CSC-601-MICROPROCESSOR & INTERFACING

UNIT-I

Introduction to microprocessors, Microprocessor architecture and its operations, memory, inputs-outputs (I/Os), data transfer schemes interfacing devices, architecture, advancements of microprocessors.

UNIT-II

Architecture of 8085 microprocessor, Instruction set and Addressing modes of 8085 microprocessor, Assembly language programs of 8085 microprocessor, Stack, Subroutines, Time-Delay loops, Modular programming, Macro.

UNIT-III

8086 Microprocessor**:** Architecture, Register, Memory Segmentation, 8086 Memory Addressing Memory Read and Write Bus Cycle of 8086, Demultiplexing of the system Bus in 8086 and 8088 microprocessors, Instruction set and Addressing modes of 8086 microprocessor, Assembly language programs of 8086 microprocessor.

UNIT-IV

I/O and Memory Interfacing Using 8085/8086, Interrupts of 8085/8086 Microprocessors, 8259A Programmable Interrupt Controller, Programmable peripheral Interface, 8253 Programmable Counter/Interval Timer, Communication and Bus Interfacing with 8085/8086 Microprocessor, Serial Communication Interface, DMA Controller 8257, 8279-Programmable Keyboard and Display I/O Interface, Bus Interface, 8089 I/O processor.

UNIT-V

8051 Microcontroller: Architecture of 8051 microcontroller, Memory organization, Timers/Counters, Interrupts, Addressing modes, 8051 Instruction set, Assembly language Programs, Applications of microcontrollers.

REFERENCES:

1. Douglas V Hall, “Microprocessors and interfacing – Programming & Hardware” TMH
2. Gaonkar, “Microprocessor Architecture, Programming & Applications with 8085”, TMH
   Grading System 2013 - 14
3. Rafiquzzaman, “Microprocessors-Theory & Applications”, PHI
4. Savaliya, “8086 Programming & Advance Processor Architecture”, Wiley India
5. Ray, Bhurchandi, “Advanced Microprocessor and peripherals” TMH Pub
6. Soumitra Kumar Mandal, “Microprocessors and Microcontroller” TMH Pub

LIST OF EXPERIMENTS:-

1. To study 8085 based microprocessor system.

2. To study 8086 based microprocessor system.

3. To develop and run a program for finding out the largest/smallest number from a given set of numbers.

4. To develop and run a program for arranging in ascending/descending order of a set of numbers.

5. To perform multiplication/division of given numbers.

6. To perform conversion of temperature from 0F to 0C and vice-versa.

7. To perform computation of square root of a given number.

8. To perform floating point mathematical operations (Addition, Subtraction, Multiplication and Division).

9. To obtain interfacing of RAM chip to 8085/8086 based system.

10. To obtain interfacing of keyboard controller.

CSC-602-DOT NET TECHNOLOGY

UNIT-I

Introduction to .NET Technology, Introduction to VB.NET, Software development and Visual Basic .NET, Visual Basic .NET and .NET frame.

UNIT-II

Visual Basic fundamentals: The Visual Basic .NET Development Environment, The element of VB.NET, VB.NET operators, Software design, Conditional structure and control flow, Methods.

UNIT-III

Classes and Objects: Types, Structure and Enumeration, Classes, Interfaces, Exception handling and Classes, Collections, Arrays and other Data Structure.

UNIT-IV

Advance design concepts, Patterns, Roles and Relationships, Advanced Interface Patterns: Adapters and Delegates and Events Data Processing and I/O.

UNIT-V

Writing Software with Visual Basic .NET, Interfacing with the End User, Introduction to ASP.NET and C#. NET and their features.

REFERENCES:

1. Jeffrey R. Shapiro "The Complete Reference Visual Basic .NET" Tata Mcgraw Hill (2002 Edition).
2. Rox "Beginner and Professional Edition VB.NET" Tata Mcgraw Hill.
3. Steven Holzner "Visual Basic .NET Black Book" Wiley Dreamtech Publication.
4. Alex Homer, Dave Sussman "Professional ASP.NET1.1" Wiley Dreamtech.

LIST OF EXPERIMENTS:

1. Working with call backs and delegates in C#.
2. Code access security with C#.
3. Creating a Windows Service with C#.
4. Interacting with a Windows Service with C#.
5. Using Reflection in C#.
6. Perform String Manipulation with the String Builder and String Classes and C#.
7. Using the System .Net Web Client to Retrieve or Upload Data with C#.
8. Working with Page and forms using ASP .Net.
9. Data Sources access through ADO.Net.
10. Working with Data readers, Transactions.

