simple calculator using switch/case loop.

14. Write a C program to prepare EB Bill using if…else if ladder.

15. Write a C program to find factorial and GCD value using recursion.

16. Write a C program to arrange the names in alphabetical order using strcmp() function.

Part-IV B.Sc. Electronics/Semester – I / SKILL ENHANCEMENT COURSE 1: COMPUTERHARDWARE (U23EL1S1)

Lecture Hours	: 28	**Tutorial Hours**	: - 02
Practical Hours	: -	**No. of Credit**	: 02
Contact Hours per Semester: 30			
Contact hours per Week	: 02		
Internal Marks	: 50		
External Marks	: 00		
Total Marks	: 50		

Objectives of the course:

➢ To equip the students with basic understanding in Computer Hardware Technology and devices.

➢ A Student should be able to install and maintain Keyboard, Printer, Mouse, Monitor etc. along with the computer system.

➢ The student does will get to know how various peripherals communicate with central processing unit of the computers system and pattern their respective operations.

Course Learning Outcomes (for mapping with POs and PSOs)

On successful completion of course, the leaner should be able to

CO1   Get a clear idea about various Parts of a computer

CO2   Understanding the Concept of Parts of a computer

CO3   Use the Concepts to understand the function of   Computer Hardware

CO4   Analyze the Principles & working of every parts of the computer

CO5   Evaluate the Operation of Motherboard, Memory, I/O Devices & OS and diagnose the effect of Viruses

CO-PO-PSO Mapping (Course Articulation Matrix)

POs, PSOs / COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
CO1	1	2	3	3	1	2	3	2	2	3
CO2	2	3	3	3	3	3	2	2	3	3
CO3	3	2	2	2	2	3	2	3	2	2
CO4	2	3	2	3	2	3	3	2	3	2
CO5	3	3	3	2	2	2	3	3	3	3
Total Contribution of COs to POs, PSOs	11	13	13	13	10	13	13	12	13	13
Weighted Percentage of COs Contribution to POs, PSOs	73.3	86.7	86.7	86.7	66.7	86.7	86.7	80	86.7	86.7

0-No Correlation;   1-Weak;   2-Moderate;   3-Strong

COURSECONTENT

UNIT– I: MOTHER BOARD COMPONENTS (L-5hrs; T – 1hr)

Introduction: Hardware, Software and Firmware. Motherboard, IO and memory expansions lots, SMPS, Drives, front panel and rear panel connectors. Processors: Architecture and block diagram of multicore Processor, Features of new processor (Definition only)- Chipsets (Concepts only). Bus Standards: Overview and features of PCI, AGP, PCMCIA

UNIT–II: MEMORY STORAGE DEVICES (L-6hrs)

Primary Memory: Introduction-Main Memory, Cache memory– DDR2, DDR3and Direct RDRAM. Secondary Storage: Hard Disk – Construction – Working Principle Specification of IDE, Ultra ATA, Serial ATA; HDD Partition - Formatting.

Removable Storage: Pen drive, Memory cards Construction and reading & writing operations.

UNIT–III: I/ODEVICESANDINTERFACE (L-5hrs; T – 1hr)

Keyboard: Signals– operation of membrane and mechanical keyboards– troubleshooting; wireless Keyboard. Mouse: types, connectors, operation of Optical mouse and Troubleshooting.

Printers: Introduction – Types of printers- Dot Matrix, Inkjet Laser, MFP (Multi-Function Printer) and Thermal printer–Operation, Construction and Features-Troubleshooting. I/O Ports: Serial, Parallel, USB, Game Port and HDMI. Displays: Principles of LED, LCD and TFT Displays.

UNIT–IV: DESKTOP (L-6hrs)

Bios – Setup: Standard MOS setup, Advanced BIOS setup, Power management, advanced chipset features, PC Bios communication–upgrading BIOS, Flash BIOS-setup. POST: Definition – IPL hardware – POST Test sequence–beeps codes.

UNIT–V: DIAGNOSTICSOFTWAREANDVIRUSES (L-6Hrs)

Computer Viruses – Precautions –Anti-virus Software – identifying the signature of viruses –Firewalls and latest diagnostic software's.

