Department of Computer Science

Academic Organizer 2015-2016

M.Sc I Year I Sem Microprocessors and Micro controllers

Unit	Sub Unit	Details	sub Total	Total
I	a)	Digital systems- Number systems, Logic gates, Boolean algebra	4	18
	b)	Flip-flops, Registers	4	
	c)	Encoders, Decoders, Multiplexers, Demultiplexers, Counters	4	
	d)	DC Power supplies, UPS	3	
	e)	Special Devices- CRT, Floppy, Hard Disk and Printer Controllers, KBD 827, Memory	3	
II	a)	Evolution of Microprocessors and Digital computers	3	14
	b)	Memory (Storage type and devices), Buses, Bus Architecture	4	
	c)	Intel 8085, Instruction cycle, Timing Diagrams	3	
	d)	Addressing modes and instructions	4	
III	a)	Micro processors, 8086- Intel 8086, Block diagram, and operations	3	14
	b)	Registers, Interrupts, Bus cycle, Assembler Directives and operators	3	
	c)	Addressing modes and instructions with examples	3	
	d)	Interfacing peripheral devices- PPI 8257, PIC 8259, 8253 Counter/ Timer	5	
IV	a)	Micro controllers, 8051- Detailed Architecture of single chip Micro controller – 8051	5	14
	b)	Registers, Flags and PSW, Internal Memory, Special Function Registers, I/O Lines	5	
	c)	Interrupts, Instructions with simple examples. Other 8 bit, 16 bit and 32 bit Micro controllers	4	
Total No. of Teaching Hours			60	**60**

Department of Computer Science
Academic Organizer 2015-2016
M.Sc Iyear I Sem, Computer Graphics
Year-wise Lesson Plan

UNIT	Details	Periods Per Sub Unit	Total
I	Algorithms for Drawing Line, Circle, Ellipse	10	15
	Polygon Filling Algorithms, Scan Line Algorithms	3	
	HardCopy Devices, Raster Scan, Random Scan	2	
II	Area Primitives	2	15
	2-D Transformations	6	
	Composite Transformations and Other	7	
III	Viewing Pipe Line	2	15
	Line Clippings	8	
	Polygon Clippings	5	
IV	Curves and Polygon Representations	3	15
	3-D Transformations and Projections	7	
	Visible Surface Determination Algorithms	5	
	TOTAL NO OF CLASSES		60

Department of Computer Science
M.Sc Iyear- I Semester, Software Engineering
Lesson Plan 2015-2016

UNIT	Details	Periods Per Sub Unit	Total
I	Introduction to Software Engineering, Project Size and Categories	3	15
	Planning a Software Project . Software developing life cycle	9	
	Planning and Organization Structure	3	
II	Software Cost Estimation,Least factor- Cost Estimation_Techniques	4	11
	Maintenance Cost Estimation . Software Requirement_Specifications	4	
	Formal Specification Techniques	3	
III	Software Design- Fundamental design concepts and relations	3	20
	Modularization -Module design techniques . detailed design considerations	4	
	Implementation Issues . Structures Coding Techniques . Coding Style . Standards and guidelines . Documentation	6	
	Verification and Validation Techniques	4	
	Quality Assurance . Walk through and Inspection . Testing -formal_Verification	3	
IV	Software Tools . Overview of CASE- Software Reliability	3	9
	Software Errors- Faults . Repairs and availability	2	
	Software Maintenance -Management aspects of maintenance-maintenancce tools and techniques	4	
	Revision Classes	5	5
	TOTAL NO OF CLASSES		60

Department of Computer Science
Academic Organizer 2015-2016
M.Sc I/I MODERN OPERATING SYSTEM
Year-wise Lesson Plan

