2 DEPARTMENT OF INFORMATION TECHNOLOGY

- **M. Sc. in INFORMATION TECHNOLOGY** **FACULTY OF SCIENCE**
- **SECOND SEMESTER** (EVEN SEMESTER)

Eligibility Criteria (Qualifying Exams)	Course Code	Course Type	Course (Paper/Subjects)	Credits	Contact Hours Per WeeK			EoSE Duration (Hrs.)	
					L	T	P	Thy	P
After appearing in the first semester examination irrespective of any number of back/ arrear papers	MIT 201	CCC	ADVANCED OPERATING SYSTEM	5	4	2	00	3	0
	MIT 211	CCC	ADVANCED OPERATING SYSTEM – LABORATORY WORK	2	00	00	3	0	3
	MIT 202	CCC	WEB TECHNOLOGY : BASED ON VB.NET & ASP.NET	5	4	2	00	3	0
	MIT 212	CCC	WEB TECHNOLOGY : BASED ON VB.NET & ASP.NET - LABORATORY WORK	2	00	00	3	0	3
	MIT 203	CCC	OBJECT ORIENTED PROGRAMMING CONCEPTS IN C++	5	4	2	00	3	0
	MIT 213	CCC	OBJECT ORIENTED PROGRAMMING CONCEPTS IN C++ - LABORATORY WORK	2	00	00	3	0	3
	MIT 221	PRJ/FST/EST	SOCIAL OUTREACH AND SKIL DEVELOPMENT	6	00	00	9	00	4
	MIT B01	ECC/CB	ENVIRONMENTAL AND FOREST LAWS	6	4	3	00	3	00
	MIT B02	ECC/CB	INTERACTIVE COMPUTER GRAPHICS						
	MIT B03	ECC/CB	COMPUTER SYSTEM ORGANIZATION AND ARCHITECTURE						
	MIT B04	ECC/CB	DISCRETE MATHEMATICS						
	MIT B05	ECC/CB	SOFTCOMPUTING TECHNIQUES						
	MIT B06	ECC/CB	ALGORITHMIC TECHNIQUES AND IMPLEMENTATION						
				TOTAL= 33					

• M.Sc. in INFORMATION TECHNOLOGY (SECOND SEMESTER)	
COURSE CODE: MIT 201 **COURSE TYPE :** CCC	
COURSE TITLE: ADVANCEDOPERATING SYSTEM	
CREDIT: 07 **THEORY:** 05 **PRACTICAL:** 02	**HOURS:** 135 **THEORY:** 90 **PRACTICAL:** 45
MARKS: 100 **THEORY:** 70 **CCA :** 30 **PRACTICAL:** 33	
OBJECTIVE: The main objective is to give the basic concepts regarding operating systems . How it works , it's types and various process synchronization and communication , memory management , file and secondary storage management..	
UNIT-1 15Hrs	**Introduction**: Definition, Design Goals, Types, Batch processing, Multi-programming, Time sharing;Functions of Operating System.
UNIT-2 15Hrs	**Process Management**: Process states, Process Control block, Schedulers, CPU Scheduling algorithm
UNIT-3 20 Hrs	**Inter process synchronization and communication:** need, Mutual exclusion, semaphore, and hardware support for mutual exclusion, classical problem in concurrent programming, critical region and conditional critical region, Deadlock Characteristics, prevention, resource allocation graphs.
UNIT-4 20Hrs	**Memory Management (Contiguous and non contiguous)** : Address Binding, Dynamic Loading and Linking Concepts, Logical and Physical Addresses, Contiguous Allocation, Fragmentation, Paging,Segmentation, Virtual Memory, Demand Paging, Page fault, Page replacement algorithms, Global Vs Local Allocation, Thrashing,
UNIT-5 20Hrs	**File and Secondary Storage Management**: File Attributes, File Types, File Access Methods, Directory Structure, File System Organization and Mounting, Allocation Methods, Free Space management; Disk Structure, Logical and Physical View, Disk Head Scheduling, Formatting, Swap Management.Protection& Security., DOS,UNIX/ LINUX and WINDOWS as an example of Operating systems.