Tutorial Section

Unit	Topic	Hours
I	Motherboard	1
III	Printers	1

Text Books:

1. B.Govindrajalu,"IBMPC and CLONES,- Hardware Troubleshooting and Maintenance", TataMcGraw-Hill Publishing Company Ltd,

2. D.Balasubramanian,"ComputerInstallationandServicing",TataMcGrawHill.

Reference books:

1. MarkMinasi,"The complete PC upgrade and Maintenance" BPB Publication.

2. Stephen J Bigelow,"Troubleshooting, Maintaining and Repairing PCs" Tata MC Graw Hill Publication

3. Scott Mueller,"Upgrading and repairing laptops" QUE Publication

Websites for references:

1. https://www.watelectronics.com/different-types-of-sensors-with-applications/

2. https://www.educba.com/applications-of-sensors/

3. https://www.instructables.com/Building-a-computer-from-parts/?amp_page=true

4. https://baictchs09.wordpress.com/2018/10/21/installation-of-hardware-components-and-other-peripherals

Part-IV B.Sc. Electronics / Semester – I / FOUNDATION COURSE: FUNDAMENTAL OF ELECTRONICS (U23ELFC1)

Lecture Hours	: 28	**Tutorial Hours**	: - 02
Practical Hours	: -	**No. of Credit**	: 02
Contact Hours per Semester: 30			
Contact hours per Week	: 02		
Internal Marks	: 50		
External Marks	: --		
Total Marks	: 50		

Objectives of the course:

➢ This Course provides a comprehensive idea about the basic concepts of Electronics.

➢ The student should be able to understand the characteristics, performance and applications of semiconductor physics.

➢ The goal is to develop a solid understanding of the basic concepts of electronics that will be needed in a broad range of areas from semiconductor to circuit design.

Course Learning Outcomes (for mapping with POs and PSOs)

On successful completion of course, the leaner should be able to

CO1   Identify the basics of passive and active components

CO2   Understand the concepts of semiconductor devices

CO3   Apply the fundamental principle of semiconductor physics to study the parameters of semiconductor devices

CO4   Analyze the functions of electrical and electronic components

CO5   Evaluate the principle of operations of passive and active components

CO-PO-PSO Mapping (Course Articulation Matrix)

POs, PSOs COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
CO1	2	2	3	3	1	2	3	2	2	3
CO2	2	3	3	3	3	3	2	2	3	3
CO3	3	3	2	3	2	3	2	3	3	2
CO4	3	3	3	3	2	3	3	3	3	3
CO5	3	3	3	2	2	2	3	3	3	3
Total Contribution of COs to POs, PSOs	13	14	14	14	10	13	13	13	14	14
Weighted Percentage of COs Contribution to POs, PSOs	86.7	93.3	93.3	93.3	66.7	86.7	86.7	86.7	93.3	93.3

0-No Correlation;   1-Weak;   2-Moderate;   3-Strong

COURSECONTENT

UNIT- I: Electrical Element and Circuits (L-6 hrs)

Definitions: Current – Potential – Potential Difference – Power – Energy

Electric Circuit – Types of Circuit – Direct current and Alternating Current – Fundamental Concepts of AC – Comparison of AC and DC – Network Terminology - Ohm's law and its limitations – Kirchhoff's laws

UNIT- II: Resistors (L-5hrs;T – 1hr)

Active Components and Passive Components– Resistors – Resistor Color code –Factors affecting Resistance – Types of Resistors – Fixed Resistors -Variable resistors - LDR – Resistors in Series and Parallel

UNIT- III: Capacitors (L-5hrs; T– 1hr)

Capacitors – Introduction – Construction and working – Factors affecting Capacitance –Types of Capacitors – Fixed Capacitors – Non Electrolytic Capacitor – Electrolytic Capacitor –Variable Capacitors – Capacitors in Series and Parallel – Applications

UNIT- IV: Inductors and Transformers (L-6hrs)

Inductors -Introduction – working – Factors affecting Inductance –Types – Fixed Inductors - Variable Inductors - Self Inductance and Mutual Inductance – Difference between Self & Mutual inductance – Applications Transformers – working principle – Types – Applications.

