ShriVaishnavVidhyapeethVishvavidhyalaya, Indore

Institute of Computer Applications

Name of Program: BCA + MCA

COURSE CODE	CATEGORY	COURSE NAME	L	T	P	CREDITS	TEACHING & EVALUATION SCHEME				
							THEORY			PRACTICAL	
							END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*
BCCA401	COMPULSORY	Computer Networks	3	1	0	4	60	20	20	0	0

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit; Q/A – Quiz/Assignment/Attendance, MST - Mid Sem Test.

***Teacher Assessment** shall be based on following components: Quiz/Assignment/Project/Participation in class (Given that no component shall be exceed 10 Marks)

Course Educational Objectives (CEOs):

- To provide an introduction to the fundamental concepts on data communication and the design of computer networks.
- To get familiarized with the basic protocols of computer networks.

Course Outcomes (COs): After the successful completion of this course students will be able to

- Identify the different components in a Communication System and their respective roles.
- Describe the technical issues related to the local Area Networks
- Identify the common technologies available in establishing LAN infrastructure.

UNIT-I

Introduction: Computer Network, Data communication, Network Topologies, Layered Network Architecture-Review of ISO-OSI Model., Transmission Media: Guided and unguided.

UNIT-II

Data Security and Integrity: Parity Checking Code, Cyclic redundancy checks (CRC), Hemming Code, Flow and error control, Go-Back-N protocol, sliding window protocol. Contention Protocol-, Stop-Go-Access Protocol.

UNIT-III

Data Link Layer: Simplex, Half duplex and Full duplex, Inter Networking, Layer 1 connections-Repeater, Hubs, Layer 2 connections-Bridges, Switches, Layer 3 connections-Routers, Gateways.

UNIT-IV

Wide Area Network: Introduction, Network routing, least cost routing algorithms, Dijkstra's algorithm,

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Internetworking.

UNIT-V

Transport and upper layers in OSI Model: Transport layer functions, Network Security, email, Multimedia.

Suggested Readings:

1. A.S.Tanenbaum, "Computer Network", 4thaddition,PHI
2. Forouzan "Data Communication and Networking 3ed", TMH
3. J.F.Hayes, "Moduling and Analysis of Computer Communication Networks", Plenum Press
4. D.E.Comer, "Internetworking with TCP/IP", Volume Ist & IInd, PHI
5. Willium Stalling, "Data & Computer communications", Maxwell Macmillan International Ed.
6. D.Bertsekas and R.Gallager, "Data Networks", 2ndEd. ,PHI.
7. G.E. Keiser, "Local Area Networks ", McGraw Hill, International Ed.

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BCCA403	COMPULSORY	Basics of Computer Graphics and Multimedia Concepts	3	1	0	4	60	20	20	0	0

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Course Educational Objectives (CEOs):

- To provide knowledge about hardware and software used in computer Graphics.
- To impart knowledge about drawing algorithms.
- To provide detailed knowledge about color and intensity levels.
- To acquaint students with windowing and clipping.
- To make the student understanding about Multimedia tools used in graphics.

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Course Outcomes (Cos):

- An ability to understand basic knowledge of Computer Graphics.
- An ability to apply knowledge of Computer Graphics.
- An ability to understand the color and intensity levels.
- An ability to identify visible area of any surface.
- An ability to understand Multimedia.

UNIT - I

Devices: Display devices: Random scan and raster scan monitors. Color CRT monitor, Plasma panel, Hard copy devices: Printers and Plotter: Input devices Joysticks, Mouse, Digitizer, Scanner, Camera.

UNIT - II

Introduction to Computer Graphics, Pixel, color and intensity, Types of refresh graphics displays, CRT Raster Scan Basics, Video Basics, Interactive input and output Devices, Raster scan graphics, Line drawing algorithms, Bresenham's algorithm, Scan Conversion.

UNIT - III

Clipping- 2D clipping, line clipping algorithms, Cyrus-Beck algorithm, convex polygon & inward normal, concave clipping, Introduction of 3D clipping, character clipping.
Hidden line and Hidden surface algorithms- Floating horizon, Roberts algorithm, Warnock algorithm, Weiler-Atherton Subdivision algorithm.

UNIT - IV

Rendering, Illumination model, surface normal, reflection vector, shading, transparency, shadows, texture, colour.

UNIT V

Introduction to multimedia, multimedia components, multimedia hardware, SCSI, IDE, MCI, Multimedia data and file formats, RTF, TIFF, MIDI, JPEG, DIB, MPEG.

Suggested Readings:

1. D.Hearn and M.P. Baker "Computer Graphics" (2nd ed), PHI.
2. S. Harrington – "Computer Graphics - a Programming approach" (2nd ed) McGrawhill.
3. New Mann &Sprovl- "Principles of interactive computer graphics" (2nd ed) McGrawhill.
4. Roger S. David "Procedural Elements for Computer Graphics", McGraw Hill.
5. Roger S David "Mathematical Elements for Computer Graphics", McGraw Hill.
6. Foley &Vandan "Computer Graphics Principles & Practice in "C" "AddisionWesly.
7. Tay Vaugham "MultimediaMaking it Work" 5th Ed. 2001, Tata McGraw Hill.
8. Prabhat K. Andleigh & Kiran Thakur "Multimedia System Design", PHI
9. Drew, "Fundamentals of Multimedia", Pearsons.
10. Nigel Chapman, J. Chapman "Digital Multimedia" Wiley India.

