Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

Shri Vaishnav Institute of Computer Applications

Name of Prgram: BCA + MCA/ BCA + MCA (Banking Technology)

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	DCC	Computer Networks	3	0	0	3	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.

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UNIT-IV

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

UNIT-V

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

Text Books:

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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BCCA402	DCC	Introduction to Artificial Intelligence	4	0	0	4	60	20	20	00	00

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit;
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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 provide the knowledge of AI and Expert System
- To explain advance applications of AI and Fuzzy logic concept.
- To develop Knowledge representations to understand proper uses of AI applications.

Course Outcomes (COs): Students will be able to

- Identify and describe AI techniques and their roles in building intelligent machines.
- Recognize the feasibility of applying an artificial intelligence methodology for a particular problem.
- Apply fuzzy logic and reasoning to handle uncertainty and solve engineering problems.

Unit-I

Introduction: Definition, Basic elements of Artificial Intelligence (AI), Applications of AI, History of AI, Characteristics of AI applications, AI techniques

Unit-II

Knowledge Representations: Definition, Types of Knowledge: Declarative Knowledge, Procedural Knowledge, Structural Knowledge, Heuristic Knowledge, Relation between knowledge and intelligence, AI knowledge cycle, Approaches to knowledge representation, Techniques of knowledge representation.

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BCCA402	DCC	Introduction to Artificial Intelligence	4	0	0	4	60	20	20	00	00

Unit-III

Fuzzy Computing: Basic Concepts of Fuzzy Logic, Fuzzy Sets and Crisp Sets, Applications of Fuzzy Logic, Properties of Fuzzy Sets, Fuzzy and Crisp Relations, Fuzzy to Crisp Conversion Membership Functions, Interference in Fuzzy Logic, Fuzzy If – Then Rules, Fuzzification's and Defuzzification's, Fuzzy Controller.

Unit-IV

Expert Systems: Definition, advantages, characteristics, Design of expert systems – selecting a problem, Expert systems development stages, Issues in development, Expert system software engineering, Expert system life cycle.

Unit-V

Advance Issues in AI: Engineering Applications of Artificial Intelligence, Future of Artificial Intelligence, Artificial Intelligence in Healthcare, Artificial Intelligence in Education, Artificial Intelligence in Agriculture, Robotics and Artificial Intelligence, Languages used in Artificial Intelligence.

Text Readings

1. "Artificial Intelligence" by Elaine Rich and Kevin Knight, TMH.
2. "Artificial Intelligence: A Modern Approach" by Stuart Russell and Peter Norvig, 3rd edition, Pearson Education.
3. "Artificial Intelligence and Expert Systems" by D.W.Patterson,PHI.
4. Artificial Intelligence", Tata Mcgraw Hill, 2nd Edition by Rich and Knight

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BCCA403	SEC	Basics of Computer Graphics and Multimedia Concepts	3	0	0	3	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 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.

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.

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BCCA403	SEC	Basics of Computer Graphics and Multimedia Concepts	3	0	0	3	60	20	20	0	0

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.

Text Books:

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” “Addision Wesly.
7. Tay Vaugham, “Multimedia Making 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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ML307	AEC	Environmental Management and Sustainability	4	0	0	4	60	20	20	0	0

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
***Teacher's Assessment** shall be based upon following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Objectives

1. To create awareness towards various environmental problems.
2. To create awareness among students towards issues of sustainable development.
3. To expose students towards environment friendly practices of organizations.
4. To sensitize students to act responsibly towards environment.

Examination Scheme

The internal assessment of the students' performance will be done out of 40 Marks. The semester Examination will be worth 60 Marks. The question paper and semester exam will consist of two sections A and B. Section A will carry 36 Marks and consist of five questions, out of which studentwill be required to attempt any three questions. Section B will comprise of one or more cases / problems worth 24 marks.

Course Outcomes

1. The course will give students an overview of various environmental concerns and practicalchallenges in environmental management and sustainability.
2. Emphasis is given to make students practice environment friendly behavior in day -to-dayactivities.

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ML307	AEC	Environmental Management and Sustainability	4	0	0	4	60	20	20	0	0

COURSE CONTENT

Unit I: Introduction to Environment Pollution and Control

1. Pollution and its types (Air, Water, and Soil): Causes, Effects and Control measures
2. Municipal Solid Waste: Definition, Composition, Effects
3. Electronic Waste: Definition, Composition, Effects
4. Plastic Pollution: Causes, Effects and Control Measures

Unit II: Climate Change and Environmental Challenges

1. Global Warming and Green House Effect
2. Depletion of the Ozone Layer
3. Acid Rain
4. Nuclear Hazards

Unit III: Environmental Management and Sustainable Development

1. Environmental Management and Sustainable Development: An overview
2. Sustainable Development Goals (17 SDGs)
3. Significance of Sustainable Development
4. Environment Friendly Practices At Workplace and Home (Three Rs' of Waste Management, Water Conservation, Energy Conservation)

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Unit IV: Environmental Acts

1. The Water (Prevention and Control of Pollution) Act, 1974: Objectives, Definition ofPollution under this act, Powers and Functions of Boards
2. The Air (Prevention and Control of Pollution) Act, 1981: Objectives, Definition of Pollutionunder this act, Powers and Functions of Boards
3. The Environment (Protection) Act, 1986: Objectives, Definition of important terms used inthis Act, Details about the act.
4. Environmental Impact Assessment: Concept and Benefits

Unit V: Role of Individuals, Corporate and Society

1. Environmental Values
2. Positive and Adverse Impact of Technological Developments on Society and Environment
3. Role of an individual/ Corporate/ Society in environmental conservation
4. Case Studies**:** The Bhopal Gas Tragedy, New Delhi's Air Pollution, Arsenic Pollution in Ground Water (West Bengal), Narmada Valley Project, Cauvery Water Dispute, Fukushima Daiichi Disaster (Japan), Ozone Hole over Antarctica, Ganga Pollution, Deterioration of Taj Mahal, Uttarakhand flash floods.

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Suggested Readings:

1. Rogers, P.P., Jalal, K.F. , Boyd, J.A.(Latest Edition) . **An Introduction to Sustainable Development.** Earthscan
2. Kalam, A.P.J. (Latest Edition) . ***Target 3 Billon: Innovative Solutions Towards Sustainable Development.*** Penguin Books
3. Kaushik , A. and Kaushik (Latest Edition). ***Perspectives in Environmental Studies***. New Delhi: New Age International Publishers.
4. Dhameja, S.K. (Latest Edition). ***Environmental Studies***. S.K. Kataria and Sons.New Delhi
5. Bharucha, E. (Latest Edition). ***Environmental Studies for Undergraduate Courses.*** NewDelhi: University Grants Commission.
6. Wright, R. T. (Latest Edition). ***Environmental Science: towards a sustainable future*** .New Delhi: PHL Learning Private Ltd.
7. Rajagopalan, R. (Latest Edition). ***Environmental Studies***. New York: Oxford University Press.

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BCCA406	SEC	Computer Graphics and Multimedia Lab	0	0	4	2	0	0	0	30	20

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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.

COURSE CODE	CATEGORY	COURSE NAME	L	T	P	CREDITS	TEACHING & EVALUATION SCHEME				
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BCCA406	SEC	Computer Graphics and Multimedia Lab	0	0	4	2	0	0	0	30	20

9. Write a program to draw a Bezier surface.

Text 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.

Reference Books:

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.