LABORATORY WORK CMP 211	1. Practise any five Unix commands. 2. Practise any five Linux commands. 3. Practise any five internal Dos commands. 4. Practise any five External Dos commands. 5. Practise DESKTOP and Icons in Windows O.S. 6. Practise pop-up Menu and shortcuts in Windows O.S. 7. Practise any three socket commands of Unix O.S. 8. Practise for MS-Word. 9. Practise for MS-Excel. 10. Practise for MS-Powerpoint. 11. Practise for MS-Access. 12. Practise for simple Networking using any Network O.S.
SUGGESTED READINGS	1. Operating System Concepts 6/ed By Silberschatz and Galvin, Addison Wesley. 2. Operating Systems: Internals and Design Principles 5/ed By William Stalling, PHI. 3. Modern operating Systems By Tanenbaum, PHI. 4. Operating System Concepts By Peterson and Silberschatz, Addison Wesley. 5. Operating System Principles By P. B. Hansen, PHI. 6. The UNIX Operating System By K. Christian, John Wiley.

M.Sc. in INFORMATION TECHNOLOGY (SECOND SEMESTER)	
COURSE CODE: MIT 202 **COURSE TYPE :** CCC	
COURSE TITLE: WEB TECHNOLOGY : BASED ON VB.NET & ASP.NET	
CREDIT: 07 **THEORY:** 05 **PRACTICAL:** 02	**HOURS:** 135 **THEORY:** 90 **PRACTICAL:** 45
MARKS: 100 **THEORY:** 70 **CCA :** 30 **PRACTICAL:** 34	
OBJECTIVE: The main objective is to develop a website by using VB.Net and ASP.Net . To know the basics of Database connectivity using VB.Net and ASP.Net .	
UNIT-1 15 Hrs.	**Internet Concept**: Fundamental of Web ,History of Web, Web development overview, Domain Name System (DNS),DHCP,and SMTP and other servers ,Internet service provider (ISP), Concept of IP Address, Internet Protocol, TCP/IP Architecture ,Web Browser and Web Server.
UNIT-2 15Hrs	**HTML and DHTML** HTML Tag, Rules of HTML, Text Formatting and Style, List, Adding Graphics to Html Document, Tables and Layout , Linking Documents, Frame, Forms, Project in HTML, Introduction to DHTML, CSS, Class and DIV, External Style Sheet.
UNIT-3 20 Hrs	**Introduction to VB.Net** Introduction to OOP's,variables,constants,conditionalstatements,loopingstatements,Array and it's types,ConsoleApplication,WindowApplication,ToolBox,Meaning of Project,SDIforms,MDIforms,Methods,Functions,Class and Objects,constructors,Overridding,Overriddable,
UNIT-4 20Hrs	**Database Connectivity** Introduction to ODBC,Introduction to Database,MS-Access,RDBMS,OLEDB,DatabaseConnectivity,Importance of Path in Database Connectivity,Reports and it's attributes,Accessing data members in Reports,Introduction to Data Grid.
UNIT- 5 20Hrs	**Active Server Page (ASP)** Introduction ,Internet Information System (IIS),ASP object ,Server object, File system object, session ,Accessing data base with an ASP page ,ODBC – ADO connection object, common methods and properties, ADO record set object .Introduction to ASP.Net.

LABORATORY WORK MIT212	1. Design a program for various controls of tool box in window application . 2. Design a program for addition of five numbers in single dimension . 3. Design a program for various types of arrays . 4. Design a program for various relational operators . 5. Design a program for various control structures . 6. Design a program for functions . 7. Design a program for subroutine . 8. Design a program for login form and database connectivity . 9. Design a program to develop any website . 10. Design a program for report generation . 11. Design a program for searching any field from database using VB.Net. 12.Design a program to develop any software .
SUGGESTED READINGS	1. The complete Reference By Thomos A. Powell ,TMH publication 2. Web Technology :A Developers Perspective ,N.P.Gopalan ,J.Akilandeswani,PHI Publication. 3.Java Script :The definite Guide By Flangam , O'Reilly 4. Java Script :Developers Resource by Kamran Husain and Jason Levitt PTR-PHI publication. 5."Mastering VB Script" BPB Publication. 6.World Wide Web design with HTML by Xavier Tata McGraw Hill Publication . 7. XML By Example, Sean Mc GrathPentice Hall Publication. 8. Web Technology : A Developments Perspective , N.P. Gopalan, J. Akilandeswari, PHI Publication.