UNIT- V: Semiconductor Basics (L-6 hrs)

Atomic structure– Bohr atom model – energy levels – energy bands –important energy band in solids- classification of solids and energy bands – Basics of Semiconductor.

Tutorial Section

Unit	Topic	Hours
I	Ohms Law	1
III	Resistor Color code	1

Text Books

1) Study Materials prepared by the Department

Reference Books

1) V.K.Mehta "**Principle of Electronics"**, 10th Revised Edition, Tata McGrawHill

2) R.S.Sedha "**A Text Book of Applied Electronics"**, Multicolor illustrative edition S.Chand& Company Ltd

Websites for Reference

1) https://www.electronics-tutorials.ws/
2) https://www.electronicshub.org/tutorials/
3) https://www.tutorialspoint.com/basic_electronics/index.htm
4) https://www.electronics-notes.com/
5) https://byjus.com/jee/transformer/

II SEMESTER

Part-III B.Sc. Electronics / Semester – II / Core-3: DIGITAL ELECTRONICS (U23EL202)

Lecture Hours	: 70	**Tutorial Hours**	: 05
Practical Hours	: -	**No. of Credit**	: 5
Contact Hours per Semester	: 75		
Contact hours per Week	: 05		
Internal Marks	: 25		
External Marks	: 75		
Total Marks	: 100		

Objectives of the course:

➢ The design of the subject is to impart the knowledge about code conversion, Boolean algebra, logic gates.

➢ To bring out a clear understanding between combinational and sequential logic circuits.

➢ The Students can get fundamental knowledge on memory devices.

Course Learning Outcomes (for mapping with POs and PSOs):

On successful completion of course, the leaner should be able to

CO1   Identify the basic concepts of digital electronic circuits

CO2   Understand the number systems, codes, logic gates, Boolean algebra, combinational, sequential circuits and different memory storage types

CO3   Apply the concept of minimization techniques for designing a simplified logic circuit and memory devices

CO4   Analyze the principle of various digital circuits

CO5   Evaluate the functions of various digital circuits

CO-PO-PSO Mapping (Course Articulation Matrix)

POs, PSOs COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
CO1	2	2	2	3	2	2	3	1	2	2
CO2	1	3	3	3	2	2	3	2	3	3
CO3	3	2	3	3	2	2	3	3	2	3
CO4	2	3	2	2	2	2	2	2	3	2
CO5	2	3	2	2	2	2	2	2	3	2
Total Contribution of COs to POs, PSOs	10	13	12	13	10	10	13	10	13	12
Weighted Percentage of COs Contribution to POs, PSOs	66.7	86.7	80	86.7	66.7	66.7	86.7	66.7	86.7	80

0-No Correlation;   1-Weak;   2-Moderate;   3-Strong

COURSE CONTENT

UNIT- I: Number System and Codes(L-14hrs;T-1 hr)

Number systems: Decimal, Binary, Octal and Hexa Decimal Numbers - Conversion -Floating Point Representation - Binary Addition, Subtraction and Multiplication - 1's and 2's Complements - Binary Coded Decimal (BCD). Weighted Codes and Non-weighted Codes: Excess Three code, Grey Code, ASCII Codes, and EBCDIC Codes.

UNIT- II: Boolean algebra And Logic Gates (L-14hrs; T-1hr)

Boolean logic operations: Basic Laws of Boolean algebra – De-Morgans Theorem -Sum of Products and Products of Sums – Karnaugh map. – Three variables and four variables.
Logic Gates: OR, AND, NOT, NAND, NOR, EX-OR and EX-NOR Gates

UNIT – III: Combinational Logic Circuits (L-14hrs; T-1hr)

Half Adder - Full Adder - Half Subtractor - Full Subtractor - Parallel Binary Adder /Subtractor - Multiplexer - Demultiplexer - Decoders - Encoders - Code Conversion - Parity Generators / Checkers.

UNIT- IV: Sequential Logic Circuits (L-14hrs; T-1 hr)

Flip Flops: RS, Clocked RS, D and T Flip Flops. Shift Registers: Serial in Serial out Shift registers.
Counters: Synchronous Counter, Asynchronous Counters - Ring Counters.

