

BTCS 601 (Microprocessor Systems)

UNIT – I

Computer Number Systems, Codes, and Digital Devices: Computer Number Systems and Codes, Evolution of microprocessors, Intel 8085 – ALU, Timing and Control unit, registers, Data and Address bus, Instruction Set, Timing Diagram, Interrupts. Examples of Assembly language Programming

UNIT – II

The 8086 microprocessor family-overview, 8086 internal architecture, introduction to programming the 8086, addressing modes of 8086. 8086 Family Assembly Language Programming: Program Development Steps, Constructing the machine codes for 8086 instructions, writing programs for use with an assembler, assembly language program development tools

UNIT – III

Implementing Standard Program Structures in 8086 Assembly Language: Simple Sequence Programs, Jumps, Flags, and Conditional Jumps, If-Then, if-then-else, and multiple if-then-else programs, while-do programs, repeat-until programs, Strings, Procedures, and macros: the 8086 string instructions, writing and using procedures, writing and using assembler macros. Timing Diagrams 8086 Interrupts and Interrupt Applications: 8086 interrupts and Interrupt Responses, Hardware Interrupt Applications

UNIT – IV

Interfacing 8086 with 8255, 8254, 8259, 8253, 8251, 8259, 8279.
Brief Introduction to Architecture of 80186, 80286, 80386, 80486, 8087 and Pentium architecture.

TEXT BOOKS:

1. D. V. Hall, “Microprocessors and Interfacing”, TMH, 2nd Edition, 1999

REFERENCES BOOKS:

1. Peter Able, “IBM PC Assembly language programming”, PHI, 1994.
2. James. L. Antonaks, “An Introduction to the Intel Family of Microprocessors”, Addison Wesley, 1999.
3. Liu Gibson, “Microprocessor Systems: The 8086/8088 family Architecture, Programming & Design”, PHI, 1999.
4. Barry B. Brey, “The Intel microprocessors Architecture, Programming & interfacing” Pearson Education.

BTCS 602 (Object Oriented Software Engineering)

UNIT – I

Introduction to Software Engineering: Software Engineering Development, Software Life Cycle Models, Comparison of various models
Requirement Elicitation: Introduction to Object Oriented Methodology, Overview of Requirements Elicitation, Requirements Model-Action & Use cases, Requirements Elicitation Activities, Managing Requirements Elicitation.

UNIT – II

Architecture: Introduction, System development is model building, model architecture, requirements model, analysis model, the design model, the implementation model, test model
Analysis: Introduction, the requirements model, the analysis model

UNIT – III

Construction: Introduction, the design model, block design, working with construction
Testing: introduction, on testing, unit testing, integration testing, system testing, the testing process

UNIT – IV

Modelling with UML: Basic Building Blocks of UML, A Conceptual Model of UML, Basic Structural Modeling, UML Diagrams.
Case Studies

TEXT BOOKS:

1. Ivar Jacobson, “Object Oriented Software Engineering”, Pearson, 2004.
2. Grady Booch, James Runbaugh, Ivar Jacobson, “The UML User Guide”, Pearson, 2004.
3. Wendy Boggs, Michael Boggs, “Mastering UML with Rational Rose”, BPB Publication, 2003.

REFERENCES BOOKS:

1. Stephen R. Scach, “Classical & Object Oriented Software Engineering with UML and Java: McGraw Hill, 1999.
2. Richard C. Lee, William M. Teufenhard, “UML and C++, A Practical guide to object-oriented Development”, Pearson Education, 2002.

BTCS 603 (Computer Networks)

UNIT – I

Uses of Computer Networks, Network Architecture, Reference Model (ISO-OSI, TCP/IP-Overview, IP Address Classes, Subnetting), Domain Name Registration & Registrars

The Physical Layer: Theoretical basis for data communication, transmission media-Magnetic Media, Twisted Pair, Baseband Coaxial Cable, Broadband Coaxial Cable, Fibre Cable, Structured Cabling, Cable Mounting, Cable Testing, Wireless transmission, the telephone system, narrowband ISDN, broadband ISDN and ATM.

UNIT – II

The Data Link Layer: Data link layer design issues, error detection and correction, data link protocols, sliding window protocols, Examples of Data Link Protocols.

UNIT - III

The Medium Access Sublayer: The channel allocation problem, multiple access protocols, IEEE standard 802 for LANS and MANS, high-speed LANs, satellite networks, Network devices-repeaters, hubs, switches and bridges.