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BCCA405	Compulsory	**System Analysis and Design**	3	1	0	4	60	20	20	0	0

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***Teacher Assessment** shall be based on following components: Quiz/Assignment/Project/Participation in class (Given that no component shall be exceed 10 Marks)

Course Educational Objectives (CEOs):

- To introduce established and evolving methodologies for the analysis, design, and development of an information system.

Course Outcomes (Cos): The students should be able to:

- Understand system characteristics, project management, prototyping, and systems development life cycle phases.
- analyze a problem and design an appropriate solution using a combination of tools and techniques

UNIT I

Overview of system analysis and design: Systems concepts, Definition, Characteristics of a system, Elements of a system, Types of Systems: Physical or Abstract System. Open or Closed Systems. Man-Made Information Systems: Categories of Information, Formal Information Systems, Informal Information Systems.

UNIT II

System Development Life Cycle: Recognition of need, Feasibility study, Analysis, Design, Implementation, Post implementation and Maintenance, Project Termination, Prototyping, Role of the system Analyst: Definition, Skills, Academic and Personal Qualifications.

UNIT III

System Analysis: Systems Planning and the Initial Investigation- Initial Investigation: Needs Identification, Strategies for Determining Information Requirements, Problem Definition and Project Initiation.

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Structured Analysis: Introduction, Tools of Structured Analysis: Dataflow Diagrams, Data Dictionaries, Decision Tables, Decision Trees, Structured English.
Feasibility study: Introduction, Feasibility Considerations, Feasibility Study Stages, Feasibility Report, Cost/Benefit Analysis.

UNIT IV

System Design: The Process and Stages of System Design: Introduction, The Process of Design: Logical and Physical Design, Design Methodologies: Structured Design, Form-Driven Methodology-The IPO Charts.
Input/Output and Forms Design: Introduction, Input Design, Output Design, Forms Design.
File Organization and Data Base Design: Introduction, File Structure, File Organization, Data Base Design, Views of Data.

UNIT V

System implementation, Post Implementation and Maintenance: Introduction, Testing objectives, Types of Testing, Quality Assurance: Quality Factors specifications, Levels of Quality Assurance, Post Implementation and Maintenance.

Suggested Readings:

1. Elias M. Awad , System Analysis and Design, GALGOTIA Publications.
2. Joseph S. Valacich, Joey F. Grorger & Jeffrey A. Hoffer, Essentials of Systems Analysis and Design, 2004.
3. V. Rajaraman, Analysis and Design of Information Systems, III Edition, 2014.

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BCCA406	COMPULSORY	Lab-1 (Computer Graphics and Multimedia Lab)	0	0	4	2	0	0	0	30	20

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- To acquaint students with windowing and clipping.
- To make the student understanding about Multimedia tools used in graphics.

Course Outcomes (Cos):

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- An ability to understand Multimedia.

List of Practical

1. Write a program for generating line using DDA algorithm.
2. Write a program for generating line using Bresenham's algorithm.
3. Write a program for generating circle using DDA algorithm.
4. Write a program for generating circle using Bresenham's algorithm.
5. Write a program for Cohen Sutherland line clipping algorithm.
6. Write a program for polygon clipping.
7. Write a program to draw mid-point circle algorithm.
8. Write a program to draw a Bezier curve.
9. Write a program to draw a Bezier surface.

Reference Books:

1. Rogers, D. F. "Procedural Elements for computer graphics". McGraw Hill.
2. Hearn, D. and Baker,M. "Computer Graphics" PHI.
3. Asthana, R. G. S. and Sinha, N. K. "Computer Graphics", New Age International.

Suggested Readings:

1. Elias M. Awad , System Analysis and Design, GALGOTIA Publications.
2. Joseph S. Valacich, Joey F. Grorger& Jeffrey A. Hoffer, Essentials of Systems Analysis and Design, 2004.
3. V. Rajaraman, Analysis and Design of Information Systems, III Edition, 2014.

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BCCA407	Compulsory	Lab-2 (System Analysis & Design Lab)	0	0	4	2	0	0	0	30	20

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- To introduce established and evolving methodologies for the analysis, design and development of an information system.

Course Outcomes (Cos): The students should be able to:

- Understand system characteristics, project management, prototyping, and systems development life cycle phases.
- analyze a problem and design an appropriate solution using a combination of tools and techniques

Knowledge and understanding

1. Explain the principles, methods and techniques of systems development
2. Elaborate on the application areas for different types of methods
3. Explain the problems relating to systems development
4. Describe the differences between turn-key systems and systems developed by the organization
5. Describe the various stages of a phased systems analysis method
6. Explain, from a system theoretical viewpoint, how systems development is perceived
7. Discuss principles, methods and techniques for systems development with persons without specialized knowledge in this area

Skills and abilities

1. Use a phased system development methodology to implement a systems development project
2. Collaborate with other students to jointly implement a systems development project
3. Analyze and model organizational work
4. Identify and describe different types of objectives for businesses and organizations
5. Analyze and describe processes

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6. Describe a complete, new system in terms of processes and data structures

Values and perspectives

1. Show an understanding of how the values a system development methodology is based on can affect the resulting system
2. Demonstrate an understanding of the uncertainties that different users may have when it comes to introducing a new information system in an organization
3. Critically reflect on the completed system development project