Maharaja Agrasen Institute of Management & Technology, Jagadhri

Name of the Faculty : Amit Kapoor

Discipline : Computer Application

Semester : MCA-IVth

Subject : PROGRAMMING IN JAVA (MCA-14-41)

Lesson Plan Duration: 09 weeks from January 2018 to April 2018

**** work Load (Lecture / Practical) per week (in Hours) : Lectures-06, Practicals- 06**

WEEK	THEORY		PRACTICAL	
	Lecture Day	Topic (Including Assignment / Test)	Practical Day	Topic
1st	1st	Features of Java	1st	Java Basic Programs
	2nd	Data types, operators & expressions	2nd	Java Basic Programs
	3rd	control structures	3rd	control structures
	4th	control structures	4th	control structures
	5th	control structures	5th	control structures
	6th	Arrays	6th	Arrays
2nd	7th	Arrays	7th	Arrays
	8th	Arrays	8th	Arrays
	9th	Classes, objects & Methods	9th	Classes, objects & Methods
	10th	Classes, objects & Methods	10th	Classes, objects & Methods
	11th	Classes, objects & Methods	11th	Classes, objects & Methods
	12th	Constructors	12th	Constructors
3rd	13th	Constructors	13th	Constructors
	14th	garbage collection, access qualifiers	14th	garbage collection, access qualifiers
	15th	string handling – string operations, character extraction, string comparison, searching and modifying strings	15th	string handling methods
	16th	string handling – string operations, character extraction, string comparison, searching and modifying strings	16th	string handling methods
	17th	StringBuffer	17th	StringBuffer methods
	18th	StringBuffer	18th	StringBuffer methods

WEEK	THEORY		PRACTICAL	
	Lecture Day	Topic (Including Assignment / Test)	Practical Day	Topic
4th	19th	Packages	19th	Packages
	20th	Packages	20th	Packages
	21st	Interfaces	21st	Interfaces
	22nd	Interfaces	22nd	Interfaces
	23rd	Wrapper classes	23rd	Wrapper classes
	24th	Inheritance: single	24th	Inheritance: single
5th	25th	multilevel inheritance	25th	multilevel inheritance
	26th	method overriding, abstract class	26th	method overriding, abstract class
	27th	use of super and final keywords	27th	use of super and final keywords
	28th	Exception Handling: Exception types	28th	Exception Handling: Exception types
	29th	uncaught exceptions, built-in exceptions	29th	uncaught exceptions, built-in exceptions
	30th	multiple catch clauses, nested try statements	30th	multiple catch clauses, nested try statements
6th	31st	creating your own exceptions	31st	creating your own exceptions
	32nd	Multithreading: Java thread model, creating multiple threads, thread priorities	32nd	Multithreading: Java thread model, creating multiple threads, thread priorities
	33rd	synchronization, interthread communication	33rd	synchronization, interthread communication
	34th	suspending, resuming and stopping threads	34th	suspending, resuming and stopping threads
	35th	Applets: Local & Remote Applets, Applet architecture	35th	Applets: Local & Remote Applets, Applet architecture
	36th	Passing Parameters to Applets	36th	Passing Parameters to Applets
7th	37th	Applet Graphics, Adapter Class	37th	Applet Graphics, Adapter Class
	38th	I/O Streams: Console I/O – reading console input, writing console output	38th	I/O Streams: Console I/O – reading console input, writing console output
	39th	Files I/O – Byte Streams, Character Streams	39th	Files I/O – Byte Streams, Character Streams
	40th	Collection Interfaces & Classes	40th	Collection Interfaces & Classes
	41st	Collection Interfaces & Classes	41st	Collection Interfaces & Classes
	42nd	Delegation Event Model	42nd	Delegation Event Model

WEEK	THEORY		PRACTICAL	
	Lecture Day	**Topic (Including Assignment / Test)**	**Practical Day**	**Topic**
8th	43rd	AWT Classes: Window fundamentals, working with graphics	43rd	AWT Classes: Window fundamentals, working with graphics
	44th	working with color & fonts	44th	working with color & fonts
	45th	AWT controls	45th	AWT controls
	46th	layout managers	46th	layout managers
	47th	working with menus	47th	working with menus
	48th	JFrames	48th	JFrames
9th	49th	JFrames	49th	JFrames
	50th	Swing Classes	50th	Swing Classes
	51st	Swing Classes	51st	Swing Classes
	52nd	Java Beans	52nd	Java Beans
	53rd	Java Beans	53rd	Java Beans
	54th	Servlet classes & Life Cycle	54th	Servlet classes & Life Cycle

