CSE Semester: V Sem	Code CS – 501	Subject Artificial Intelligence	LTP C 3 0 0 3
Prerequisite: Discrete mathematics, Basic probability theory and Data Structure			
CO1	Exhibit strong familiarity with a number of important AI techniques, including in particular search, knowledge representation, planning and constraint management.		Level 2: Understand
CO2	Demonstrate various informed search methods to solve AI application problems.		Level 3: Apply
CO3	Build awareness of AI facing major challenges and the complexity of typical problems within the field.		Level 3: Apply
CO4	Illustrate the concepts of knowledge representation through logics, inference rules and deduce solutions using the principle of resolution.		Level 3: Apply
CO5	Explain the concept of learning and explore uncertainty with probabilistic reasoning.		Level 3: Apply
Unit - I	**Introduction**: Artificial Intelligence, Agents- Environments and its types, AI Application areas. Problems, Problem space, Problem characteristics, Production systems. Search algorithm terminologies, uninformed searches.		6 Hrs.
Unit - II	**Informed Search**: Generate and Test, Best First Search, Heuristics Search, A*, Problem reduction, AO*, Hill climbing, Simulated annealing.		7 Hrs.
Unit - III	**Adversarial Search and Constraint Satisfaction Problems**: minimax algorithm, Optimal decisions in multiplayer games, Alpha-Beta Pruning, move ordering, Evaluation functions, Cutting off search, Forward pruning, Constraint Satisfaction Problems: Defining Constraint Satisfaction Problems, Variations on the CSP formalism, Constraint Propagation: Inference in CSPs, Backtracking Search for CSPs, Local Search for CSPs		8 Hrs.
Unit - IV	**Knowledge Representation**: Types of Knowledge, Knowledge based system and reasoning, frames, and semantic nets. Logic and Inferences: Propositional logic (PL) and Predicate Logic (FOPL), Inference rules, Conversion to clausal form, Unification, Forward & backward Chaining, Resolution refutation proof for PL and FOPL.		7 Hrs.
Unit - V	**Learning**: Rote learning, Learning by Taking Advice, Learning in Problem-solving, Learning from example: induction, Explanation-based learning. Inductive Learning, Winston learning program, Version space, Candidate elimination algorithm, Decision tree. Reasoning in uncertain environments: Probabilistic reasoning, Bayes theorem.		7 Hrs.
Text Books			

- Artificial Intelligence by Elaine Rich, Kevin Knight and Nair ISBN-978-0-07- 008770-5, TMH

Reference Books

- Artificial Intelligence: A Modern Approach, Stuart Russell and Peter Norvig 3rdEdition, Prentice Hall, 2010
- Introduction to Artificial Intelligence, Dan W Patterson Pearson,2009
- Artificial Intelligence and Intelligent Systems by Padhy, Oxford University Press
- Artificial intelligence, Addison Wesley, Patrick Henry Winston 1992
- Heuristic Search: Theory and Applications, Stefan Edelkamp, Stefan Schroedl Morgan Kaufman, 2011

CO – PO – PSO Mappings

COs	Programme Outcomes (POs)												PSO	
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**
CO1	1	1	2	2	2	1								
CO2	3	2	3	2	2	1								
CO3	3	2	3	2	2	1						1		2
CO4	3	2	3	2	2	1						1		
CO5	3	2	3	2	2	1								2

CSE Semester: V Sem	Code Subject CS – 502 Distributed System	LTP C 3 0 0 3
Prerequisite: Knowledge of Computer networks and Operating system		
CO1	Illustrate principles and importance of distributed operating .	Level 2: Understand
CO2	Illustrate the concept of Inter process communication and apply various distributed algorithms related to clock synchronization.	Level 3: Apply
CO3	Ability to understand Distributed shared memory.	Level 2: Understand
CO4	Designing and evaluation of algorithms and protocols for various distributed systems.	Level 3: Apply
CO5	Ability to understand Transactions and Concurrency control.	Level 2: Understand
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.	6 Hrs.
Unit - II	**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, Logical clocks, Lamport's & vectors logical clocks .Concepts in Message Passing Systems: causal order, total order, total causal order.	7 Hrs.
Unit - III	**Distributed Shared Memory And Distributed File System:** Basic Concept of Distributed Shared Memory (DSM), DSM Architecture & its Types, Design & Implementations Issues In DSM System, Consistency Model, and Thrashing. Desirable features of good Distributed File System, File Model, File Service Architecture, File Accessing Model, File Sharing Semantics, File Caching Scheme, File Application & Fault tolerance.	8 Hrs.
Unit - IV	**Distributed Mutual Exclusion:** Classification of distributed mutual exclusion, requirement of mutual exclusion theorem, Token based and non token based algorithms, performance metric for distributed mutual exclusion algorithms. Distributed Deadlock Detection: system model, resource Vs communication deadlocks, deadlock prevention, avoidance, detection & resolution, centralized deadlock detection, distributed deadlock detection.	7 Hrs.