CSC- 603 – COMPUTER GRAPHICS

UNIT-I

Introduction, Application areas of Computer Graphics, overview of graphics systems, video-display devices, raster-scan systems, random scan systems, graphics monitors and work stations and input devices.

UNIT-II

Output primitives: Points and lines, line drawing algorithms, Mid-point circle and ellipse algorithms, Filled area primitives: Scan line polygon fill algorithm, boundary-fill and flood-fill algorithms.

UNIT-III

2-D Geometrical transforms: Translation, scaling, rotation, reflection and shear transformations, matrix representations and homogeneous coordinates, composite transforms, Transformations between coordinate systems.

UNIT-IV

2-D Viewing: The viewing pipeline, viewing coordinate reference frame, window to view-port coordinate transformation, viewing functions, Cohen-Sutherland and Cyrus-beck line clipping algorithms, Sutherland –Hodgeman polygon clipping algorithm.

UNIT-V

3-D Object representation**:** Polygon surfaces, quadric surfaces, spline representation, Hermite curve, Bezier curve and B-spline curves, Bezier and B-spline surfaces, Basic illumination models, polygon rendering methods.

REFERENCES:

1. "Computer Graphics Second edition", Zhigand xiang, Roy Plastock, Schaum's outlines, Tata Mc Graw hill edition.
2. "Procedural elements for Computer Graphics", David F Rogers, Tata Mc Graw hill, 2nd edition.
3. "Principles of Interactive Computer Graphics", Neuman and Sproul, TMH.
4. "Principles of Computer Graphics", Shalini, Govil-Pai, Springer.

LIST OF EXPERIMENTS:

1. To implement Bresenham's algorithms for circle and ellipse drawing.
2. Program for Line Drawing using Bresenham‟s algorithm using C and OpenGL.
3. To perform 2D Transformations such as translation, rotation, scaling, reflection and sharing.
4. To implement Cohen–Sutherland 2D clipping and window–viewport mapping.
5. To perform 3D Transformations such as translation, rotation and scaling.
6. To visualize projections of 3D images and Hidden Surface Elimination.
7. To convert between color models.
8. To implement text compression algorithm.
9. Program to implement basic graphics primitives in OpenGL.
10. Program for Line Drawing using DDA algorithm using C and OpenGL.

CSC- 604(A) –SIMULATION & MODELING

UNIT-I

Introduction to Modeling and Simulation: Nature of Simulation Systems, Models and Simulation, Continuous and Discrete Systems, system modeling, concept of simulation, Components of a simulation study, Principles used in modeling, Static and Dynamic physical models, Static and Dynamic Mathematical models, Introduction to Static and Dynamic System simulation, Advantages, Disadvantages and pitfalls of Simulation.

UNIT-II

System Simulation and Continuous System Simulation: Types of System Simulation, Monte Carlo Method, Comparision of analytical and Simulation methods, Numerical Computation techniques for Continuous and Discrete Models, Distributed Lag Models, Cobweb Model, Continuous System models, Analog and Hybrid computers, Digital-Analog Simulators, Continuous system simulation languages, Hybrid simulation, Real Time simulations.

UNIT –III

System Dynamics & Probability concepts in Simulation: Exponential growth and decay models, logistic curves, Generalization of growth models, System dynamics diagrams, Multi segment models, Representation of Time Delays. Discrete and Continuous probability functions, Continuous Uniformly Distributed Random Numbers, Generation of a Random numbers, Generating Discrete distributions, Non-Uniform Continuously Distributed Random Numbers, Rejection Method.

UNIT-IV

Simulation of Queueing Systems and Discrete System Simulation: Poisson arrival patterns, Exponential distribution, Service times, Normal Distribution Queuing Disciplines, Simulation of single and two server queue, Application of queuing theory in computer system, Discrete Events, Generation of arrival patterns, Simulation programming tasks, Gathering statistics, Measuring occupancy and Utilization , Recording Distributions and Transit times.

UNIT-V

Introduction to Simulation languages and Analysis of Simulation output GPSS: Action times, Succession of events, Choice of paths, Conditional transfers, program control statements, **SIMSCRIPT:** Organization of SIMSCRIPT Program, Names & Labels, SIMSCRIPT statements, Estimation methods, Relication of Runs, Batch Means, Regenerative techniques, Time Series Analysis, Spectral Analysis and Autoregressive Processes.

REFERENCES:

1. Gorden G., System simulation, Prentice Hall.
2. Seila, Simulation Modeling, Cengage Learning.
3. Law .,Simulation Modeling And Analysis, McGraw Hill.
4. Deo, System Simulation with Digital Computer, PHI.
5. Harrington, Simulation Modeling methods, McGraw Hill.
6. Severance, " System Modeling & Simulation, Willey Pub.

