

BCA Curriculum Scheme and Structure (Semester Wise)

Semester-VI (2017)

Course Code	Course Title	Marks		Total
BCA-SVI-01	Seminar And Project	50 (Internal)	150 (External)	200
BCA-SVI-02	Artificial Intelligence	25	75	100
BCA-SVI-03	Computer Graphics	25	75	100
BCA-SVI-04	Linear Algebra	25	75	100

Proposed Semester based syllabus for BCA to be effective from 2015

BCA 6th Semester

Course Code: BCA-SVI-01

Course Title: Project and Seminar

Course Code: BCA-SVI-02

Course Title: Artificial Intelligence

Unit I

Introduction: definition, classification of definitions, intelligent agents, Agents and environments - The nature of environments -Structure of agents, Problem solving agents, Example problems. Local search in continuous spaces, online search agents.

Unit II

Searching for solutions, uniformed search strategies, avoiding repeated states, searching with partial information. Informed search and exploration, informed search strategies, Heuristic function, Local search algorithms and optimization problems. Unknown environments, backtracking search -Adversarial search.

Unit III

AI Languages –

Lisp: McCarthy, parenthesis, data, functions, atoms, lists, eval, Read/Eval/Print loop, debugging, trace, Garbage collection and how it works

Prolog: Predicate, arity, Clause – Facts, Rules , Queries – simple and compound, Control structure - depth first, backtracking, cut;

Development of Prolog programs for simple application.

Unit IV

First order logic, Syntax and semantics for first order logic, Using first order logic, Knowledge engineering in first order logic, Inference in first order logic– Propositional versus first order logic.

TEXT BOOK

1. Russell, S. and Norvig, P., “Artificial Intelligence-A Modern Approach”, 2nd Edition, Pearson Education / Prentice Hall of India, 2004.

References :

1. Patterson ,” Introduction to Artificial intelligence and expert systems” , Pearson Education
2. Elaine Rich and Kevin Knight, “Artificial Intelligence”, 2nd Edition, Tata McGraw-Hill, 2003.
3. Luger, G.F., “Artificial Intelligence, Structures and Strategies for Complex Problem Solving”,Pearson Education / Prentice Hall of India, 2002.

Proposed Semester based syllabus for BCA to be effective from 2015

Course Code: BCA-SVI-03

Course Title: Computer Graphics

Unit I

Introduction to Computer Graphics. Applications of Computer Graphics. Input and output devices. Graphic Display Devices_ Raster, Refresh, Random. Interactive computer Graphics, basic positioning methods.

Unit II

Mathematics for Computer Graphics: coordinate reference frames, 2D Cartesian reference frame, Polar coordinate in the xy plane, Points and vectors, vector addition, scalar multiplication, scalar product and vector product, Matrices, Scalar multiplication and addition of matrices, matrix multiplication.

Unit III:

2-D Graphics. Cartesian and Homogeneous Coordinate Systems. Line drawing algorithms DDA line drawing algorithm, Basic 2-Dimensional Transformations. Concepts of Window & Viewport, Window to Viewport Transformation Pipeline.

Unit IV

2D-Clipping: Polygon filling algorithms (Flood fill, Boundary fill, scan-line filling), Clipping, Line Clipping Algorithms (Cohen-Sutherland Algorithm), Text Clipping.

Text Book : Hearn and Baker “ Computer Graphics” 2nd Edition , Pearson Education.

Reference Books

1. W.M.Newman and Sproull. “Principles of interactive Computer Graphics” ,TMH
- 2.Steven Harrington.” Computer Graphics a Programming Approach” McGraw Hill.
3. Plastock and Kelley. “Schaums outline of theory and problems of computer Graphics”
4. David F Frogers and J Alan Adams. “Procedural Elements of Computer Graphics” McGraw Hill
5. David F Rogers and J Alan Adams. “Mathematical Elements of Computer Graphics” McGraw Hill
6. James. D. Foley, A Vandam etal “Computer Graphics” Pearson.

Proposed Semester based syllabus for BCA to be effective from 2015

Course Code: BCA-SVI-04

Course Title: Linear Algebra

UNIT-I

Matrices. Types of Matrices, Addition, Subtraction, Scalar Multiplication and Multiplication of Matrices, Algebraic Properties of Matrix Operations. Solving Linear Systems. Elementary Matrices. Vector Equations, the Matrix Equation $Ax = b$, Solution Sets of Linear Systems Finding the Inverse of a Matrix. Equivalent Matrices.

UNIT-II

DETERMINANTS: Definition, Minors, Cofactors, Properties of Determinants

MATRICES: Adjoint, Inverse, Cramer's Rule, Rank of Matrix Dependence of Vectors, Eigen Vectors of a Matrix, Caley-Hamilton Theorem (without proof).

UNIT-III

Vector spaces and algebras. Linear dependence and independence. Bases. Linear transformations and their representation as matrices. Geometrical interpretation of determinant of a 2x2 matrix.

UNIT-IV

Eigenvalues and Eigenvectors. Diagonalization and Similar Matrices Diagonalization of Symmetric Matrices. Markov Matrices. Mat lab programming of matrix operations.

References:

1. SERGE LANG : Introduction to Linear Algebra, Springer Verlag.
2. S. KUMARESAN : Linear Algebra A Geometric approach, Prentice Hall of India Private Limited.
3. M. ARTIN : Algebra, Prentice Hall of India Private Limited.
4. K. HOFFMAN and R. KUNZE : Linear Algebra, Tata McGraw Hill, New Delhi.
5. GILBERT STRANG : Linear Algebra and its applications, International Student Edition.
6. L. SMITH : Linear Algebra, Springer Verlag.
7. A. RAMACHANDRA RAO and P. BHIMA SANKARAN : Linear Algebra, Tata McGraw Hill, New Delhi.
8. T. BANCHOFF and J. WERMER : Linear Algebra through Geometry, Springer Verlag New York, 1984.
9. SHELDON AXLER : Linear Algebra done right, Springer Verlag, New York.
10. KLAUS JANICH : Linear Algebra.
11. OTTO BRETCHER : Linear Algebra with Applications, Pearson Education.
12. GARETH WILLIAMS : Linear Algebra with Applications, Narosa Publication.