Maharaja Agrasen Institute of Management & Technology, Jagadhri

Name of the Faculty : Meenakshi Gupta (Theory)

Discipline : Computer Application

Semester : MCA-IVth

Subject : ADVANCED COMPUTER ARCHITECTURE (MCA-14-42)

Lesson Plan Duration: 09 weeks from January 2018 to April 2018

**** work Load (Lecture) per week (in Hours) : Lectures-06**

WEEK	THEORY	
	Lecture Day	Topic (Including Assignment / Test)
1st	1st	Computational Model: Basic computational models
	2nd	Evolution and interpretation of computer architecture
	3rd	Concept of computer architecture as a multilevel hierarchical framework
	4th	Classification of parallel architectures
	5th	Relationships between programming languages and parallel architectures
	6th	Parallel Processing: Types and levels of parallelism
2nd	7th	Parallel Processing: Types and levels of parallelism
	8th	Instruction Level Parallel (ILP) processors
	9th	Dependencies between instructions
	10th	Principle and general structure of pipelines
	11th	Performance measures of pipeline
	12th	Test
		Assignment 1
3rd	13th	Pipelined processing of integer, Boolean, load and store instructions
	14th	VLIW architecture
	15th	Code Scheduling for ILP-Processors
	16th	Basic block scheduling
	17th	Loop scheduling
	18th	Global scheduling
4th	19th	Superscalar Processors: Emergence of superscalar processors
	20th	Tasks of superscalar processing – parallel decoding
	21st	Superscalar instruction issue
	22nd	Shelving
	23rd	Register renaming
	24th	Test
		Assignment 2

5th	25th	Parallel execution
	26th	Preserving sequential consistency of instruction execution and exception processing
	27th	Comparison of VLIW & superscalar processors
	28th	Branch Handling: Branch problem
	29th	Approaches to branch handling – delayed branching
	30th	Branch detection and prediction schemes
6th	31st	Branch penalties and schemes to reduce them
	32nd	Multiway branches
	33rd	Guarded execution
	34th	MIMD Architectures: Concepts of distributed and shared memory MIMD architectures
	35th	UMA, NUMA
	36th	Test
		Assignment 3
7th	37th	CCNUMA & COMA models
	38th	Problems of scalable computers
	39th	Direct Interconnection Networks: Linear array
	40th	Ring, chordal rings
	41st	Star, tree
	42nd	2D mesh, barrel shifter, hypercubes
8th	43rd	Dynamic interconnection networks: single shared buses
	44th	Comparison of bandwidths of locked, pended & split transaction buses
	45th	Arbiter logics, crossbar
	46th	Multistage networks – omega, butterfly
	47th	Cache coherence problem
	48th	Test
		Assignment 4
9th	49th	Hardware based protocols – snoopy cache protocol
	50th	Directory schemes, hierarchical cache coherence protocols
	51st	Software based protocols
	52nd	Previous years question paper discussion
	53rd	Revision
	54th	Revision

Maharaja Agrasen Institute of Management & Technology, Jagadhri

Name of the Faculty : Inakshi

Discipline : MCA

Semester : 4th

Subject : Data Warehousing and Mining (MCA-14-43)

Lesson Plan Duration: from January 2018 to April. 2018.

**** work Load (Lecture / Practical) per week (In Hours) :**

WEEK	THEORY	
	Lecture Day	Topic (Including Assignment / Test)
1st	1st	• Basic concepts, Brief History, and Characteristics of data warehousing • Difference between Operational Database Systems and Data Warehouse
	2nd	• Attribute Selection Measures • Fact and Dimension Tables
	3rd	• Data Warehouse Schemas
	4th	Data Cube : A Multidimensional Data Model,
	5th	• Data Cube Computation Methods • Typical OLAP Operations
2nd	6th	• Data Warehouse Design and Usage, • Data Warehouse Implementation
	7th	• Data Generalization by Attribute Oriented Induction.
	8th	• Introduction, Motivation, and Importance of data mining
	9th	• Knowledge Discovery Process
	10th	• Data Mining Functionalities • Interesting Patterns
3rd	11th	• Classification of Data Mining Systems
	12th	• Major issues
	13th	• Data Objects and • Attribute Types
	14th	• Data Pre-processing overview • Data Cleaning
	15th	• Data Integration
	16th	• Data Transformation and • Data Discretization