CSC- 604(B) –EMBEDDED SYSTEM

UNIT-I

Introduction to Embedded System, Categories, Requirements, Applications, Challenges and Issues, Core of Embedded system, Memory, Sensors and Actuators, communication interface, Embedded firmware, System components.

UNIT-II

Fundamental issues of hardware software co-design, computational models in embedded design, data flow graph, control flow graph, state machine model, sequential programmed model, concurrent model, unified modeling language.

UNIT-III

Architecture of 8085 microcontroller, memory organization, registers, interrupts, addressing modes, instruction sets.

UNIT-IV

Embedded firmware design approaches-OS based, Super loop based,
Embedded firmware development languages, Assembly language based, high level language based, mixed. Programming in embedded C.

UNIT-V

Types of Operating system, Task, process and threads, Multi processing and multi task, Task scheduling, Task communication, Task synchronization.

REFERENCES:

1. Shibu K V, "Introduction to Embedded System", TMH.
2. David E Simon, "An Embedded Software Primer", Pearson education Asia, 2001.
3. Steven F. Barett, Daniel J. Pack, "Embedded Systems" Pearson education, First Impression 2008.
4. Vahid Frank, Tony Givargis, "Embedded System Design", John Wiley and Sons, Inc.
5. Raj Kamal, "Embedded Systems", TMH.

CSC- 604(C) PRINCIPLES OF PROGRAMMING LANGUAGES

UNIT-I

Programming Language and its Implementation: Programming Language, Language categories, Language Evaluation Criteria, impacts on Language design, Programming Paradigms Imperative, Object Oriented programming Structure, functional Programming, Logic Programming, Programming Language Implementation, Compilation process and Virtual Machines, programming environments.

UNIT-II

Data types and Statements: Overviews of Data type, category of data type, primitive and Non primitive data types, design and Implementation uses related to these types, Names, Variable, type checking, strong typing, type compatibility, named constants, variable initialization, control statement with Expressions, Conditional Statements, Loops, Exception handling.

UNIT-III

Subprograms and Blocks: Overviews of sub-programs, Lifetime and Scope of variable, static and dynamic scope, Design issues of subprograms, **parameter passing methods:** call by value, address and reference, overloaded sub-programs, Method Overriding, generic subprograms, co-routines.

UNIT-IV

Abstract Data types: Data abstraction, level of abstraction, Abstractions and encapsulation, abstract data type, Static and Stack-Based Storage management, heap based storage management, Garbage Collection, object oriented programming in small talk, C++, Java, C#, PHP, Perl, **Concurrency:** Subprogram level concurrency, semaphores, monitors, massage passing, Java threads, C# threads.

UNIT-V

Exception handling: Error, Type of Error, Exceptions, Type of Exception, exception Propagation, Exception handler in C++ and Java, Try, catch and throw statement, multiple catch.

REFERENCES:

1. Sebesta, ”Concept of programming Language”, Pearson Edu.
2. Louden, “Programming Languages: Principles & Practices”, Cengage Learning.
3. Tucker, “ Programming Languages: Principles and paradigms “, Tata McGraw –Hill.
4. Terrance W Pratt, "Programming Languages: Design and Implementation" Pearson Edu.

CSC- 605(A) INTERNET OF THINGS

UNIT-I

Introduction: Definition, Characteristics of IOT, IOT Conceptual framework, IOT Architectural view, Physical design of IOT, Logical design of IOT, Application of IOT.

UNIT-II

Machine-to-machine (M2M), SDN (software defined networking) and NFV(network function virtualization) for IOT, data storage in IOT, IOT Cloud Based Services.

UNIT-III

Design Principles for Web Connectivity: Web Communication Protocols for connected devices, Message Communication Protocols for connected devices, SOAP, REST, HTTP Restful and Web Sockets. Internet Connectivity Principles, Internet Connectivity, Internet based communication, IP addressing in IOT, Media Access control.

UNIT-IV

Sensor Technology, Participatory Sensing, Industrial IOT and Automotive IOT, Actuator, Sensor data Communication Protocols, Radio Frequency Identification Technology, Wireless Sensor Network Technology.

UNIT-V

IOT Design methodology: Specification requirement, process, model, service, functional & operational view, IOT Privacy and security solutions, Raspberry Pi & arduino devices. IOT Case studies, smart city streetlights control & monitoring.

REFERENCES:

1. Rajkamal,"Internet of Things", Tata McGraw Hill publication.
2. Vijay Madisetti and Arshdeep Bahga, "Internet of things(A-Hand-on-Approach)" 1st Edition ,Universal Press.
3. Hakima Chaouchi "The Internet of Things: Connecting Objects", Wiley publication.
4. Charless Bell "MySQL for the Internet of things", Apress publications.