• M.Sc. in INFORMATION TECHNOLOGY (SECOND SEMESTER)	
COURSE CODE: MIT 203 **COURSE TYPE :** CCC	
COURSE TITLE: OBJECT ORIENTED PROGRAMMING CONCEPTS IN C++	
CREDIT: 07 **THEORY:** 05 **PRACTICAL:** 02	**HOURS:** 135 **THEORY:** 90 **PRACTICAL:** 45
MARKS: 100 **THEORY:** 70 **CCA :** 30 **PRACTICAL:** 33	
OBJECTIVE: The main objective is know the basic principles of OOPS.Basic data types ,familiar about class and objects , polymorphism and Inheritance,file handling and Exception handling.	
UNIT-1 15 Hrs.	**Principles of OOP** Procedure oriented Vs Object oriented, OOP paradigm, Features of OOP ,Basic Data types Tokens,Keywords, Constant ,Variables, Operator I/O statements , Structure of C++ program, Arrays, pointers,Object modeling technique (OMT).
UNIT-2 15Hrs	**Function, Object and Class** Defining class, Abstract class ,Function prototype, Function with parameter ,Passing object as a parameter,Constructor function ,Types of constructor, Destructor Friend function , Friend class, Dynamic allocation operator new and delete.
UNIT-3 20 Hrs	**Polymorphism and Inheritance** Types of polymorphism, Constructor overloading ,Operator overloading, Template function Template class,Types of inheritance ,Private ,protected and public derivation of class ,Resolving ambiguity Pointer to object, This pointer ,Virtual class , virtual function.
UNIT-4 20Hrs	**Input - output and File handling** I/O classes ,File and stream classes ,Opening and closing file Detecting end of file, String I/O**,** Char I/O,Object I/O, I/O with multiple object ,File pointer, Disk I/O**.**
UNIT- 5 20Hrs	**Exception handling ,Name spaces and Standard Template library (STL)** Need of Exception handling ,try ,catch and throws keywords , defining namespace ,benefit of namespace,Component of STL.
LABORATORY WORK MIT213	1. Design a program to create a class and object. 2. Design a program for various relational operators . 3. Design a program for scope resolution operator. 4. Design a program for private and public member functions . 5. Design a program for passing object as parameter. 6. Design a program constructor and Destructor. 7. Design a program for operator overloading. 8. Design a program function overloading . 9. Design a program for various types of inheritance . 10. Design a program for template . 11. Design a program for virtual class and function . 12.Design a program for file handling and Exception handling .

SUGGESTED READINGS	1. Object oriented programming with C++ by E.Balagurusamy II nd edition Tata Mc-Graw Hill. 2. Object Oriented Programmin By McGregor and Sykes S A, 1992 Van Nostrand. 3. The C++ Programming Language By StrustrpB,AddisionWasley. 4. Object Oriented Programming in C++ By Lafore R, Galgotia Publications. 5. Introduction to Object Oriented Programming By Witt KV, Galgotia Publications. 6. Object Oriented Programming By Blaschek G, Springer Verlag

• M.Sc. in INFORMATION TECHNOLOGY (SECOND SEMESTER)	
COURSE CODE: MITB01COURSE TYPE : ECC/CB	
COURSE TITLE: ENVIRONMENTALAND FOREST LAWS	
CREDIT: 06 **THEORY: 06**	**HOURS : 90** **THEORY: 90**
MARKS : 100 **THEORY: 70 CCA : 30**	

OBJECTIVE:

- Understands the concept and place of research in concerned subject
- Gets acquainted with various resources for research
- Becomes familiar with various tools of research
- Gets conversant with sampling techniques, methods of research and techniques of analysis of data
- Achieves skills in various research writings
- Gets acquainted with computer Fundamentals and Office Software Package .