4th	**17th**	• Directed Data Mining Models • Directed Data Mining Methodology
	18th	• Data Visualization. Outliers
	19th	• Types of Outliers and • Challenges of Outlier Detection.
	20th	• Data Mining Classical Techniques • Statistics – Similarity Models
5th	**21th**	• Steps for Designing Similarity Models
	22th	• Table Lookup Model
	23th	• Clustering- Requirement for Cluster Analysis
	24th	• Clustering Methods- Partitioning Methods
	25th	• Data Reduction
6th	**26th**	• Hierarchical Methods
	27th	• Density-Based Methods
	28th	• Grid-Based Methods
	29th	• Evaluation of Clustering
	30th	• Nearest Neighborhood- Memory Based Reasoning
7th	**31st**	• Decision Tree- Decision Tree Induction
	32nd	• Attribute Selection measures
	33rd	• Tree Pruning.
	34th	• Association Rule Mining- Market Basket Analysis,
	35th	• Frequent Item set Mining using Apriori Algorithm
8th	**36th**	• Improving the Efficiency of Apriori,
	37th	• Neural Network- Bayesian Belief Networks
	38th	• Classification by Back propagation.
	39th	• Data Mining Applications
	40th	• Data Mining Trends and Tools.

Maharaja Agrasen Institute of Management & Technology, Jagadhri

Name of the Faculty : Amit Kapoor (Theory) and Meenakshi Gupta (Practical)

Discipline : Computer Application

Semester : MCA-IVth

Subject : COMPUTER GRAPHICS (MCA-14-44)

Lesson Plan Duration: 09 weeks from January 2018 to April 2018

**** work Load (Lecture / Practical) per week (in Hours) : Lectures-06, Practical's- 06**

WEEK	THEORY		PRACTICAL	
	Lecture Day	Topic (Including Assignment / Test)	Practical Day	Topic
1st	1st	Introduction to Computer Graphics and its applications	1st	Graphics functions
	2nd	Components and working of Interactive Graphics	2nd	Graphics functions
	3rd	Video Display Devices: Raster scan and Random Scan displays	3rd	Graphics functions
	4th	Display Processors; Resolution, Aspect Ratio	4th	Graphics functions
	5th	Refresh CRT, interlacing	5th	Flying Kite Program
	6th	Color CRT monitors	6th	Flying Kite Program
2nd	7th	LookUp tables, Plasma Panel and LCD monitors	7th	Flying plane Program
	8th	Interactive Input and Output Devices: keyboard, mouse, trackball, joystick, light pen, digitizers; image scanners, Touch Panels; Voice systems	8th	Flying plane Program
	9th	printers, plotters; Graphics Software; Coordinate representations	9th	Moving Cycle Program
	10th	Drawing Geometry: Symmetrical and Simple DDA line drawing algorithm	10th	Moving Cycle Program
	11th	Numerical's Symmetrical and Simple DDA line drawing algorithm	11th	Program to Draw Hut
	12th	Bresenham's line Algorithm Case-I	12th	Program to Draw Hut
3rd	13th	Bresenham's line Algorithm Case-II	13th	Program to draw Taj Mahal
	14th	Numerical's Bresenham's line Algorithm	14th	Program to draw Taj Mahal
	15th	loading frame buffer;	15th	Program to draw Taj

		Symmetrical DDA for drawing circle, Polynomial method for circle drawing		Mahal
	16th	circle drawing using polar coordinates, Bresenham's circle drawing	16th	Practical test
	17th	Numerical's of Circle drawing algo	17th	Program to draw line using Simple DDA algorithm
	18th	Generation of ellipse	18th	Program to draw line using Simple DDA algorithm
4th	19th	Ellipse using mid-point	19th	Program to draw line using Symmetrical DDA algorithm
	20th	Numerical's of Ellipse drawing algo	20th	Program to draw line using Symmetrical DDA algorithm
	21st	Parametric representation of cubic curves, drawing Bezier curves	21st	Program to draw line using Bresenham's algorithm
	22nd	Filled-Area Primitives: Flood fill algorithm, Boundary fill algorithm	22nd	Program to draw line using Bresenham's algorithm
	23rd	Scan-line polygon fill algorithm	23rd	Program to draw line using Bresenham's algorithm
	24th	Numerical's of Filling Techniques	24th	Practical test
5th	25th	2-D Transformations: translation, rotation, scaling	25th	Program to draw circle using Symmetrical DDA
	26th	matrix representations and homogeneous coordinates, composite transformations	26th	Program to draw circle using Symmetrical DDA
	27th	general pivot point rotation, general fixed point scaling	27th	Program to draw circle using Polynomial DDA
	28th	Shearing; Reflection; Reflection about an arbitrary line	28th	Program to draw circle using Polynomial DDA
	29th	Numerical's of 2d transformations	29th	Program to draw circle using polar coordinates DDA
	30th	Numerical's of 2d transformations	30th	Program to draw circle using polar coordinates DDA
6th	31st	2-D Viewing: window, viewport; 2-D viewing transformation	31st	Practical test
	32nd	Numerical's of Viewing Transformation	32nd	Program to draw ellipse using polar coordinates