CSC- 605(B) E-COMMERCE & GOVERNANCE

UNIT-I

Introduction to e-commerce: History of e-commerce, e-business models B2B, B2C, C2C, C2B, legal, environment of e-commerce, ethical issues, electronic data interchange, value chain and supply chain, advantages and disadvantages of e-commerce.

UNIT-II

Electronic Payment Systems: Credit cards, debit cards, smart cards, e-credit accounts, e-money, Marketing on the web, marketing strategies, advertising on the web, customer service and support, introduction to m-commerce, **case study:** e-commerce in passenger air transport.

UNIT-III

E-Government, theoretical background of e-governance, issues in e-governance applications, evolution of e-governance, its scope and content, benefits and reasons for the introduction of e-governance, e-governance models broadcasting, critical flow, comparative analysis, mobilization and lobbying, interactive services / G2C2G.

UNIT-IV

E-readiness, e-government readiness, E- Framework, step & issues, application of data warehousing and data mining in e-government, **Case studies:** NICNET-role of nationwide networking in e-governance, e-seva.

UNIT-V

E-Government systems security: Challenges and approach to e-government security, security concern in e-commerce, security for server computers, communication channel security, security for client computers.

REFERENCES:

1. Gary P. Schneider, "E-commerce", Cengage Learning India.
2. C.S.R. Prabhu, "E-governence: concept and case study", PHI Learning Private Limited.
3. V. Rajaraman, "Essentials of E-Commerce Technology", PHI Learning Private Limited.
4. David Whiteley, "E-commerce study, technology and applications", TMH.

CSC- 605(C) UNIX & SHELL PROGRAMMING

UNIT–I

General Overview of the System: System structure, user perspective, O/S services assumption about Hardware,The Kernel and buffer cache architecture of Unix O/S, System concepts, Kernel data Structure, System administration, Buffer headers, Structure of the buffer pool, Scenarios for retrieval of the buffer, Reading and writing disk block, Advantage and disadvantage of buffer cache.

UNIT–II

Internal Representation of Files: Inodes, Structure of regular, Directories conversions of a path name to an inode, Super block, Inode assignment to a new file, Allocation of disk blocks, Open read write file and record close, File creation, Operation of special files change directory and change root, change owner and change mode, STAT and FSTAT, PIPES mounting and unmounting files system, Link Unlink.

UNIT–III

Structures of Processes and process control: Process states and transitions layout of system memory, the context of a process, manipulation of process address space, Sleep process creation/termination, The user Id of a process, changing the size of a process, Killing process with signals, job control, **Scheduling commands:** AT and BATCH,TIME,CORN.

UNIT-IV

Introduction to shell scripts: shell Bourne shell, C shell, Unix commands, permissions, editors, grep family, shell variables, scripts, metacharacters and environment, if and case statements, for while and until loops, Shell programming.

UNIT-V

Introduction of Awk and perl Programming: Awk pattern scanning, BEGIN and END patterns, Awk arithmetic and variables, and operators, functions, perl, the chop() function, variable and operators, **Networking tools:** Resolving IP addressing, TELNET, FTP, Socket programming, introduction of Linux structure.

REFERENCES:

1. M.J. Bach “Design of UNIX O.S. “, PHI Learning.
2. Y.Kanetkar “Unix shell programming”, BPB Pub.
3. B.W. Kernighan & R. Pike, “The UNIX Programming Environment”, PHI Learning.
4. S.Prata “Advanced UNIX: A Programming's Guide”, BPB Publications, New Delhi.

CSC- 606(A) CYBER CRIME & INFORMATION WARFARE

UNIT-I

Introduction of Cyber Crime, Challenges of cyber crime, Classifications of Cybercrimes**:** E-Mail Spoofing, Spamming, Internet Time Theft, Salami attack/Salami Technique.

UNIT-II

Web jacking, Online Frauds, Software Piracy, Computer Network Intrusions, Password Sniffing, Identity Theft, cyber terrorism, Virtual Crime, Perception of cyber criminals**:** hackers, insurgents and extremist group etc. Web servers were hacking, session hijacking.

UNIT-III

Cyber Crime and Criminal justice**:** Concept of Cyber Crime and the IT Act, 2000, Hacking, Teenage Web Vandals, Cyber Fraud and Cheating, Defamation, Harassment and E-mail Abuse, Other IT Act Offences, Monetary Penalties, jurisdiction and Cyber Crimes, Nature of Criminality, Strategies to tackle Cyber Crime and Trends.