Unit - V	**Transactions and Concurrency Control:** Introduction, Transactions, Nested Transactions, Locks, Optimistic Concurrency Control, Timestamp Ordering, Comparison of Methods for Concurrency Control. Distributed Transactions: Introduction, Flat and Nested Distributed Transactions, Atomic Commit Protocols, Concurrency Control in Distributed Transactions, Distributed Deadlocks, Transaction Recovery.	7 Hrs.

Text Books

- Distributed Systems, Concepts and Design, George Coulouris, J Dollimore and Tim Kindberg, Pearson Education, Edition. 2009.

Reference Books

- Singhal & Shivaratri, "Advanced Concept in Operating Systems", McGraw Hill
- Pradeep K. Sinha, Distributed Operating Systems, PHI, 2005.
- Coulouris, Dollimore, Kindberg, "Distributed System: Concepts and Design", Pearson Education
- Tenanuanbaum, Steen," Distributed Systems", PHI
- Gerald Tel, "Distributed Algorithms", Cambridge University Press

CO – PO – PSO Mappings

COs	Programme Outcomes (POs)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	1			1					1			1	1
CO2	2	3	2	2	1								2	2
CO3	3	1								1			1	1
CO4	2	2	3	3	2		2						3	2
CO5	2	3	1		2								1	1

CSE Semester: V Sem	Code CS – 503	Subject Computer Graphics & Multimedia	LTP C 3 1 0 4
Prerequisites: Basic Knowledge of Matrix, 2-dimensional & 3-dimensional concepts**.**			
CO1	To understand the Graphics systems, its applications, hardware & software requirement.		Level 2:
CO2	To apply scan conversion algorithms of various graphics output primitives.		Level 3:
CO3	To understand the basic principles of homogeneous coordinate systems, 2-dimensional & 3- dimensional computer graphics systems.		Level 3:
CO4	To create geometrical transformation on 2-dimensional & 3-dimensional objects.		Level 3:
CO5	To apply window into viewport, clipping algorithms of graphics objects against a window.		Level 3:
Unit – I	Basic of Computer Graphics, Applications of computer graphics, Display devices, Cathode Ray Tube, quality of phosphors, CRTs for color display, beam penetration CRT, The Shadow - Mask CRT, Direct View Storage Tube,LED and LCD. Graphics input devices, Graphics software and standards, Output primitives, attributes of output primitives, point and line style, color and intensity, Area filling algorithms, Scan line algorithm, boundary fill & flood fill algorithm, Antialiasing techniques.		6 Hrs.
Unit – II	Line drawing- various algorithms and their comparison, circle generation - Bresenham's midpoint circle drawing algorithm, 2D transformation- Basic Transformations, Matrix Representation and Homogeneous Coordinates, translation, scaling, rotation, reflection, sheering, composite transformation, Window to view port transformation, line clipping algorithm; Cohen Sutherland, polygon clipping; Sutherland hodgman algorithm.		7 Hrs.
Unit – III	Need for 3-Dimensional imaging, techniques for 3-Dimesional displaying, 3D transformation, projection and its types, Curve-parametric and non parametric functions, Bezier (Bernstein Polynomials) Curves, Cubic-Splines, B-Splines, Need for hidden surface removal, Back face detection, Z-buffer method, Painter's algorithm.		8 Hrs.
Unit – IV	Shading Algorithms-Phong's shading model, Gouraud shading, Shadows and background, illumination, light sources, illumination methods (ambient, diffuse reflection, specular reflection), Color models: properties of light, XYZ, RGB, YIQ and CMY color models		7 Hrs.