U23EL 22

UNIT- V: Memory Devices (L-14hrs; T-1hr)

Classification of Memory: Volatile & Non Volatile Memory. Non Volatile Memory: ROM, PROM, EPROM, EEPROM. Volatile Memory: RAM - Static RAM, Dynamic RAM. Programmable Logic Devices: Programmable Logic Array (PLA) - Programmable Array Logic (PAL) - Field Programmable Gate Arrays (FPGA).

Tutorial Section

Unit	Topic	Hours
I	Grey Code, ASCII Codes, EBCDIC Codes	1
II	Karnaugh map	1
III	Parity Generators / Checkers	1
IV	Shift Registers	1
V	Field Programmable Gate Arrays (FPGA)	1

Text Books

1. S.Salivahanan, S.Arivazhagan "Digital Circuits And Design", 4th edition, Vikas Publishing House Pvt Ltd,2012.
2. P.Raja, "Digial Electronics", Scitech Publications (India) Pvt Ltd,2010.

Reference Books

1. Malvino& Leech, "Digital Principles And Applications", 7th edition Tata McGraw Hill
2. Thomas L.Floyd "Digital Fundamentals", Prentice Hall
3. M.Morris Mano "Digital Design" PHI 2005

Websites for Reference:

1. https://www.tutorialspoint.com/digital_circuits/index.htm
2. https://www.javatpoint.com/digital-electronics
3. https://www.electronics-tutorials.ws/
4. https://www.electronicshub.org/tutorials/

Part-III B.Sc. Electronics / Semester – II / Core 4:
DIGITAL ELECTRONICS LAB (U23EL2P2)

Lecture Hours	: -	**Tutorial Hours**	: -
Practical Hours	: 45	**No. of Credit**	: 02
Contact Hours per Semester: 45			
Contact hours per Week	: 3		
Internal Marks	: 40		
External Marks	: 60		
Total Marks	: 100		

Objectives of the course:

➢ To get Hands on experience in Digital electronic circuits

➢ To get clear idea about shift registers and counters

Course Learning Outcomes (for mapping with POs and PSOs)

On successful completion of course, the leaner should be able to

CO1   Acquire knowledge on logic gates, combinational and sequential circuits

CO2   Apply the minimization techniques to design different logic circuit

CO3   Analyze and prepare the report on the experiments carried out

CO4   Verify the output of the digital experiments

CO5   Design application oriented various digital circuits

CO-PO-PSO Mapping (Course Articulation Matrix)

POs, PSOs \ COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
CO1	2	1	3	2	2	3	2	2	1	3
CO2	3	1	3	3	2	3	2	3	1	3
CO3	2	3	3	3	2	3	1	2	3	3
CO4	3	2	2	2	2	2	2	3	2	2
CO5	3	2	2	2	2	2	2	2	2	2
Total Contribution of COs to POs, PSOs	13	9	13	12	10	13	9	12	9	13
Weighted Percentage of COs Contribution to POs,PSOs	86.7	60	86.7	80	66.7	86.7	60	80	60	86.7

0-No Correlation;   **1-Weak;**   **2-Moderate;**   **3-Strong**

List of Experiments

 (Minimum 12 Experiments to be carried out)

1. Design and verify Basic Gates.

2. Design and verify Basic Gates using NAND Gate.

3. Design and verify neither Basic Gates using NOR Gate.

4. Convert a Boolean expression into logic gate circuit and assemble it using logic gate ICs.

5. Verify the De-Morgan's Theorem

6. Design the logic circuit for Half Adder and Full Adder.

7. Design the logic circuit for Half Subtractor and Full Subtractor.

8. Design and Verify the Code conversion.

9. Design and Verify the Multiplexer.

10. Design and Verify the De-Multiplexer.

11. Design and Verify the Encoder.

12. Design and Verify the Decoder.

13. Study the various types of Flip-Flop.

14. Study the various types of Shift registers.

15. Design a counter using D/T/JK Flip-Flop.

16. Construct 4-bit Binary Adder circuit.

Part-III B.Sc. Electronics / Semester – II / Elective Generic-2:
PYTHON PROGRAMMING (U23EL2A2)

Lecture Hours	: 55	**Tutorial Hours**	: - 5
Practical Hours	: -	**No. of Credit**	: 03
Contact Hours per Semester: 60			
Contact hours per Week	: 04		
Internal Marks	: 25		
External Marks	: 75		
Total Marks	: 100		

Objectives of the course:

➢ The course is designed to provide an introduction to the python programming language.