UNIT	Details	Periods Per Sub Unit	Total
I	Introduction to OS structures, Memory Hierarchy, OS services and managements, process states.	8	15
	IPCs, CPU scheduling algorithms, problems of critical_region monitors	7	
II	Deadlock detection,avoidance, distributed OS,Process synchronization,semaphores and implementations, physicaL and logical memory,fragmentation and paging.	10	15
	LRU, Optimal algorithms,	5	
	segmentation, allocation of		
	frames, file systems, free		
	space management, disk		
	management.		
III	Swap space management,	7	15
	security and types, goals of		
	protection and security		
	management		
	Recovery, concurrent access	8	
	control, synchronization,		
	check points, fault tolerance,		
	commit protocol.		
IV	Unix admn: device	8	15
	management, TCP/IP		
	protocol, disk installation,		
	unix file system, process		
	management, DHCP settings		
	Unix user management, file	7	
	system management,		
	network managements.		
TOTAL			60

Department of Computer Science
Academic Organizer 2015-2016
M.Sc Iyear II Sem, Computer Networks and Internet Programming
Year-wise Lesson Plan

UNIT	Details	Periods Per Sub Unit	Total
I	A Communication model - Data Communications - Data Communications networking -Protocols and protocol architecture - standards - Data transmission - Concepts and terminology Analog and Digital data transmission - Transmission impairments	5	15
	Data Encoding - Digital data digital signal - Digital data, Analog data, Analog signals - Analog data, digital signal - Analog data, analog signal	5	
	Transmission media - Guided transmission media - Wireless transmission	5	
II	The data communication interface - Asynchronous and Synchronous transmission - Line configurations - Interfacing.	4	15
	Data link control - flow control - Error detection - Error control - High-level data link control (HDLC) - Other data link protocols.	8	
	Multiplexing - Frequency-division multiplexing - Synchronous time-division multiplexing - Statistical time-division multiplexing.	3	
III	LAN Technology - LAN architecture - Bus/Tree LANs - Ring LANs - Star LANs - Wireless LANs.	4	15
	LANs systems - Ethernet and Fast Ethernet (CSMA/CD) - Token ring and FDDI - 10 VG - Any LAN - ATM LANs - Fiber channel - Wireless LANs.	6	
	Bridges - Bridge operations - Routing with bridges - ATM LAN simulation.	5	
IV	Transport Layer and internet protocols	5	15
	Network Layer and its protocols	5	
	Tcp and Udp.	5	
	TOTAL NO OF CLASSES		60

Department of Computer Science
Academic Organizer 2015-2016
M.Sc I Year- II Semester, Embedded Systems

UNIT	sub unit	Details	Sub Total	Total
I	a)	Introduction to Embedded systems -components, examples, embedded processors -8 bits architectures	4	15
	b)	micro controllers, JNEL processors, Motorola processors, RISC processors.	4	
	c)	Memory systems — Technology, SRAM, EPROM, Flask, organization, polity Associations, packing,	4	
	d)	DRAM interface, DRAM refresh techniques, cache memory	3	
II	a)	Peripherals -ports, timers, ATC, Serial ports, UART, DMA, interfacing to the analog	8	15
	b)	world -A/D connections, codes, power control, interrupts and exceptions -source, recognitions, mechanisms, RISC exceptions, interrupt controllers, latency.	7	
III	a)	Real time operating system -Multi tasking, scheduling algorithms, priority inversion, tasks, threads and processors	8	15
	b)	memory model, memory management, address translators, commercial Operating Systems, resource protections, Linux, disk partitioning	7	
IV	a)	Development of embedded system -requirement engineering,	5	15
	b)	architecture and design, implementations aspects, validation and debugging.	5	
	c)	Embedded relative systems, programming stream.	5	
		TOTAL NO OF CLASSES	60	60