UNIT - 1 **18 Hrs**	**EVOLUTION OF FOREST AND WILD LIFE LAWS** a) Importance of Forest and Wildlife b) Evolution of Forest and Wild Life Laws c) Forest Policy during British Regime d) Forest Policies after Independence. e) Methods of Forest and Wildlife Conservation.
UNIT - 2 **18 Hrs**	**FOREST PROTECTION AND LAW** a) Indian Forest Act, 1927 b) Forest Conservation Act, 1980 & Rules therein c) Rights of Forest Dwellers and Tribal c) The Forest Rights Act, 2006 d) National Forest Policy 1988
UNIT - 3 **18 H rs**	**WILDLIFE PROTECTION AND LAW** a) Wild Life Protection Act, 1972 b) Wild Life Conservation strategy and Projects c) The National Zoo Policy

UNIT - 4 18 Hrs	**CHAPTER – BASIC CONCEPTS** a. Meaning and definition of environment. b. Multidisciplinary nature of environment c. Concept of ecology and ecosystem d. Importance of environment e. Meaning and types of environmental pollution. f Factors responsible for environmental degradation. **CHAPTER– INTRODUCTION TO LEGAL SYSTEM** a. Acts, Rules, Policies, Notification, circulars etc b. Constitutional provisions on Environment Protection c. Judicial review, precedents d. Writ petitions, PIL and Judicial Activism **CHAPTER – LEGISLATIVE FRAMEWORK FOR POLLUTION CONTROL LAWS** a) Air Pollution and Law. b) Water Pollution and Law. c) Noise Pollution and Law.
UNIT - 5 18 Hrs	**CHAPTER- LEGISLATIVE FRAMEWORK FOR ENVIRONMENT PROTECTION** a) Environment Protection Act & rules there under b) Hazardous Waste and Law c) Principles of Strict and absolute Liability. d) Public Liability Insurance Act e) Environment Impact Assessment Regulations in India **CHAPTER – ENVIRONMENTAL CONSTITUTIONALISM** a. Fundamental Rights and Environment i) Right to Equality …….Article 14 ii) Right to Information ……Article 19 iii) Right to Life ……..Article 21 iv) Freedom of Trade vis-à-vis Environment Protection b. The Forty-Second Amendment Act c. Directive Principles of State Policy & Fundamental Duties d. Judicial Activism and PIL

SUGGESTED READINGS	Bharucha, Erach. Text Book of Environmental Studies.Hyderabad : University Press (India) Private limited, 2005. Doabia, T. S. Environmental and Pollution Laws in India. New Delhi: Wadhwa and Company, 2005. Joseph, Benny. Environmental Studies, New Delhi: Tata McGraw-Hill Publishing Company Limited, 2006. Khan. I. A, Text Book of Environmental Laws.Allahabad: Central Law Agency, 2002. Leelakrishnan, P. Environmental Law Case Book. 2nd Edition. New Delhi: LexisNexis Butterworths, 2006. Leelakrishnan, P. Environmental Law in India. 2nd Edition. New Delhi: LexisNexis Butterworths, 2005. Shastri, S.C (ed). Human Rights, Development and Environmental Law, An Anthology. Jaipur: Bharat law Publications, 2006. Environmental Pollution by Asthana and Asthana, S,Chand Publication Environmental Science by Dr. S.R.Myneni, Asia law House Gurdip Singh, Environmental Law in India (2005) Macmillan. ShyamDiwan and Armin Rosencranz, Environmental Law and Policy in India – Cases, Materials and Statutes (2nd ed., 2001) Oxford University Press. **JOURNALS :-** Journal of Indian Law Institute, ILI New Delhi. Journal of Environmental Law, NLSIU, Bangalore. **MAGAZINES :-** Economical and Political Weekly Down to Earth.