				method
	33rd	zooming, panning; Clipping operations: point and line clipping	33rd	Program to draw ellipse using polar coordinates method
	34th	Cohen-Sutherland line clipping	34th	Program to draw ellipse using polynomial method
	35th	mid-point subdivision line clipping	35th	Program to draw ellipse using polynomial method
	36th	Liang-Barsky line Clipping	36th	Program to draw ellipse using mid-point method
7th	37th	Sutherland-Hodgman polygon clipping	37th	Practical test
	38th	Weiler-Atherton polygon Clipping	38th	Program for Scan Line polygon fill algorithm
	39th	Pointing and positioning techniques; rubber band technique; dragging	39th	Program for 2d-translation
	40th	3-D Graphics: 3-D modeling of objects	40th	Program for 2d-rotation
	41st	3D transformation matrices for translation, scaling and rotation	41st	Program for 2d-scaling
	42nd	Numerical's of 3D transformation	42nd	Program for 2d-shearing
8th	43rd	parallel projection: Orthographic and oblique projection; perspective projection	43rd	Program for 2d-reflection
	44th	Numerical's of Projection	44th	Practical Test
	45th	Hidden surface removal: Zbuffer	45th	Program for 2d viewing transformation
	46th	depth-sorting	46th	Program for 2d viewing transformation
	47th	area subdivision	47th	Program for Liang Barsky Line Clipping Algorithm
	48th	BSP-Tree method	48th	Program for Cohen Sutherland Line Clipping Algorithm
9th	49th	Ray casting	49th	Program for mid-point subdivision line clipping
	50th	Shading: Modelling light intensities, Gouraud shading	50th	Practical Test
	51st	Phong shading	51st	Program for Projection
	52nd	Introduction to Animation	52nd	Program for Projection
	53rd	Tweening, Morphing	53rd	Practical Test
	54th	Fractals	54th	Practical Test

Maharaja Agrasen Institute of Management & Technology, Jagadhri

Name of the Faculty : Inakshi

Discipline : MCA

Semester : 4th

Subject : Artificial Intelligence (MCA-14-45 (II))

Lesson Plan Duration: from January 2018 to April. 2018.

**** work Load (Lecture / Practical) per week (In Hours) :**

WEEK	THEORY	
	Lecture Day	Topic (Including Assignment / Test)
1st	1st	• Introduction • Background and • History Of AI applications
	2nd	• Overview of AI applications areas
	3rd	• Syntax and semantic for propositional logic
	4th	• FOPL
	5th	• Clausal form • Inference rules
2nd	6th	• Resolution and • Unification.
	7th	• Data Generalization by Attribute Oriented Induction.
	8th	• Knowledge representation : Network representation-Associative network
	9th	• Conceptual graphs
	10th	• Structured representation- Frames
3rd	11th	• Structured representation- Scripts.
	12th	• Strategies for state space search-data driven
	13th	• Goal driven search
	14th	• Search algorithms-un informed search (depth first)
	15th	• Search algorithms-un informed search (breadth first)

4th	**16th**	• Depth first with iterative deepening
	17th	• Informed search (Hill climbing • best first)
	18th	• A* algorithm • mini-max
	19th	• Computational complexity
	20th	• Properties of search algorithms – Admissibility • Monotonicity
5th	**21th**	• Optimality • Dominance
	22th	• Types of production system- commutative and • non-commutative production systems
	23th	• Decomposable and • non-decomposable production systems
	24th	• Control of search in production systems.
	25th	• Rule based expert systems: Architecture and • development
6th	**26th**	• Managing uncertainty in expert systems -Bayesian probability theory
	27th	• Stanford certainty factor algebra,
	28th	• Nonmonotonic logic and reasoning with beliefs
	29th	• Fuzzy Logic
	30th	• Dempster/Shaffer • and other approaches to uncertainty
7th	**31st**	• Types of learning
	32nd	• Learning by automata
	33rd	• Genetic algorithms
	34th	• Intelligent editors
	35th	• Learning by induction

8th	**36th**	• Problems in understanding natural languages
	37th	• Different stages of language analysis,
	38th	• Chomsky Hierarchy of formal languages
	39th	• Transition network parsers (TNP),
	40th	• Augmented Transition network parsers (ATNP).