➢ The focus of the course is to provide students with an introduction to programming, I/O and visualization using the python programming language.

Course Learning Outcomes (for mapping with POs and PSOs)

On successful completion of course, the leaner should be able to

CO1   Understand the basic concept of the python programming

CO2   Understand and analyze the concepts of the file I/O using python   programming

CO3   Develop a skill to implement python programming

CO4   Develop a skill to implement string operations and tuples in python programming language

CO5   Create and execute the python programs

CO-PO-PSO Mapping (Course Articulation Matrix)

POs, PSOs / COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
CO1	2	2	2	2	2	1	1	2	2	2
CO2	2	2	1	1	2	2	2	2	2	2
CO3	2	2	2	2	2	1	2	2	2	2
CO4	3	2	2	2	2	3	2	3	2	2
CO5	2	2	2	2	2	2	2	2	2	2
Total Contribution of COs to POs, PSOs	11	10	9	9	10	9	9	11	10	10
Weighted Percentage of COs Contribution to POs, PSOs	73.3	66.7	60	60	66.7	60	60	73.3	66.7	66.7

0-No Correlation;   1-Weak;   2-Moderate;   3-Strong

COURSE CONTENT

UNIT – I: Getting started with Python (L-11hrs; T-1hr)

Introduction – advantages of Python & disadvantage –Features of Python - installing python-Working with modes of Python (Interactive & Script mode) – simple program to print ("Hello world") - Analyzing a problem, -Designing algorithms and representation of algorithm using flowchart.

UNIT – II: Python Programming Fundamental (L-11hrs;T-1hr)

Variables & assignments(Creating a variables, Multiple assignment) - Data types of Python (Numbers- None - string, list, tuples- dictionary) – Tokens- Identifiers: valid identifiers and invalid identifiers - Keywords- Literals: string literals, Numeric literals- Boolean literals- special literal-s Delimiters - Operators & types: Arithmetic operators, Relational Operators, Logical Operators, Membership operators , Assignment Operators. Identity Operators- Expression (Evaluating expression) - operators and their precedence- mutable and immutable in Python –user input – working with function (user defined, inbuilt function, functions of some standard modules)

UNIT – III: Conditional and Iterative Statement (L-11hrs; T-1hr)

Types of statements - Conditional statements: if, if-else, if-elif-else, Nested if statement - iterative / looping statement: for loop, while loop: Jump statement: continue, break, pass, null statement – range function -Simple programs using statements

UNIT – IV: Manipulation of Sequences and Working with Dictionaries

(L-11hrs;T-1hr)

Strings in Python : Traversal a strings – string Operators –strings slices- String functions and methods – Lists in Python : creating and accessing list – list operators – working with list – list functions and methods – Tuples in Python : creating and accessing tuples – Tuple operators - working with tuples – tuple functions with methods.

Dictionaries: creation, accessing and characteristics of dictionaries- working with dictionary – dictionary functions with methods – simple program for using types of sequence and dictionaries

UNIT – V: Applications of Python (L-11hrs; T-1 hr)

File handling : Data files(text file, binary file)– opening and closing file –reading with writing files – Data visualization with Pyplot: using pyplot of matplotlib library – installing and importing matplotlib- working with pyplot methods – creating charts with matplotlib library's pyplot interface : Line chart , Bar chart and Pie chart

Tutorial Section

Unit	Topic	Hours
I	Designing algorithms	1
II	Operators	1
III	Conditional statements	1
IV	dictionary functions with methods	1
V	creating charts	1

Text Books

1. Jake Vander Plas, Python Data Science Handbook - Essential Tools for Working with   Data, O'Reily Media, Inc, 2016
2. Zhang.Y, An Introduction to Python and Computer Programming, Springer Publications,2016

Reference Books

1. Joel Grus, Data Science from Scratch First Principles with Python, O'Reilly Media,2016.
2. T.R.Padmanabhan, Programming with Python, Springer Publications,2016
3. Wes Mckinney. Python for Data Analysis. O'Reilly Media, 2013.
4. Grus, Joel. Data Science from Scratch: First Principles with Python. O'Reilly Media, 2015.