Unit – V	**UNIT V:** Multimedia systems-An introduction, multimedia hardware and architecture, Data and file format standard i.e. RTF, TIFF, MIDI, JPEG, MPEG, Video- AVI, 3GP, MOV, MPEG, Compression standards, Multimedia Authoring.	7 Hrs.

Reference Books

- Computer Graphics C Version, Donald Hearn & M. Pauline Baker , Pearson Education, New Delhi, 2004 (Chapters 1 to 12 except 10-9 to 10-22)
- James D. Foley, Andries Van Dam, Steven K. Feiner, John F. Hughes, Computer Graphics- Principles and practice, Second Edition in C, Pearson Education, 2007.
- OpenGL ES 3.0 Programming Guide 2nd Edition (English, Paperback, Budi Rijanto Purnomo, Dan Ginsburg),
- PEARSON.
- Rogers, "Procedural elements of Computer Graphics", Tata McGraw Hill.
- Parekh, "Principles if multimedia", Tata McGraw Hill.

CO – PO – PSO Mappings

COs	Programme Outcomes (POs												PSO	
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**
CO1	2					2	2	1				3	1	
CO2	3		2	2	1	2	1	1				1	3	
CO3	3	3		2	2	2	2	2				2	2	1
CO4	3	3	2	3	3		3	1				1	2	1
CO5	2	3	2	2	3		2	3				2	3	

CSE Semester: V Sem	Code Subject CS –504 (A) Software Testing	L T P C 3 0 0 3
Prerequisite: Software Engineering and UML		
CO1	Understand importance of testing techniques in software quality management and assurance (Understand)	Level 2: Understand
CO2	Understand and apply the concepts of software testing and its application in various scenarios with the help of different testing strategies, methods and tools.	Level 3: Apply
CO3	Create test case scenarios for different application softwares using various testing techniques. (Create)	Level 3: Apply
CO4	Apply different testing methodologies used in industries for software testing. (Apply)	Level 3: Apply
CO5	Identify various types of software risks and its impact on different software applications. (Analyze)	Level 4: Analyze
Unit - I	**Introduction:** Software Testing, Importance of testing, Roles and Responsibilities, Testing Principles, Attributes of Good Test, V-Model, Test Case Generation , SDLC Vs STLC, Software Testing Life Cycle-in detail. **Types of Testing:** Testing Strategies: Unit Testing, Integration Testing, System Testing, Smoke, Regression Testing, Acceptance Testing. CleanRoom Software Engineering. Functional/Non-Functional Testing. Testing Tools, Categorization of testing methods: Manual Testing, Automation Testing and Automated Testing Vs. Manual Testing.	6 Hrs.
Unit - II	**Non Functional Testing**: Performance Test, Memory Test , Scalability Test, Compatibility Test, Security Test, Cookies Test, Session Test, Recovery Test, Installation Test, Ad-hoc Test, Risk Based Test, Compliance Test. McCall's Quality Factors, FURPS. **Software Testing Methodologies:** Validation & Verification, White/Glass Box Testing, Black Box Testing, Grey Box Testing, Statement Coverage Testing, Branch Coverage Testing, Path Coverage Testing, Conditional Coverage Testing, Loop Coverage Testing, Boundary Value Analysis, Equivalence Class Partition, State Based Testing, Cause Effective Graph, Decision Table, Use Case Testing, Exploratory testing and Testing Metrics, Testing GUI	7 Hrs.
Unit - III	**Software Testing Life Cycle:** Requirements Analysis/Design, Traceability Matrix, Test Planning, Objective, Scope of Testing, Schedule, Approach, Roles & Responsibilities, Assumptions, Risks & Mitigations,Entry & Exit Criteria, Test Automation, Deliverables.	7 Hrs.

Unit - IV	**Test Cases Design:** Write Test cases, Review Test cases, Test Cases Template, Types of Test Cases, Difference between Test Scenarios and Test Cases. Test Environment setup, Understand the SRS, Hardware and software requirements, Test Data. Entry & Exit Criteria, Test Automation, Deliverables.	7 Hrs.
Unit - V	**Test Execution:** Execute test cases, Error/Defect Detecting and Reporting, DRE(Defect Removal Efficiency), Object ,Types of Bugs , Art of Debugging,. Debugging Approaches, Reporting the Bugs, Severity and priority, Test Closure, Criteria for test closure, Test summary report. **Test Metrics:** Test Measurements, Test Metrics, Metric Life Cycle, Types of Manual Test Metrics. **QA & QC & Testing:** Quality Assurance, What is Quality Control, Differences of QA , QC & Testing.	8 Hrs.