M.Sc. in INFORMATION TECHNOLOGY (SECOND SEMESTER)	
COURSE CODE: MIT **B02COURSE TYPE : ECC/CB**	
COURSE TITLE: INTERACTIVE COMPUTER GRAPHICS	
CREDIT: 06 **THEORY: 06**	**HOURS : 90** **THEORY: 90**
MARKS : 100 **THEORY: 70 CCA : 30**	
OBJECTIVE: The main objective is to know about interactive graphics , output primitive and segmented display file ,display description , Three dimensional graphics and hidden surface elimination .	
UNIT-1 20Hrs.	**Basics and Interactive Graphics :** Origin of graphics, Working of interactive graphics, Random scan methods, Raster scan methods, Pixels and frame buffer, Color display techniques, Graphics Primitives, Display file structure, CRT, Graphical input devices, Graphical input techniques, Event handling, Input functions.
UNIT-2 20Hrs	**Output primitives and Segmented display file**: Points & lines, Line drawing DDA algorithm, Bresenhams line drawing algorithm, Circle generation algorithm, Character generation, Text display, Filling polygon.,Segments, Functions for segmenting the display file, Posting and un-posting a segment, Segment naming schemes, Appending to segment.
UNIT-3 20 H rs	**Display description**: Line and polygon clipping, Viewing algorithms- Windows and viewpoints,windowing, Zooming and planning, Homogeneous co-ordinate, Two dimensional and three dimensional transformation, Concatenation.
UNIT-4 15 Hrs	**Three dimensional graphics**: Geometric models, Introduction to realism, Perspective depth, Introduction to shading and illumination: Phong shading, Gouraud shading, Projection, Types of projection.
UNIT-5 15 Hrs	**Hidden Surface elimination, Curves and surfaces**: Back face removal and algorithm, Depth buffer algorithm, Area Subdivision algorithm, Scan line algorithm, Parametric functions, Cubic spline Bezier methods, B- Spline Methods, Displaying curves and surfaces.
SUGGESTED READINGS	1. William M. Newman and Robert F. Sproull, ‘’ Principles of Interactive Computer Graphics ‘’, Tata McGraw- Hill Edition. 2. Steven Harrington ‘’ Computer Graphics ‘’ , 2nd Edition, Tata McGraw-Hill Edition. 3. Foley, van Dam, Feiner and Hughes, ‘’Computer Graphics (Principles and Practice)’’ ,IndianEdition,Addison Wesley Publication. 4. D Hearn and P M Baker ,’’Computer Graphics ‘’, Printice Hall of India (Indian Edition). 5. D F Rogers ,’’Mathematical Elements for Computer Graphics ‘’, 2nd Edition,Tata McGraw-Hill

M.Sc. in INFORMATION TECHNOLOGY (SECOND SEMESTER)	
COURSE CODE: MIT**B03COURSE TYPE : ECC/CB**	
COURSE TITLE: COMPUTER SYSTEM ORGANIZATION AND ARCHITECTURE	
CREDIT: 06 **THEORY: 06**	**HOURS : 90** **THEORY: 90**
MARKS : 100 **THEORY: 70 CCA : 30**	
OBJECTIVE: The main objective is to know about the organization of a computer . To gain knowledge aboutmicrooperations , pipeline and vector processing,memory organization .	
UNIT-1 20Hrs.	**Micro operation and Computer Organization :** Arithmetic micro operation, Logic micro operation, Shift micro operation, Arithmetic logic shift unit Instruction codes, Bus and memory transfer, Computer registers, Computer instructions, Instruction cycle, Memory reference instruction, I/O and interrupt, Design of basic computer and Accumulator logic.
UNIT-2 20Hrs	**Programming Basic Computer and C.P.U Organization:** Machine language, Assembly language, Assembler, Programming arithmetic and logic operation, I/O programming, General register organization of C.P.U, Stack organization, Instruction format, Addressing modes .
UNIT-3 20 H rs	**Pipeline and Vector Processing:** Parallel processing, Pipelining, Arithmetic pipelining, Instruction pipeline, RISC pipeline, Vector processing, Memory interleaving, Array processor, Multiprocessor**.**
UNIT4 15 Hrs	**Input-output Organization**: Peripheral devices, I/O interfaces, Modes of data transfer, Asynchronous data transfer, DMA, Priority interrupt, I/O processor.
UNIT-5 15 Hrs	**Memory Organization**: Auxiliary memory, Microcomputer memory, Memory hierarchy, Associative memory, Virtual memory, Cache memory, Memory management hardware.
SUGGESTED READINGS	1. M.MorrisManno, “Computer system Architecture”, 3rd Edition, PHI 2. Carl Hamacher, ZvonkoVranesic and SafwatZaky, 5th Edition “Computer Organization”, McGraw- Hill,2002. 3. William Stallings, “Computer Organization and Architecture – Designing for Performance”, 6th Edition, Pearson Education, 2003. 4. David A.Patterson and John L.Hennessy, “Computer Organization and Design: The hardware / software interface”, 2nd Edition, Morgan Kaufmann, 2002. 5. John P.Hayes, “Computer Architecture and Organization”, 3rd Edition, McGraw Hill, 1998.