Web References:

1. https://stanfordpython.com/#overview.

2. https://cognitiveclass.ai/courses/python-for-data-science

3. https://www.edureka.co/blog/learn-python-for-data-science

4. https://www.w3schools.com/python/default.asp

Part-III B.Sc. Electronics / Semester – II / Elective Generic-2: PYTHON PROGRAMMING Lab (U23EL2AP)

Lecture Hours	: -	**Tutorial Hours**	: -
Practical Hours	: 30	**No. of Credit**	: 01
Contact Hours per Semester: 30			
Contact hours per Week	: 02		
Internal Marks	: 40		
External Marks	: 60		
Total Marks	: 100		

Objectives of the course:

➢ This course focuses on developing the python programming to do a variety of programming tasks where the students are encouraged to develop application in various field.

➢ At the end of the course the student will be developing adequate skills in programming and will be known to understand the implementation of various applications using python

Course Learning Outcomes (for mapping with POs and PSOs)

On successful completion of course, the leaner should be able to

CO1   Acquire practical knowledge of working with python

CO2   Write, test and debug python programs

CO3   Implement conditionals and loops for python programs

CO4   Use functions and represent compound data using lists, tuples and dictionaries

CO5   Create an own program using the skilled learned

CO-PO-PSO Mapping (Course Articulation Matrix)

POs, PSOs COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
CO1	2	2	2	2	2	1	1	2	2	2
CO2	2	2	1	1	2	2	2	2	2	2
CO3	2	2	2	2	2	1	2	2	2	2
CO4	3	2	2	2	2	3	2	2	3	2
CO5	2	2	2	2	2	2	2	2	2	2
Total Contribution of COs to POs, PSOs	11	10	9	9	10	9	9	10	11	10
Weighted Percentage of COs Contribution to POs, PSOs	73.3	66.7	60	60	66.7	60	60	66.7	73.3	66.7

0-No Correlation;   1-Weak;   2-Moderate;   3-Strong

List of Practical's:

(Minimum 15 programs to be carried out)

1. Write a Python program code to input any number from user and calculate factorial of that number

2. Write a Python program code to calculate the simple interest.

3. Write a Python program code to Input three numbers and display the largest/ smallest number among them.

4. Write a Python program code to find whether the given number is ODD or EVEN number.

5. Write a Python program code to check whether the given string is vowel or not a vowel

6. Write a Python program code to implement simple mathematical calculator.

7. Write a Python program code to check whether strings is palindrome or not a palindrome.

8. Write a Python program code to input any number from user and check whether its prime number or not a prime number

9. Write a Python program code to remove all ODD number from the list

10. Write a Python program code to find the sum of element of list.

11. Write a python program code to find the largest and smallest element of a tuple

12. Write a Python program code to input any number from user and display its multiplication table

13. Write a Python program code to calculate n^{th} term of Fibonacci series

14. Write a Python function to count the number of Upper case and lower case character present in a string

15. Write a Python function to count the number of vowels present in a text file "POEM.txt".

16. Write a Python function COUNTISALL ( ) to count the number "is" and "are" present in a text file "BOOK.txt"

17. Write a Python code to create a phone dictionary for the students of classmates and print their index.

18. Write a Python program code to create and add values to the binary file.

19. Write a Python program code to update the employee salary of the binary file "EMP.dat"

20. Write a Python program to plot simple line graph using two list values.

Part-IV B.Sc. Electronics/ Semester–II / SKILL ENHANCEMENT COURSE 2: CONSUMER ELECTRONICS (U23EL2S2)

Lecture Hours	: 28	**Tutorial Hours**	: - 02
Practical Hours	: -	**No. of Credit**	: 02
Contact Hours per Semester: 30			
Contact hours per Week	: 02		
Internal Marks	: 50		
External Marks	: --		
Total Marks	: 50		

Objectives of the course:

➢ The demand of Consumer Electronic appliances is increasing day by day.