Text Books

- Roger S.Pressman, Software engineering- A practitioner's Approach, McGraw-Hill International Editions

Reference Books

- Ian Sommerville, Software engineering, Pearson education Asia
- Software Testing Techniques, 2nd edition, Boris Beizer, 1990
- Software Testing: Principles and Practices by Srinivasan Desikan
- Software Testing and Quality Assurance: Theory and Practice by Kshirasagar Naik and Priyadarshi Tripathy
- Software Quality Approaches: Testing, Verification, and Validation: Software Best Practice by Michael Haug and Eric W Olsen

CO – PO – PSO Mappings

COs	**Programme Outcomes (POs)**												**PSO**	
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**
CO1	3	2										2		
CO2	3	3	3									2		
CO3	3	3	3					2		1		2	1	
CO4	3	3	3	3	2	2	2	2	2	2	1	2	1	1
CO5	3	3	3	3	2	2	2	2	2	2	1	2	3	3

CSE Semester : V Sem	Code Subject CS – 504(B) Web Technology	LTP C 3 0 0 3
Prerequisite: Basic Knowledge of Internet Concepts, Software Engineering		
CO1	Apply cascading style sheet concept to design web page	Level 2: Understand
CO2	Create Web Page with functionalities using Java Script.	Level 3: Apply
CO3	Understand the event handling in web technology.	Level 3: Apply
CO4	Understand and demonstrate the uses of PHP in web page design and Development of websites.	Level 3: Apply
CO5	Apply cascading style sheet concept to design web page	Level 3: Apply
Unit - I	BASICS OF HTML: Html tags, entities, links, frames, Text Alignment and Lists, Text Formatting, Fonts Control, head, meta, Email Links and link within a Page, creating a Table, rules of web designing, Creating HTML Forms. page design, home page layout, Design concepts, create a Web page with Graphics, Custom Backgrounds and Colors, Creating Animated Graphics, scripts, attributes, events, URL encode.	6 Hrs.
Unit - II	CASCADING STYLE SHEET: CSS, Defining Style with HTML Tags, Features of Style Sheet, Style Properties, Style Classes, External Style Sheet, Creating Style Sheet, working with block elements and objects, working with list and table, CSS advance.	7 Hrs.
Unit - III	JAVASCRIPT: Introduction to JavaScript: Writing First JavaScript, External JavaScript, Variables: Rules for variable names, Declaring the variable, Assign a value to a variable, Scope of variable, Arrays, Using Operators, Control Statements, JavaScript loops, JavaScript Functions: Defining a Function, Returning value from function, User defined function, Dialog Box	8 Hrs.
Unit - IV	JAVASCRIPT DOM: Introduction Object in HTML, Event Handling, Window Object, Document Object, Browser Object, Form Object, Navigator Object, Screen Object, Built in Object, User defined Objects, Cookies.	7 Hrs.

Unit - V	PHP BASICS: Origin and Uses of PHP, Overview of PHP, General Syntactic Characteristics, Primitives, Operators and Expressions, Output Statement, Control Statements, Arrays, Built-in Functions, User-defined Validating Data Entry, Form Handling, Cookies, Session Tracking	7 Hrs.

Reference Books

- "HTML & CSS: The complete reference" by Thomas A. Powel, 5th Edition, McGraw Hill, 2017
- "JavaScript Bible" by Danny Goodman, 7th Edition, Wiely, 2010.
- "Beginning PHP 5" by Dave W & others, Wiley-dreamtech, Edition 2004

CO-PO-PSO Mappings

COs	**Programme Outcomes (POs)**												**PSO**	
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**
CO1	1	1	2	2	2	1								
CO2	3	2	3	2	2	1								
CO3	3	2	3	2	2	1						1		2
CO4	3	2	3	2	2	1						1		
CO5	3	2	3	2	2	1								2

CSE Semester: V Sem	Code CS – 504 (C)	Subject Network Security	L T P C 3 0 0 3

Prerequisites: To have knowledge of Discrete Structures and Linear Algebra and students are expected to have basic knowledge of Computer Networks.