UNIT-IV

The Indian Evidence Act of 1872 v, Information Technology Act 2000**:** Status of Electronic Records as Evidence, Proof and Management of Electronic Records, Relevancy, Admissibility and Probative Value of EEvidence, Proving Digital Signatures, Proof of Electronic Agreements, Proving Electronic Messages.

UNIT-V

Tools and Methods in Cybercrime: Proxy Servers and Anonymizers, Password Cracking, Key loggers and Spyware, virus and worms, Trojan Horses, Backdoors, DoS and DDoS Attacks, Buffer and Overflow, Attack on Wireless Networks, Phishing: Method of Phishing, Phishing Techniques.

REFERENCES:

1. Principles of Cyber crime, Jonathan Clough Cambridge University Press.

2. John R. Vacca, Computer Forensics:Computer Crime Scene Investigation, 2nd Edition, Charles River Media, 2005.

3. Cyber Law Simplified, VivekSood, Pub: TMH.

4. Cyber Security by Nina Godbole, SunitBelapure Pub: Wiley-India.

CSC- 606(B) DISTRIBUTED SYSTEM

UNIT-I

Introduction to distributed systems Architecture: for Distributed System, Goals of Distributed system, Hardware and Software concepts, Distributed Computing Model, Advantages & Disadvantage distributed system, Issues in designing Distributed System.

UNIT-II

Distributed Share Memory And Distributed File System: Basic Concept of Distributed Share Memory (DSM), DSM Architecture & its Types, Design & Implementations issues In DSM System, Structure of Share Memory Space, Consistency Model, and Thrashing, Desirable features of good Distributed File System, File Model, File Service Architecture, File Accessing Model, File Sharing Semantics, File Catching Scheme, File Application & Fault tolerance, **Naming:** Features, System Oriented Names, Object Locating Mechanism, Human Oriented Name.

UNIT-III

Inter Process Communication And Synchronization API for Internet Protocol: Data Representation & Marshaling, Group Communication, Client Server Communication, RPC-Implementing RPC Mechanism, Stub Generation, RPC Messages, **Synchronization:** Clock Synchronization, Mutual Exclusion, **Election Algorithms:** Bully & Ring Algorithms.

UNIT-IV

Distributed Scheduling And Deadlock Distributed Scheduling: Issues in Load Distributing, Components for Load Distributing Algorithms, Different Types of Load Distributing Algorithms, Task Migration and its issues, Deadlock-Issues in deadlock detection & Resolutions, Deadlock Handling Strategy, Distributed Deadlock Algorithms.

UNIT-V

Distributed Multimedia & Database system: Distributed Data Base Management System(DDBMS), Types of Distributed Database, **Distributed Multimedia:** Characteristics of multimedia Data, Quality of Service Managements.

REFERENCES:

1. Sinha, Distributed Operating System Concept & Design, PHI.
2. Coulouris & Dollimore, Distributed System Concepts and Design, Pearson Pub.
3. Singhal & Shivratari, Advance Concept in Operating System, McGraw Hill.
4. Attiya & Welch, Distributed Computing, Wiley Pub.

CSC- 606(C) STATISTICAL METHOD

UNIT-I

Interpolation: Forward, Backward, central (Striplings) and divided difference formulas, lagrangie's interpolation, Inverse interpolation for equal and unequal intervals, **Numerical Integration:** Newton Cote's formula, Simpson's 1/3rd and 3/8th rule, Gauss Legendre (two and three points) integration formula.

UNIT –II

Introduction of operation research, LP Formulations, Graphical method for solving LP's with 2 variables, Simplex method, Duality, Transportation problem.

UNIT-III

Numerical Solutions of Ordinary Different Equations: Linear Second– order Equations with variable coefficients, Correlation and Regression, Curve Fitting, Numerical solution by Runge Kutta Method, Its application to higher order equations.

UNIT-IV

Second Order linear differential equation with variable coefficients: Methods one integral is known, removal of first derivative, changing of independent variable and variation of parameter, Solution by Series Method.

UNIT-V

Linear partial differential equation of second and higher order: Linear homogeneous and Non homogeneous partial diff, equation of nth order with constant coefficients, Separation of variable method for the solution of wave and heat equations.

REFERENCES:

1. Iyengyr M.K. Jain & R.K. Jain "Numerical Methods for scientific and engineering computation", Wiley Eastern (New Age), 1995.
2. E.V. Krishnamurthy & S.K. Sen "Computer Based Numerical Algorithms".
3. Miller & Freund's "Probability and Statistics for Engineers".
4. Dr. D.K. Jain Engineering Mathematics volume III & II.