Department of Computer Science
Academic Organizer 2015-2016

DESIGN and ANALYSIS OF ALGORITHMS of M.Sc.(CS) II Semester

Year-wise Lesson Plan

UNIT	Details	Periods Per Sub	Total
I	Elementary data structures, order notation, analysis of algorithms	5	13
	Review of Elementary Data Structures, Heap and Heap Sort.	3	
	Hashing, sets representation, union, find operation	5	
II	Divide and conquer and Greedy Model. Binary Search, finding, maximum and minimum.	6	18
	Merge sort, Quick sort and selection sorts.	5	
	Knapsack problem, Optimal storage on tapes, job sequences with dead lines, minimum spanning trees and single source shortest pattern.	7	
III	Dynamic Programming and traversal techniques, multistage graphs, shortest pattern.	5	15
	Optimal binary search trees, 0/1 Knapsack reliability design, traveling sales man problem	7	
	Game trees, depth first search.	3	
IV	Back tracking and branch and bound technique, 8 queen problem, graph coloring, Hamilton cycles.	6	16
	0/1 knapsack problems, traveling sales man problem.	5	
	NP hard, completeness, cook's theorem, decision problem, node covering theorem.	5	
	TOTAL NO OF CLASSES		62

Department of Computer Science
Academic Organizer 2015-2016
M.Sc 1st year II Semester ADVANCED JAVA PROGRAMMING

Unit	Sub Unit	Details	Total
I	a)	**UNIT – 1** J2EE Architecture	**5**
	b)	Directory Services	**5**
	c)	RMI	3
	d)	JDBC.	2
II	a)	**UNIT – 2** Web Containers, Java Servlets – Life Cycle	5
	b)	Implementation, Request-response, Servlet sessions, Context- Collaborations,	5
	c)	JSP – Basic and Architecture, Tag extensions.	5
III	a)	**UNIT -3** JSP Tag Libraries	5
	b)	Java Mail, JMS	5
	c)	J2EE Connector Architecture	5
IV	a)	**UNIT - 4** EJB – Architecture and Design	5
	b)	Session Beans, Entity Beans	5
	c)	Container Services.	5
Total No. of Teaching Hours			60

Department of Computer Science

M.Sc I Year II Sem, Automata Languages and Computation

Year-wise Lesson Plan 2015-2016

UNIT	Details	Periods Per Sub Unit	Total
I	Strings, alphabets and languages - Graphs and Trees, Finite automata	4	16
	Regular Expression - Finite state systems - Non deterministic finite automata	6	
	Finite automata with E-moves-Regular expression.	6	
II	Two-way Finite automata - Finite automata with output	4	16
	Pumping lemma for regular sets - Closure properties of regular sets - Decision algorithms for regular sets	7	
	The Myhill-Nerode theorem and minimization of finite automata.	5	
III	Context-free grammars - Motivation and Introduction - Context-free grammars - Derivation trees	6	17
	Chomosky normal form - Greibach normal f	5	
	Push down automata, Properties of CFL.	6	
IV	Turning machines - Introduction - Truing machine model - Computable languages and functions	4	11
	Church's hypothesis - Regular grammars - Unrestricted grammars	4	
	Context - Sensitive languages - Chomosky hierarchy.	3	
	TOTAL NO OF CLASSES		60

Department of Computer Science
Academic Organizer 2015-2016
M.Sc IIyear I Sem, Artificial Intelligence
Year-wise Lesson Plan

UNIT	Details	Periods Per Sub Unit	Total
I	Definition, Introduction to AI techniques, Problems, Problem spaces & search, Production system, Problem characteristics Heuristic Search: Generate & Test, Hill Climbing, Breadth-First search, Problem reduction, Constraint Satisfaction	5	15
	Knowledge Representation, issues, representation & mapping, approaches, issues Frame Problem	5	
	Knowledge representation using predicate logic, predicate logic,	5	
II	Procedural v/s Declarative knowledge Logic programming, Forward v/s Backward reasoning, matching Declarative knowledge representation, Semantic nets, Frames, Conceptual dependency, scripts , CYC	8	15
	Symbolic reasoning under uncertainty, non-monotonic reasoning, logic for nonmonotonic reasoning Implementation of depth-first search & breadth-first search	4	
	Statistical reasoning, Certainty factors & rule based systems Bayesian networks, Dempster-Shafer theory Fuzzy Logic	3	
III	Game playing, minmax search, alpha-beta heuristics, iterative deepening Planning, non-linear planning, hierarchical planning	6	15
	Learning, Rote learning, Learning by taking advice, from examples & explanation based learning Connectist models, Neural Networks ,applications	4	
	Natural Language Processing, syntax, semantic & pragmatic processing, perception Expert system representation & using domain knowledge, Expert system shells Explanation knowledge acquisition	5	
IV	The brain as a dynamical system Neurons as functions, signal monotonicity, Biological activations & signals, neuron fields	5	15
	Theory of fuzzy sets: Definition, dilation, Concentration, Normalization	5	
	Reasoning with fuzzy logic, Natural Language Computations, Fuzzy Matching algorithms	5	
	TOTAL NO OF CLASSES		60