CO1	To Understand cryptography concepts and application.	
CO2	To Identify and investigate network security threats.	
CO3	Apply security principles to system design.	
CO4	To Apply cryptography algorithms to design secure system	
CO5	To Understand and Apply authentication requirements	

UNITs	**Descriptions**	**Hrs.**
UNIT I	**Introduction :** Introduction to Cryptography, Security Threats, Vulnerability, Active and Passive attacks, Security services and mechanism, Conventional Encryption Model, CIA model	**4**
UNIT II	**Classical Encryption Techniques:** Symmetric Cipher Model, Cryptography, Cryptanalysis and Brute-Force Attack, Substitution Techniques, Caesar Cipher, Monoalphabetic Cipher, Playfair Cipher, Hill Cipher, Polyalphabetic Cipher, One Time Pad.	8
UNIT III	**Block Ciphers and the Data encryption standard:** Traditional block Cipher structure, stream Ciphers and block Ciphers, Motivation for the feistel Cipher structure, Simplified DES,DES Modes of Block Cipher Encryptions (Electronic Code Book, Cipher Block Chaining, Cipher Feedback Mode, Output Feedback Mode, Counter Mode), Symmetric Ciphers, Asymmetric Ciphers.	10
UNIT IV	**Public-Key Cryptography:** Principles of public-key cryptosystems. Public-key cryptosystems. Applications for public-key cryptosystems, requirements for public-key cryptosystems. RSA algorithm, Diffie-hellman key exchange	10
UNIT V	**Hash and MAC Algorithms** : Authentication Requirement, Functions, Message Authentication Code, Hash Functions, MD5 Message Digest Algorithm, Secure Hash Algorithm, Digital Signatures	8
Total Hours		40

Text Books & Reference Books-

- William Stallings: Cryptography and Network Security, Pearson 6th edition.
- "Cryptography & Network Security", Mc Graw Hill Atul Kahate
- V K Pachghare: Cryptography and Information Security, PHI 2nd Edition
- W. Mao, "Modern Cryptography – Theory and Practice", Pearson Education.
- Jonathan Katz and Yehuda Lindell, Introduction to Modern Cryptography, CRC Press.
- Network Security Essentials: Applications and Standards, by William Stallings. Prentice Hall

CO-PO Mappings:

COs	Programme Outcomes (POs)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO-1	1	1	2										1	2
CO-2	2	2	2										1	2
CO-3	2	1	2										1	2
CO-4	2	1	2											2
CO-5	2	2	1										1	2

CSE Semester: V Sem	Code CS – 505 (A)	Subject Foundation of Data Science	L T P C 3 0 0 3
Prerequisites: Mathematics			
CO1	To explain how data is collected, managed and stored for data science.		
CO2	To understand the key concepts in data science, including their real-world applications and the toolkit used by data scientists.		
CO3	To implement data collection and management scripts using Mongo DB.		
CO4	Examine the techniques of Data Visualization.		
CO5	Identification of various applications of Data Science.		
UNITs	**Descriptions**		**Hrs.**
UNIT I	Data Science-What is Data Science, Need for Data Science, Difference between Data Science & Business Intelligence, Data Science Components, Tools for Data Science, Data Science Life cycle, Applications of Data Science, Data Science Ethics. Representation of Data- Types of data, primary, secondary, quantitative and qualitative data. Types of Measurements, nominal, ordinal, discrete and continuous data.		6
UNIT II	Presentation of data by tables, construction of frequency distributions for discrete and continuous data. Graphical representation of a frequency distribution by histogram and frequency polygon, cumulative frequency distributions. Data Pre-processing- Knowing Data, Data Cleaning, Data Integration, Data Selection, Data Transformation		8
UNIT III	Descriptive Statistics-Arithmetic mean, Median, Mode, Geometric mean, Harmonic mean. Partition values: Quartiles, Deciles and percentiles. Measures of dispersion: Mean deviation, Quartile deviation, Standard deviation, Coefficient of variation. Moments: measures of skewness, Kurtosis		8
UNIT IV	Correlation-Scatter plot, Karl Pearson coefficient of correlation, Spearman's rank correlation coefficient, multiple and partial correlations. Regression: Concept of errors, Principles of Least Square, Simple linear regression and its properties. Types of Regressions		10
UNIT V	Basics of Big Data, Problem handling large data, general techniques for handling large data, Basic concept of Machine Learning, training model, validating model, supervised & unsupervised learning.		8
Total Hours			40