• M.Sc. in INFORMATION TECHNOLOGY (SECOND SEMESTER)	
COURSE CODE: MIT **B04COURSE TYPE : ECC/CB**	
COURSE TITLE: DISCRETE MATHEMATICS	
CREDIT: 06 **THEORY: 06**	**HOURS : 90** **THEORY: 90**
MARKS : 100 **THEORY: 70 CCA : 30**	
OBJECTIVE: The main objective is to know about Mathematical Logic , Set theory, Boolean algebra ,Groups and Graphs .	
UNIT-1 20Hrs.	**Mathematical Logic** : Notations, Algebra of Propositions & Propositional functions, logical connectives, Truth values & Truth table Tautologies & Contradictions, Normal Forms, Predicate Calculus, Quantifiers. **Set Theory**: Sets, Subsets, Power sets, Complement, Union and Intersection, De-Morgan's law Cardinality,relations: Cartesian Products, relational Matrices, properties of relations equivalence relation functions:Injection, Surjection, Bijection, Composition, of Functions, Permutations, Cardinality, the characteristic functions recursive definitions, finite induction.
UNIT-2 20Hrs	**Boolean Algebra :**Truth values and truth tables, the algebra of propositional functions, boolean algebra of truth values ,Axiomatic definitions of Boolean algebra as algebraic structures with two operations, Switching Circuits.
UNIT-3 20 H rs	**Groups :**Groups, axioms, permutation groups, subgroups, co-sets, normal subgroups.
UNIT-4 15 Hrs	**Graphs :** Simple Graph, directed graph, Degree of a Vertex, Types of Graphs, Sub Graphs and Isomorphic Graphs, Operations of Graphs, Path, Cycles and Connectivity, Euler and Hamilton Graph, Shortest Path Problems, BFS ,DFS, Dijkastra's Algorithm, Representation of Graphs, Planar Graphs, Applications of Graph Theory.
UNIT-5 15 Hrs	**Matrices :**Addition, subtraction, multiplication, transposes.
SUGGESTED READINGS	1. A text book of Discrete Mathematics By Swapan Kumar Sarkar (S. Chand & company Ltd.). 2. Discrete Mathematical structure with Applications to computer science By J.P Trembly& R.P. Manohar. 3. Discrete Mathematics By K.A Ross and C.R.B writht. 4. Discrete Mathematics Structures By Bernard Kohman& Robert C. Bushy. for computer science 5. Discrete Mathematics By Seymour Lipschutz Mare Lipson. Tata McGraw-Hill Edition.