Department of Computer Science
Academic Organizer 2015-2016
M.Sc IIyear I Sem, Network Security
Year-wise Lesson Plan

UNIT	Details	Periods Per Sub Unit	Total
I	Conventional encryption, security attacks, security, model for network security	5	15
	conventional encryption model, encryption techniques, DES, triple DES	7	
	key distribution, random number generation.	3	
II	Public-key cryptology, principles of public - key cryptosystems	5	15
	RSA algorithm, key management	6	
	distribution of public keys, public key - distribution of s	4	
III	Authentication and digital systems authenticate requirements - functions cryptographic checksum, hash function, digital signatures	6	15
	authentication protocols, kerboros, x-509 directory, authentication services	4	
	Diffie-Hellman key exchange, digital signature standards.	5	
IV	Cryptographic algorithms, the MD 5 message digest algorithm, secure has algorithm, international data encryption algorithm	7	15
	LUC public key encryption - Electronic mail and management security	5	
	pretty good privacy (PGP), privacy enhanced mail	3	
	TOTAL NO OF CLASSES		60

Department of Computer Science
Academic Organizer 2015-2016
M.Sc IIyear I Sem, Computer Networks and Internet Programming
Year-wise Lesson Plan

UNIT	Details	Periods Per Sub Unit	Total
I	A Communication model - Data Communications - Data Communications networking -Protocols and protocol architecture - standards - Data transmission - Concepts and terminology Analog and Digital data transmission - Transmission impairments	5	15
	Data Encoding - Digital data digital signal - Digital data, Analog data, Analog signals - Analog data, digital signal - Analog data, analog signal	5	
	Transmission media - Guided transmission media - Wireless transmission	5	
II	The data communication interface - Asynchronous and Synchronous transmission - Line configurations - Interfacing.	4	15
	Data link control - flow control - Error detection - Error control - High-level data link control (HDLC) - Other data link protocols.	8	
	Multiplexing - Frequency-division multiplexing - Synchronous time-division multiplexing - Statistical time-division multiplexing.	3	
III	LAN Technology - LAN architecture - Bus/Tree LANs - Ring LANs - Star LANs - Wireless LANs.	4	15
	LANs systems - Ethernet and Fast Ethernet (CSMA/CD) - Token ring and FDDI - 10 VG - Any LAN - ATM LANs - Fiber channel - Wireless LANs.	6	
	Bridges - Bridge operations - Routing with bridges - ATM LAN simulation.	5	
IV	Transport Layer and internet protocols	5	15
	Network Layer and its protocols	5	
	Tcp and Udp.	5	
	TOTAL NO OF CLASSES		60

Department of Computer Science
Academic Organizer 2015-2016
M.Sc II year- I Semester,00SD & UML
Year-wise Lesson Plan

UNIT	Details	Periods Per Sub	Total
	An overview of OOSD, Object oriented Methodologies,00SD life cycle	3	
	Object basics ,Importance of modeling, Object oriented modeling	3	
	An overview of UML, A conceptual model of the UML, SDLC	4	15
	Building Blocks of UML, Rules of UML, Common Mechanisms, UML		
	Architecture.	5	
II	Structuraln modeling: classes, Relationships, Common Mechanisms, Diagrams	3	
	Class Diagrams, Advanced Structural ModelingAdvanced Classes,Advanced Relationships,	6	15
	Interfaces, Types, Roles, Instances, Object Diagrams	6	
	Behavioral Modeling: Interactions, Use Cases, Use Case Diagrams	4	
III	Activity Diagrams, Advanced Behavioral Modeling, Events and Signals	6	15
	State Machines, Processes and		
	Threads,Time and Space, Space Chart	5	
	Architectural Modeling: Components, Deployment, Collaborations	3	
IV	Patterns and FrameWorks, Component Diagrams	4	10
	Deployment Diagrams, Systems and Models	3	
	Revision Classes	5	5
	TOTAL NO OF CLASSES		60