Text Books & Reference Books

- Joel Grus, Data Science from Scratch, Shroff Publisher/O'Reilly Publisher Media
- Annalyn Ng, Kenneth Soo, Num sense Data Science for the Layman, Shroff Publisher Publisher
- Cathy O 'Neil and Rachel Schutt. Doing Data Science, Straight Talk from The Frontline. O'Reilly Publisher.

CO-PO-PSO Mappings

COs	Programme Outcomes (POs)												PSO	
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**
CO-1	3	2											3	
CO-2	3	3			1									
CO-3	3	3	1		1							3		3
CO-4	3	3	2	1								1	2	3
CO-5	3	3										1	2	

CSE Semester: V Sem	Code CS – 505(B) Subject Artificial Intelligence	LTP C 3 0 0 3
Prerequisite: Discrete mathematics, Basic probability theory and Data Structure		
CO1	Exhibit strong familiarity with a number of important AI techniques, including in particular search, knowledge representation, planning and constraint management.	Level 2: Understand
CO2	Demonstrate various informed search methods to solve AI application problems.	Level 3: Apply
CO3	Build awareness of AI facing major challenges and the complexity of typical problems within the field.	Level 3: Apply
CO4	Illustrate the concepts of knowledge representation through logics, inference rules and deduce solutions using the principle of resolution.	Level 3: Apply
CO5	Explain the concept of learning and explore uncertainty with probabilistic reasoning.	Level 3: Apply
Unit - I	**Introduction**: Artificial Intelligence, Agents- Environments and its types, AI Application areas. Problems, Problem space, Problem characteristics, Production systems. Search algorithm terminologies, uninformed searches.	6 Hrs.
Unit - II	**Informed Search**: Generate and Test, Best First Search, Heuristics Search, A*, Problem reduction, AO*, Constraint Satisfaction problems, Hill climbing, Simulated annealing.	7 Hrs.
Unit - III	**Adversarial Search and Constraint Satisfaction Problems**: minimax algorithm, Optimal decisions in multiplayer games, Alpha-Beta Pruning, move ordering, Evaluation functions, Cutting off search, Forward pruning, Constraint Satisfaction Problems: Defining Constraint Satisfaction Problems, Variations on the CSP formalism, Constraint Propagation: Inference in CSPs, Backtracking Search for CSPs, Local Search for CSPs	8 Hrs.
Unit - IV	**Knowledge Representation**: Types of Knowledge, Knowledge based system and reasoning, frames, and semantic nets. Logic and Inferences: Propositional logic (PL) and Predicate Logic (FOPL), Inference rules, Conversion to clausal form, Unification, Forward & backward Chaining, Resolution refutation proof for PL and FOPL.	7 Hrs.
Unit - V	**Learning**: Rote learning, Learning by Taking Advice, Learning in Problem-solving, Learning from example: induction, Explanation-based learning. Inductive Learning, Winston learning program, Version space, Candidate elimination algorithm, Decision tree. Reasoning in uncertain environments: Probabilistic reasoning, Bayes theorem.	7 Hrs.
Text Books		

- Artificial Intelligence by Elaine Rich, Kevin Knight and Nair ISBN-978-0-07- 008770-5, TMH

Reference Books

- Artificial Intelligence: A Modern Approach, Stuart Russell and Peter Norvig 3rd Edition, Prentice Hall, 2010
- Introduction to Artificial Intelligence, Dan W Patterson Pearson,2009
- Artificial Intelligence and Intelligent Systems by Padhy, Oxforfd University Press
- Artificial intelligence, Addisson wessley, Patrick Henry Winston 1992
- Heuristic Search: Theory and Applications, Stefan Edelkamp, Stefan Schroedl Morgan Kaufman, 2011

CO – PO – PSO Mappings

COs	**Programme Outcomes (POs)**												**PSO**	
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**
CO1	1	1	2	2	2	1								
CO2	3	2	3	2	2	1								
CO3	3	2	3	2	2	1						1		2
CO4	3	2	3	2	2	1						1		
CO5	3	2	3	2	2	1								2

CSE Semester: V	Code CS – 506	Subject Programming Lab-1	LTP C 0 0 4 2

Course Overview :

To impart hand on experience of Network traffic analyzer, Crypto graphical algorithms, understand working of Intrusion Detection Systems, secure communication web.