➢ It is constantly making our day to day life easy and smart. The aim of the course is to help the student to attain depth knowledge of electronic household or office devices.

➢ This course will introduce the students with working principles, main features and care and Maintenance of the consumer electronics appliances used in everyday life.

Course Learning Outcomes (for mapping with POs and PSOs)

On successful completion of course, the leaner should be able to

CO1   Identify the principles of consumer electronic appliances like microwave ovens, photocopier, CCTV & DTH etc.

CO2   Understand the fundamental concepts of household and office devices

CO3   Interpret the main features of electronic appliances

CO4   Analyze the care and maintenance of electronic home and office devices

CO5   Evaluate the working principles of the consumer electronics appliances

CO-PO-PSO Mapping (Course Articulation Matrix)

POs, PSOs / COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
CO1	1	2	3	2	3	2	3	1	2	3
CO2	2	3	3	3	2	3	2	2	3	3
CO3	3	2	2	1	2	2	2	3	2	2
CO4	2	1	2	3	2	1	2	2	1	2
CO5	3	2	2	1	1	2	3	3	2	2
Total Contribution of COs to POs, PSOs	11	10	12	10	10	10	12	11	10	12
Weighted Percentage of COs Contribution to POs, PSOs	73.3	66.7	80	66.7	66.7	66.7	80	73.3	66.7	80

0-No Correlation; 1-Weak; 2-Moderate; 3-Strong

COURSECONTENT

UNIT - I: Microwave ovens (L-6 hrs)

Introduction – Block diagram – LCD timer with alarm – Single chip controllers – Types – Microwave cooking – Wiring and Safety instructions – Care and Cleaning.

UNIT - II: Washing Machines (L-6 hrs)

Introduction– Electronic controller for Washing machines –Washing Machine hardware – washing cycle – Types – Fuzzy logic washing machines – Features

UNIT – III: Air Conditioners and Refrigerators (L-6hrs; T- 1hr)

Air Conditioners: Air Conditioning – Components of air conditioning systems – All water air conditioning systems – All air air conditioning systems

Refrigerators: Refrigeration - Refrigerants – Refrigeration systems – Domestic Refrigerators

UNIT- IV: Office Digital Devices (L-5hrs;T-1hr)

Facsimile machine: Block diagram – Basic fax machine operations – **Cellular phones:** Operating principle – Block diagram – **Cordless phones:** Block diagram of Base unit – Block diagram of Handset - **Photocopier:** Parts – Working – **CCTV:** Block diagram

UNIT - V: Digital Access Services (L-5hrs)

DTH: Working – **Set Top boxes**–**Barcode:** Barcode Scanner and decoder – **Automated Teller Machines (ATMs):** Electronic Fund Transfer – **The Internet:** Applications – Email

Tutorial Section

Unit	Topic	Hours
III	Air Conditioning	1
IV	Cellular phones	1

Text Books

1. S.P.Bali "**Consumer Electronics"**, First edition, PEARSON, 2008
2. Dr.J.S Chode "**Consumer Electronics"**, First edition, Seventh reprint 2014, Technical Publication

Reference Books

1. Dr.B R Gupta and V. Singhal "**Consumer Electronics"**, 10th Revised Edition, S   K Kataria & sons, 2013
2. R.G. Gupta **"TV Engineering& Video Systems",** 2nd Edition, Tata MaGraw Hill Education Pvt. Ltd, 2017
3. Bali R & Bali S.P, **"Audio video systems: principle practices & troubleshooting"**, Khanna Book Publishing Co. (P) Ltd., India 2010
4. J.Rangarajan "**Television and Video engineering"**, Charulatha Publications, 2014.