UNIT – IV

The Network Layer: Network layer design issues, routing algorithms, congestion control algorithm, internetworking, the network layer in the internet, the network layer in ATM networks.

TEXT BOOKS:

1. A. S. Tananbaum, “Computer Networks”, 3rd Ed, PHI, 1999.
2. B. Furouzan Data Communication & Networking 4th Edition. TMH.

REFERENCE BOOKS:

1. U. Black, “Computer Networks-Protocols, Standards and Interfaces”, PHI, 1996.
2. W. Stallings, “Computer Communication Networks”, PHI, 1999.
3. Laura Chappell (ed), “Introduction to Cisco Router Configuration”, Techmedia, 1999.
4. Michael A. Miller, “Data & Network Communications”, Vikas Publication, 1998.
5. William A. Shay, “Understanding Data Communications & Networks”, Vikas Publication, 1999.

BTCS 604 (Digital Signal Processing)

UNIT – I

Discrete time signals and systems, Z-transforms, structures for digital filters, design procedures for FIR and IIR filters. Frequency transformations: linear phase design; DFT. Methods for computing FFT. Noise analysis of digital filters, power spectrum estimation.

Signals and signal Processing: characterization & classification of signals, typical Signal Processing operations, example of typical Signals, typical Signals Processing applications.

Time Domain Representation of Signals & Systems: Discrete Time Signals, Operations on Sequences, the sampling process, Discrete-Time systems, Time-Domain characterization of LTI Discrete-Time systems, state-space representation of LTI Discrete-Time systems, random signals.

UNIT – II

Transform-Domain Representation of Signals: the Discrete-Time Fourier Transform, Discrete Fourier Transform, DFT properties, computation of the DFT of real sequences, Linear Convolution using the DFT. Z-transforms, Inverse z-transform, properties of z-transform, transform domain representations of random signals, FFT Algorithms.

UNIT – III

Transform-Domain Representation of LTI Systems: the frequency response, the transfer function, types of transfer function, minimum-phase and maximum-Phase transfer functions, complementary transfer functions, Discrete-Time processing of random signals.

Digital Processing of Continuous-Time Signals : sampling of Continuous Signals, Analog Filter Design, Anti-aliasing Filter Design, Sample-and-hold circuits, A/D & D/A converter, Reconstruction Filter Design.

UNIT – IV

Digital Filter Structure: Block Diagram representation, Signal Flow Graph Representation, Equivalent Structures, FIR Digital Filter Structures, IIR Filter Structures, Parallel all pass realization of IIR transfer function, Digital Sine-Cosine generator.

Digital Filter Design: Impulse invariance method of IIR filter design, Bilinear Transform method of IIR Filter Design, Design of Digital IIR notch filters, FIR filter Design based on truncated Fourier series, FIR filter design based on Frequency Sampling approach.

Applications of DSP.

TEXT BOOKS:

1. Sanjit K. Mitra, “DSP a Computer based approach” , TMH, 2nd Ed., 2001.
2. Allan Y. Oppenheim & Ronald W. Schacter , "Digital Signal Processing", PHI, 2004.

REFERENCE BOOKS:

1. J. R. Johnson, “Introduction to Digital Signal Processing”, PHI, 2000.
2. B. Somanthan Nair, “Digital Signal Processing: Theory, Analysis & Digital Filter Design”, PHI, 2004.

BTCS 605 (Data Warehousing and Data Mining)

UNIT – I

The Compelling Need for data warehousing: Escalating Need for strategic information, failures of Past decision-support systems, operational versus decision-support systems, data warehousing – the only viable solution, data warehouse defined

Data warehouse – The building Blocks: Defining Features, data warehouses and data marts, overview of the components, metadata in the data warehouse

Defining the business requirements: Dimensional analysis, information packages – a new concept, requirements gathering methods, requirements definition: scope and content

UNIT – II

Principles of dimensional modeling: Objectives, From Requirements to data design, the STAR schema, STAR Schema Keys, Advantages of the STAR Schema

Dimensional Modeling:

Updates to the Dimension tables, miscellaneous dimensions, the snowflake schema, aggregate fact tables, families of STARS

UNIT – III

OLAP in the Data Warehouse:

Demand for Online analytical processing, need for multidimensional analysis, fast access and powerful calculations, limitations of other analysis methods, OLAP is the answer, OLAP definitions and rules, OLAP characteristics, major features and functions, general features, dimensional analysis, what are hypercubes? Drill-down and roll-up, slice-and-dice or rotation, OLAP models, overview of variations, the MOLAP model, the ROLAP model, ROLAP versus MOLAP, OLAP implementation considerations

UNIT – IV

Data Mining Basics: What is Data Mining, Data Mining Defined, The knowledge discovery process, OLAP versus data mining, data mining and the data warehouse, Major Data Mining Techniques, Cluster detection, decision trees, memory-based reasoning, link analysis, neural networks, genetic algorithms, moving into data mining, Data Mining Applications, Benefits of data mining, applications in retail industry, applications in telecommunications industry, applications in banking and finance.