Department of Computer Science
Academic Organizer 2015-2016
M.Sc IIyear- I Semester, Image Processing
Year-wise Lesson Plan

UNIT	Details	Total
I	Image formation and description-Digital image representation — Elements of Visual perception — Sampling and quantisation — Elements of digital image processing systems	15
II	Image transform, Digital Image transforms — Fourier transform — Extension to	15
	2D.DCT Walsh, Hadamard Transforms	
III	Image Enhancements and Segmentation — Histograms modification — Image smoothing — Image Sharpening — Thresholding — Edge detection — segmentation point and region dependent techniques	15
	Color image processing: Color fundamentals, color models psuedu- color image processing — intensity slicing gray level to color transformation, filtering approach , full — color image processing	
IV	Image encoding — fidelity criteria — transform compression — K.L., Fourier,	15
	DCT spatial compression run length coding —Hoffman coding —contour coding	
	restoration — Restoration models, inverse filtering — Least squares filtering — Recursive Filtering	
	TOTAL NO OF CLASSES	60

Department of Computer Science			
Academic Organizer 2015-2016			
M.Sc IIyear II Sem, Data Warehousing and Data Mining			
Year-wise Lesson Plan			
UNIT	**Details**	**Periods Per Sub Unit**	**Total**
I	Basic elements of DW,Dimension Modeling: Bus Architecture, Dimensional Modeling Techniques.	5	15
	Fact Table design, ROLAP querying and reporting and building dimensional models.	5	
	DW Architecture, Frameworks and approach.	5	
II	Back room data stores, services, management. Front room data stores, services for data access.	5	14
	Aggregation goals, risks, design goals of aggregate navigation system.	4	
	Physical design develop standards, data model, index plan, storage structure. Fact table loads and warehouse operations.	5	
III	Data mining(DM), definitions, KDD, DM techniques, applications. Methods: Priori, partition, pincer-search, FP-tree growth, border algorithm	8	14
	Clustering techniques and algorithms.	6	
IV	Decision trees introduction, splitting indices and criteria. Decision construction algorithms, Pruning techniques.	7	17
	Neural networks introduction, learning. Temporal mining, association rules, sequence mining.	5	
	Sequence mining algorithms:		
	episode discovery, event prediction, spatial mining, clustering trends.	5	
Total Classes			60

Department of Computer Science
M.Sc IIyear IISem, Mobile Computing
Academic Organizer 2015-2016
Year-wise Lesson Plan

UNIT	Details	Periods Per Sub Unit	Total
	Introduction: Applications, Wireless Transmission: Frequencies of radio Transmission	4	16
	Signals, Antennas, Signal Propogation	2	
	Multiplexing .Modulation, Spread Spectrum, Cellular System	4	
	MAC: Motivation for Specialized MAC, SDMA, TDMA CDMA, Comparisons	6	
II	Wireless LAN: Infrared vs radio transmission, infrastructure and adhoc networks	4	17
	1EE802.ll, HiperLan, Bluetooth, Wireless ATM: WATM Services, Reference Model	6	
	Management, Addressing, Access point control protocol	7	
III	Mobile network layer: Mobile IP, DHCP, Adhoc networks, Mobile Transpoñ layer:		12
	indirect Tcp, Snooping TCP	6	
	Mobile Tcp, fast transmit/fast recovery, transmission/timeout freezing	3	
	Selective retransmission, transaction oriented TCP	3	
IV	Wireless Application Protocol: WAP Architecture, Components of WAP standards	4	10
	Design principles, Wireless Markup Language(WML),	2	
	WML Basics, Events ,Tasks and Bindings	4	
	Revision classes	5	5
	TOTAL NO OF CLASSES		60