B.C.A. - Semester I

Name of Program **: BCA –I Semester**	**Program Code: 101**
Name of Group **: MAJOR**	
Name of the Course**: Computer Fundamentals Organization and Architecture**	
Course Code: BCAA-101T	**Max. Marks :100** **(External :80 + Internal 20)**

Course Outcomes:

C01: **Explain** the concepts of computer components, operating system and virus

CO2: **Outline** different contemporary computer technologies &**understand** concept of E-waste management

CO3: Explain various communication networks and their utility

C04: Perform Number Conversions

CO5: Identify the logic gates and their functionality and **design** basic electronic combinational Circuits

BCA1-sem ⅠComputerFundamentalsandArchitecture]

Unit	Topics	Duration (InHours)
I	**Fundamentals of Computers:** Definition, Characteristics, Evolution &Generations of Computers, Classification of Computers, Basic Organization of a Digital Computer, Concepts of Hardware and Software. **Hardware-** Memory Unit: Primary and Secondary Memory, INPUT DEVICES- Key Board,Scanner, Mouse,Light Pen,Bar CodeReader,OMR, OCR, MICR., Track ball,Joystick, Touch Screen etc., OUTPUT DEVICES: Monitorsand itstypes,Printersand itstypes,Plottersand its types,Projectors etc., STORAGE DEVICES: Magnetic tapes, Floppy Disks, Hard Disks, Compact Disc, Flash Drives etc. **Software** - System Software and Utility Software; Programming Language and its classification - Machine Level, Assembly Level &High-Level Languages. Translator Programs- assembler, Interpreter and Compiler. Operating Systems:Introduction.FunctionandTypesofOSIntroductionto DOS. Unix. Linux. Windows and Mac OS. The concept of Open Source software and its advantages and limitations. Virus and malwares- working principles,Types of viruses, Worms and Trojan Horses, virus detection and prevention,virusesonnetwork,Anti-virussoftware,someexamples relatedto types of virus attacks.	18

Unit	Topics	Duration (InHours)
II	**Introduction Contemporary Computer Technologies:** Multimedia, Data Warehousing &Mining, E-commerce, Neural Networks, Artificial Intelligence, Machine Learning, Cloud Computing, Wireless SensorNetwork, Big Data, Data Analytics, Block chain, Social Media &Digital Marketing. E-Governance.E-Banking,E-learning, GIS,YRandAR, Robotic, CryptCurrencies, IoT,and Immersive Technology **E-Waste** E-Waste, Indian and global scenario of e-Waste, Growth of Electrical and Electronics industry in India, Composition of e-waste, Possible hazardous substancespresentin[-Waste,EnvironmentalandHealthimplications,E-wastemanagementrules	18

Unit	Topics	Duration (InHours)
III	**Introduction Networks:** Basic of Computer networks &their uses, Topology, Networking Devices, Firewalls, Network Operating System, Classification of Networks. **Concept of Internet:** HistoryApplications of Internet; ISP; World Wide Web; Web Browsers, Search Engines; URL; Domain name; IPAddress, Basics ofelectronic mail;SocialNetworking;Netiquettes.Websitesand Web Portals.	18

Unit	Topics	Duration (InHours)
IV	**FundamentalsofDigitalElectronics:**NumberSystem:Decimal.Binary,Octal.Hexadecimal withconversion,Complements, BinaryArithmetic, Fixed- Point Representation, Floating-Point Representation, Codes: BCD Code, Excess-3 Code, Gray Code, EBCDIC, ASCII Code, Error Detection Code.	18

Unit	Topics	Duration (InHours)
V	**LogicGates:**AND,OR,NOT,NANO,NOR,XOR,XNOR,Boolean Algebra, Karnaugh Map Simplification, Combinational Circuits:Adder, Subtractor, Multiplexer, DE multiplexer Decoders, Encoders, Sequential Circuits:Flip - Flops, Registers, Counters.	18

RecommendedTextBooks:

I. PKSinha,"computerFundaments",PHI

2. M. MorrisMano. ComputerSystemArchitecture",PHI.

J. B. Ram."Computer Fundamental ".TMIH

RecommendedReferenceBooks:

1. WilliamStalling,"ComputerOrganization&Architecture",PearsonEducationAsia.

2. V.CarlHamacher,"ComputerOrganization",TMI-I

3. Tannenbaum,"StructuredComputerOrganization", PHI.

4. Er.RajivChopra,"ComputerArchitecture",Revised 3rd Edition,S.Chand&Company Pvt. Ltd, 2013

5. JohriR., "E-waste:implications, regulations,andmanagementinIndiaandcurrent globalbest practices",TERI Press, New Delhi

RecommendedWebReference:

I. https://onlinccourcs.swayam2.ac.in/cec19cs06/preview

Name of Program **: BCA –I Semester**	**Program Code: 102**
Name of Group **: Minor**	
Name of the Course**: Operating System**	
Course Code: BCAA-102T	**Max. Marks :100** **(External :80 + Internal 20)**

Unit – I

Operating System Definitions, its Components, Evolution of Operating System, types of operating systems: batch, multiprogrammed, multitasking, desktop, multiprocessor, real-time, client-server, peer-to-peer, distributed, clustered and handheld. Operating system services, dual-mode operation, protection of I/O, memory and CPU. Non-virtual and virtual machines.

Unit – II

Process Scheduling: concept of a process, process states, PCB, Process state transitions, operations on processes, context switch, types of schedulers, CPU scheduling concept, CPU Scheduler, CPU-I/O burst cycle, dispatcher, scheduling criteria, scheduling algorithms – FCFS, SJF, STRN, Round Robin, priority, multilevel queue and event driven (i.e., pre-emptive priority) scheduling algorithms, Performance evaluation of algorithms through deterministic modeling.

Unit – III

Memory Management Concepts: Address Binding, logical and physical address space, dynamic loading etc., Contiguous allocation methods – static & dynamic partitioned memory allocation. Concepts of fragmentation, swapping, relocation, compaction, protection, sharing. Segmentation.

Non–contiguous allocation methods – Paging: basic principle of operation, h/w support for paging, protection and sharing. Virtual memory: concept of demand paging, Page fault, page replacement algorithms – FIFO, LRU, OPT. Thrashing, Concept of Page fault

frequency, prepaging, decision about minimum number of frames, page size etc.,

Unit – IV

File system implementation, Responsibilities of file management system, directory implementation as linear list/hash table, directory structure, disk organization, disk controller and driver, disk space management – contiguous allocation, non contiguous allocation – chaining and indexing, disk address translation. Idea about disk caching, disk mirroring. Disk scheduling algorithms. Disk management.

Unit – V

Device Management: I/O hardware, Techniques for device management. Dedicated devices, shared devices, virtual peripherals. Security & protection: Security threats and goals, penetration attempts, Security policies and mechanism, authentication, protection and access control. Interprocess communication, need for interprocess synchronization. Deadlocks – definition, avoidance, detection, prevention and recovery.

TEXT BOOK:

1. Operating System Concepts – by Silberschatz, Galvin and Gagne.

REFERENCE BOOKS:

1. Operating System Concepts and Design – by Milenkovic
2. Operating System – by Tanenbaum.
3. Operating System – by Peterson.

Name of Program **: BCA –I Semester**	**Program Code: 103**
Name of Group **: Elective**	
Name of the Course**: Probability & Statistics**	
Course Code: PSEL-103T	**Max. Marks :100** **(External :80 + Internal 20)**

UNIT I: Probability
Sample space and events – Probability – The axioms of probability – Some Elementary theorems - Conditional probability – Baye's theorem, Random variables – Discrete and continuous.

UNIT II: Distributions
Binomial , Poisson & normal distributions related properties . Sampling distributions –Sampling distribution of means (known and Unknown)

UNIT III: Small samples
Confidence interval for the t- distribution – Tests of hypothesis – t- distributions, F- distributions distribution. Test of Hypothesis –.

UNIT IV: Correlation & Regression
Coefficient of correlation – Regression Coefficient – The lines of regression – The rank correlation

1. Probability & Statistics by D.K. Murugesan & P.Guru Swamy, Anuradha Publications
2. Probability & Statistics for Engineers by G.S.S.Bhisma Rao, Scitech Publications.
REFERENCE BOOKS:
1. Probability & Statistics by T.K.V.Iyengar & B.Krishna Gandhi & Others, S.Chand.
2. Probability & Statistics by William Mendenhall & Others, Cengage Publications.
3. Higher Engineering Mathematics by B.S. Grewal, Khanna Publications.
4. Higher Engineering Mathematics by Jain & S.K.R. Iyengar, Narasa Publications.