OBJECTIVES The main objective is students gain knowledge about multimedia concepts, 2D and 3D Transformations

Course Outcomes:

Student who successfully completes this course should be able to

CO1 Explain line drawing using programming language.

CO2 Explain 2D and 3D transformations

CO3 Demonstrate simple 2D animations using animation software.

CO4 Prepare simple scenes using image editing software.

CO5 Explain the linking between web and multimedia.

Suggested List of Experiments :

1. To Study various in build graphics functions in C library.
2. Write a program to draw a line using DDA algorithm.
3. Write a program to draw a line using Bresenham‘s algorithm.
4. Write a program to draw a circle using midpoint algorithm.
5. Write a program to draw a circle using Bresenham‘s algorithm.
6. Write a program to draw a rectangle using line drawing algorithm.
7. Write a program to perform 2D Transformation on a line.
8. Write a program to perform shear transformation on a rectangle.
9. Write a program to rotate a circle (alternatively inside and outside) around the circumference of another circle.
10. Write a program to draw a car using in build graphics function and translate it from bottom left corner to right bottom corner of screen.
11. Write a program to draw balloons using in build graphics function and translate it from bottom left corner to right top corner of screen.
12. Write a program to draw a cube using in build library function and perform 3D transformations i) Translations in x, y, z directions ii) Rotation by angle 450 about z axis, rotation by 600 about y-axis in succession. iii) Scaling in x-direction by a factor of 2, scaling in y- direction by a factor of 3.
12. Write a program to implement line clipping (Cohen Sutherland algorithm).
13. Write a program for making Bezier curve.
14. Write a program to study various in build functions for 2D drawing in MAYA software.
15. Write a program to show animation of a ball moving in a helical path.
16. Write a program to show animation of solar system

CSE Semester: V	Code CS – 507	Subject Programming Lab-2	LTP C 0 0 4 2

Course Objectives :

- To orient students to basics of web server along with installation.
- To orient students to web programming fundamental and expose students to PHP Script (server side scripting) to develop interactive web page development.
- To orient students to basics of MySQLi along with installation and working.
- To expose students to advanced concepts in PHP.
- To orient students to Fundamentals of AJAX script

Course Outcomes:

Student who successfully completes this course should be able to

CO 1: Develop a fundamental understanding of web servers along with installation, configuration, and setup.

CO 2: Develop interactive web page using PHP.

CO 3: Create a MySQLi connectivity using PHP along with installation, configurationand code.

CO 4: Operate file using PHP and manage the session.

CO 5: Create AJAX script to retrieve and update data in database.

List of Experiments :

1 Demonstration of open source web server's installation i.e. xampp, lamp, etc. on Linux/ Ubuntu.

2 Design HTML form and retrieve the values in PHP script.

3 PHP variables, arrays (array multiplication, addition, etc).

4 PHP Functions: array, string, date-time, and calendar.

5 MySQLi connectivity, INSERT, SELECT, DELETE with PHP.

6 PHP Mysqli connectivity using OOP method.

7 PHP script for File uploading.

8 PHP script for-Session Management (login form).

9 AJAX Script using XMLHttpRequest, Data Formats, PHP.

10 PHP script to update and retrieve data stored in database from user using Ajax.

CO – PO – PSO Mappings

COs	Programme Outcomes (POs)												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	-	-	-	3	1	2	2	-	2	2	2	-	3
CO2	3	2	2	2	3	3	2	2	-	2	2	1	1	2
CO3	3	2	3	2	3	3	2	2	-	3	2	2	1	3
CO4	3	2	3	3	3	3	2	2	-	3	2	2	2	2
CO5	3	2	3	2	3	3	2	2	-	3	2	1	1	2

1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)

References:

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