Websites for Reference

1. https://www.slideshare.net/
2. https://www.scienceabc.com/
3. https://www.lecturenotes.in/
4. https://www.electronics-notes.com/

Part-IV B.Sc. Electronics / Semester – II / SKILL ENHANCEMENT COURSE III: MS OFFICE AUTOMOTION (U23EL2S3)

Lecture Hours	**: 28**	**Tutorial Hours**	**: - 02**
Practical Hours	**: -**	**No. of Credit**	**: 02**
Contact Hours per Semester	**: 30**		
Contact hours per Week	**: 02**		
Internal Marks	**: --**		
External Marks	**: 50**		
Total Marks	**: 50**		

Objectives of the course:

➢ Course provides a comprehensive idea about the office Automation.

➢ This course also examines the knowledge and fundamentals of office Automation.

➢ The student should be able to understand applications of office Automation

Course Learning Outcomes (for mapping with POs and PSOs)

On successful completion of course, the leaner should be able to

CO1   Get a clear idea about office automation

CO2   Understanding the principles of Word, Excel

CO3   Examines the principles and operations of MS office Automation

CO4   Apply the gained knowledge in designing of spread sheets

CO5   Experiments the Power point & Access

CO-PO-PSO Mapping (Course Articulation Matrix)

POs, PSOs COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
CO1	1	3	3	2	2	2	3	2	3	3
CO2	1	2	3	2	3	2	3	2	2	3
CO3	2	2	3	2	3	2	3	2	2	3
CO4	3	3	3	2	2	2	3	2	3	3
CO5	3	1	2	2	1	2	2	2	1	2
Total Contribution of COs to POs, PSOs	10	11	14	10	11	10	14	10	11	14
Weighted Percentage of COs Contribution to POs, PSOs	66.7	73.3	93.3	66.7	73.3	66.7	93.3	66.7	73.3	93.3

0-No Correlation; 1-Weak; 2-Moderate; 3-Strong

COURSECONTENT

Unit - I: Microsoft Word (L-6hrs)

Introducing the Microsoft Office User interface – Microsoft Office features.

New features in Word – Starting Microsoft Word– Creating a new blank word document – Applying Basic formatting: - changing the font and font size – applying the Bold, Italic and Underline styles – changing the text color – Aligning the text – Applying Bulleted and Numbered lists – Using Cut, Copy and Paste Commands – Using Find, Replace and Go To Commands – Printing a Word document – Opening an existing word document – Closing a word document – Exiting Microsoft Word.

Unit – II: Working with Tables (L-5hrs;T – 1hr)

Working with Tables: – Adding a table to a document – Adding Columns and Rows – Merging the Cells in a table – Adding a table Border – Inserting Headers and Footers – Inserting Footnotes and Endnotes – Performing Spelling and Grammar check – Marking a document as Final

Unit - III: Microsoft Excel   (L-5hrs; T – 1hr)

New features in Excel – Creating a New Blank Excel Workbook – Saving an Excel Workbook – Adding Data to Cells – Inserting and deleting Cells, Rows, Columns and Worksheet – Renaming a Worksheet – Opening an existing Excel Workbook – Printing a Worksheet – Closing an Excel Worksheet – Exiting Microsoft Excel – Working with Chart – Working with Formula and Functions.

Unit - IV: Microsoft PowerPoint (L-6hrs)

New features in PowerPoint – Creating a Blank Presentation – Saving Presentation – Adding and Removing Slides – Opening an Existing Presentation - Closing Presentation – Exiting Microsoft PowerPoint.

Unit - V: Microsoft Access (L-6 hrs)

Introduction to tables in Microsoft Access: - creating a table – Saving a table – Working with fields in a table – Entering records in a table –Introducing query types – Creating a Query – Saving a Query.

Tutorial Section

Unit	Topic	Hours
II	Inserting Headers and Footers	1
III	Working with Formula and Functions.	1

Text Book:

1. Kogent"**Learning Solutions inc., Office 2010 in Simple Steps"**, Dreamtech Press, Edition 2011.

Reference Books

1. Bittu Kumar **"Mastering MS Office"**, V&S Publishers, 2017
2. Weverka"**Microsoft Office 2021 All-In-One For Dummies New**", Wiley India

Websites for Reference

1. https://www.slideshare.net/
2. https://www.scienceabc.com/
3. https://www.lecturenotes.in/