• M.Sc. in INFORMATION TECHNOLOGY (SECOND SEMESTER)	
COURSE CODE: MIT**B05COURSE TYPE : ECC/CB**	
COURSE TITLE: SOFTCOMPUTING TECHNIQUES	
CREDIT: 06 **THEORY: 06**	**HOURS : 90** **THEORY: 90**
MARKS : 100 **THEORY: 70 CCA : 30**	
OBJECTIVE: The main objective is to know about artificial neural network ,fuzzy logic , genetic algorithm and applications of soft computing .	
UNIT-1 20Hrs.	**Introduction** -What is soft computing?,different soft computing techniques and its Comparison. Strength and weakness of various soft computing techniques.
UNIT-2 20Hrs	**Artificial Neural Network** :Biological neural network Vs Artificial neural network, Evolution of Neural Network , Neural Model and Network Architectures, ANN terminologies, Perceptron learning, Supervised learning network :Error back propogationnetwork,Radial basis function network. Unsupervised learning network :Kohonenself organizing feature maps (SOM),Counter propagation network. Associative memory network: Bidirectional associative memory, Hopefield network. Special Neural Network: Probabilistic neural Network,SimulatedAnnelling, Boltzman machine ,Cauchy Machine.
UNIT-3 20 H rs	**Fuzzy Logic-**Crisp set Vs Fuzzy set, Operations on Fuzzy sets,Fuzzyrelation,Membership function, Fuzzy arithmetic and Fuzzy measures, Fuzzy rule base and approximate reasoning :Fuzzy Inference System(FIS).
UNIT-4 15 Hrs	**Genetic Algorithm –** Introduction , Biological Background Genetic Operators and Parameters, Genetic Algorithms in Problem Solving, Theoretical Foundations of Genetic Algorithms, Classification of Genetic algorithm.
UNIT-5 15 Hrs	**Application of soft computing:** Application of Neural Network ,Fuzzy logic and Genetic Algorithm in science and engineering, Study of popular Hybrid soft computing techniques.
SUGGESTED READINGS	1. Principles of soft computing , S.N.Shivanandan and S.N. deepa Wiley India publication ,First Indian edition ,2008. 2. A Comprehensive Foundation to Neural Networks , Simon Haykins , Prentice Hall 3. Fuzzy Sets and Fuzzy Logic: Theory and Applications , G. J. Klir, and B. Yuan, PHI learning ,2011. 4. Dr.G.Canon,Fuzzy Logic and Fuzzy Decision Making: Concepts and Applications, Galgotia Publication. 5. D. E. Goldberg, Genetic Algorithms in Search, Optimization, and Machine Learning, Addison-Wesley, 1989. 6. Jang,Sun and Mizutani :Neuro-Fuzzy and soft computing :A computational Approach to learning and machine intelligence ,PHI learning ,2011. 7. N.K. Sinha & M. M. Gupta(Eds), Soft Computing and Intelligent Systems: Theory & Applications, Academic Press, 2000.

• M.Sc. in INFORMATION TECHNOLOGY (SECOND SEMESTER)	
COURSE CODE: MIT**B06COURSE TYPE : ECC/CB**	
COURSE TITLE: ALGORITHMIC TECHNIQUES AND IMPLEMENTATION	
CREDIT: 06 **THEORY: 06**	**HOURS : 90** **THEORY: 90**
MARKS : 100 **THEORY: 70 CCA : 30**	
OBJECTIVE: The main objective is to know about basic design methods , deterministic and non deterministics algorithms and lower bound techniques .	
UNIT-1 20Hrs.	**Basic:** Algorithm analysis, Analyzing algorithms, Worst- case and Average case Analysis, Asymptotic Notations, Recurrence: substitution method, master method.
UNIT-2 20Hrs	**Design Methods** : General Consideration, Algorithm design paradigms and representative problems.
UNIT-3 20 H rs	**Deterministic Algorithms** **Divide and Conquer**: Binary search, Merge sort, Quick sort. **Greedy Method**: Minimal spanning tree, Shortest Paths, Knapsack. **Dynamic Programming**: Chained matrix multiplication, shortest paths, optimal search trees. **Backtracking** 8-queens problem, Graph colouring, Hamiltonian cycles. **Branch and Bound:** 0/1 Knapsack problem, Traveling salesperson.
UNIT-4 15 Hrs	**Non Deterministic Algorithms** **Intractable Problems** : Basic concepts, Nondeterministic algorithms, NP Completeness, Cook's theorem,Examples of NP-Hard and NP-Complete problems, Problem reduction. **Approximation** Graph colouring, Task scheduling, Bin packing. **Probabilistic Algorithms** Numerical integration, Primality testing. **Graph Algorithms**: BFS, DFS and its applications.
UNIT-5 15 Hrs	**Evaluation of Algorithm** **Lower Bound Techniques**: Comparison tree, Reduction, Adversary argument.
SUGGESTED READINGS	1. The Design and Analysis of Computer Algorithms , A.Aho, J. Hopcroft and J.Ullman, Addison Wesley. 2. Fundamentals of Computer Algorithms , E. Horowitz and S. Sahani, Galgotia, New Delhi. 3. Introduction to the Design and Analysis of Algorithms ,S.E.Goodman and S.T.Hedetniemi, McGraw Hill. 4. Design Methods and Analysis of Algorithmics ,G.Brassard and P.Bratley, PHI. 5. Design Methods and Analysis of Algorithms, S.K.Basu, PHI, 2005. 6.Introduction To Algorithms , Thomas H Cormen, Charles E Leiserson, Ronald L Rivest, Clifford Stein ,MIT