TEXT BOOKS:

1. Paul Raj Poonia, “Fundamentals of Data Warehousing”, John Wiley & Sons, 2004.
2. Sam Anahony, “Data Warehousing in the real world: A practical guide for building decision support systems”, John Wiley, 2004.
3. Kamber and Han, “Data Mining Concepts and Techniques”, Hartcourt India P. Ltd., 2001

REFERENCES BOOKS:

1. W. H. Inmon, “Building the operational data store”, 2nd Ed., John Wiley, 1999.
- 2.
3. “Data Warehousing”, BPB Publications, 2004.
4. “Berson” Data Warehousing, data mining & OLAP. TMH.

BTCS 606 (Multimedia Technologies)

UNIT – I

Introductory Concepts: Multimedia – Definitions, CD-ROM and the Multimedia Highway, Uses of Multimedia, Introduction to making multimedia – The Stages of project, the requirements to make good multimedia, Multimedia skills and training, Training opportunities in Multimedia. Motivation for multimedia usage, Frequency domain analysis, Application Domain & ODA etc. Multimedia-Hardware and Software: Multimedia Hardware – Macintosh and Windows production Platforms, Hardware peripherals – Connections, Memory and storage devices, Media software – Basic tools, making instant multimedia, Multimedia software and Authoring tools, Production Standards.

UNIT – II

Multimedia – making it work – multimedia building blocks – Text, Sound, Images, Animation and Video, Digitization of Audio and Video objects, Data Compression: Different Compression algorithms concern to text, audio, video and images etc., Working Exposure on Tools like Dream Weaver, 3D Effects, Flash Etc.,

UNIT – III

Multimedia and the Internet: History, Internet working, Connections, Internet Services, The World Wide Web, Tools for the WWW – Web Servers, Web Browsers, Web page makers and editors, Plug-Ins and Delivery Vehicles, HTML, VRML, Designing for the WWW – Working on the Web, Multimedia Applications – Media Communication, Media Consumption, Media Entertainment, Media games.

UNIT – IV

Multimedia-looking towards Future: Digital Communication and New Media, Interactive Television, Digital Broadcasting, Digital Radio, Multimedia Conferencing, Assembling and delivering a project-planning and costing, Designing and Producing, content and talent, Delivering, CD-ROM technology.

TEXT BOOKS:

1. Steve Heath, “Multimedia & Communication Systems”, Focal Press, UK, 1999.
2. Tay Vaughan, “Multimedia: Making it work”, 7th edition 2006.

3. K. Andleigh and K. Thakkar, "Multimedia System Design", PHI, PTR, 2000.

REFERENCES BOOKS:

1. Keyes, "Multimedia Handbook", TMH, 2000.
2. Ralf Steinmetz and Klara Naharstedt, "Multimedia: Computing, Communications & Applications", Pearson, 2001.
3. Steve Rimmer, "Advanced Multimedia Programming", MHI, 2000.

BTCS 607 (Microprocessor Lab.)

List of experiments

For 8085: -

- (1). Adding 8 bit no series with carry.
- (2). To find largest & smallest no. from the given set of nos.
- (3). To perform subtraction from it's compliment.
- (4). To multiply two nos by successive addition & shifting product.
- (5). To perform division by successive subtraction.

For 8086: -

- (1). Addition of a series of 100 nos.
- (2). To calculate +ve & -ve nos from a given series.
- (3). Convert lower case to upper case.
- (4). To display a message on the screen.
- (5). Addition of two 3×3 matrix.

BTCS 608 (Object Oriented Software Engineering Lab.)

Practical will be based on Object Oriented Software Engineering.

BTCS 609 (Digital Signal Processing Lab.)

Practical will be based on Digital Signal Processing.

BTCS 610 (Data Warehousing and Data Mining Lab.)

Practical will be based on Data Warehousing and Data Mining.

BTCS 611 (Multimedia Technology Lab.)

Practical will be based on Multimedia Technology.