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DEPARTMENT OF COMPUTER APPLICATIONS
M. Phil Computer Applications (Full Time)
Curriculum & Syllabus
2016 Regulations

S.NO.	Sub. Code	Title of the Subject	L	T	P	C
		I SEMESTER				
1.	MPL16CA01	Research Methodology	4	0	0	4
2.	MPL16CEXX	Elective	3	1	0	4
		TOTAL	**7**	**1**	**0**	**8**

S.NO.	Sub. Code	Title of the Subject	L	T	P	C
		II SEMESTER				
1.		Dissertation Background Paper	3	1	0	4
2.	MPL16CL01*	Dissertation	7	1	0	8
		TOTAL	**10**	**2**	**0**	**12**

Total Credits to be earned for the award of the Degree: 20

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LIST OF ELECTIVES

Electives						
S.No.	Sub. Code	Title of the Subject	L	T	P	C
1	MPL16CE01*	Data Warehousing and Mining	3	1	0	4
2	MPL16CE02*	Digital Image Processing	3	1	0	4
3	MPL16CE03*	Advanced Networking	3	1	0	4
4	MPL16CE04*	Natural Language Processing	3	1	0	4
5	MPL16CE05*	Data Compression	3	1	0	4
6	MPL16CE06*	Agent Based Computing	3	1	0	4
7	MPL16CE07*	Soft Computing	3	1	0	4
8	MPL16CE08*	Embedded and Real Time Operating System	3	1	0	4
9	MPL16CE09*	Software Testing and Quality Assurance	3	1	0	4
10	MPL16CE10*	Knowledge Management	3	1	0	4

Note :

   * -   Old Regulation

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DEPARTMENT OF COMPUTER APPLICATIONS

MPL16CA01   **RESEARCH METHODOLOGY**   **4 0 0 4**

OBJECTIVES:
- To develop understanding of the basic framework of research process.
- To develop an understanding of various research designs and techniques.
- To identify various sources of information for literature review and data collection.

UNIT I   **12 Hrs**

Objectives and types of research: Motivation and objectives – Research methods vs Methodology. Types of research – Descriptive vs. Analytical, Applied vs. Fundamental, Quantitative vs. Qualitative, Conceptual vs. Empirical

UNIT II   **12 Hrs**

Research Formulation – Defining and formulating the research problem - Selecting the problem - Necessity of defining the problem - Importance of literature review in defining a problem – Literature review – Primary and secondary sources – reviews, treatise, monographs-patents – web as a source – searching the web - Critical literature review – Identifying gap areas from literature review - Development of working hypothesis.

UNIT III   **12 Hrs**

Research design and methods – Research design – Basic Principles- Need of research design –– Features of good design – Important concepts relating to research design – Observation and Facts, Laws and Theories, Prediction and explanation, Induction, Deduction, Development of Models. Developing a research plan - Exploration, Description, Diagnosis, Experimentation. Determining experimental and sample designs

UNIT IV   **12 Hrs**

Data Collection and analysis: Execution of the research - Observation and Collection of data - Methods of data collection – Sampling Methods- Data Processing and Analysis strategies - Data Analysis with Statistical Packages - Hypothesis-testing - Generalization and Interpretation.

UNIT V   **12 Hrs**

Reporting and thesis writing – Structure and components of scientific reports - Types of report – Technical reports and thesis – Significance – Different steps in the preparation – Layout, structure and Language of typical reports – Illustrations and tables - Bibliography, referencing and footnotes - Oral presentation – Planning – Preparation – Practice – Making presentation – Use of visual aids - Importance of effective.

                                                     Total No. of Hrs: 60

REFERENCES:

1. Pannerselvam, R(2004) Research *Methodology*, PHI, New Delhi .
2. Watson George (1987), *Writing a thesis: A guide to long Essays and Dissertations, Longman*, London.
3. Kothari,C,R (2011), *Research Methodology: Methods and Techniques,* New Age International Publishers.
4. Kirani Singh & Chaudhiri, B,B(2008) *MAT Lab Programming,* PHI.
5. Paul Connolly(2007) *Quantitative Data Analysis in Education : Acritica Introduction Using SPSS*, Routledge Publisher.
6. Anderson, Berny H. Dujrston & H Rode (1970), *Thesis & Assignment Writing*, Wiley Eastern Ltd, New Delhi.

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MPL16CE01   DATA WAREHOUSING AND MINING   **3   1   0   4**

OBJECTIVES:
 ➢ Understanding of the fundamental theories and concepts of data mining
 ➢ Demonstrate their ability to conduct online analytic processing(OLAP)
 ➢ Demonstrate their ability to implement typical data mining techniques

UNIT I   **12 Hrs**
Data Warehousing Introduction – Definition-Architecture-Warehouse Schema-Warehouse server-OLAP operations. Data Warehouse technology – Hardware and operating system- Warehousing Software – Extraction tools – Transformation tools –Data quality tools – Data loaders – Data Access and retrieval tools – Data Modeling tools – Fact tables and dimensions Data warehousing case studies : Data warehousing in Government , Tourism, Industry , Genomics data.

UNIT II   **12 Hrs**
Data Mining definition – DM Techniques – current trends in data mining – Different forms of Knowledge – Data selection , cleaning, Integration , Transformation, Reduction and Enrichment . Data: Types of data - Data Quality - Data Preprocessing - Measures of similarity and dissimilarity. Exploration : Summary statistics – Visualization.

UNIT III   **12 Hrs**

Association rules : Introduction – Methods to discover association rule – Apriori algorithm Partition Algorithm – Pincher search algorithm – Dynamic Item set algorithm – FP Tree growth algorithm. Classification : Decision Tree classification – Bayesian Classification – Classification by Back Propogation.

UNIT IV   **12 Hrs**
Clustering Techniques : Introduction – Clustering Paradigms – Paritioning Algorithms – K means & K Mediod algorithms – CLARA – CLARANS – Hierarchical clustering – DBSCAN – BIRCH – Categorical Clustering algorithms – STIRR – ROCK – CACTUS. Introduction to machine learning – Supervised learning – Unsupervised learning – Machine learning and data mining. Neural Networks : Introduction – Use of NN – Working of NN Genetic Algorithm : Introduction –Working of GA

UNIT V   **12 Hrs**
Web Mining : Introduction – Web Content Mining – Web structure mining – web usage mining – Text Mining – Text Clustering Temporal Mining -spatial mining – Visual data mining – Knowledge mining.

                                                                    Total No. of Hrs: 60

REFERENCES:

 1. Sushmita Mitra, T, Tir ku Acharaya(2004), "*Data Mining Multimedia , Softcomputing &*
 2. *Bioinformatics*", Wiley Interscience publications.
 3. Michal J A Berry & Gordon Linoff(2000), "*Mastering Data Mining*" , John Wiley & Sons.
 4. Jiawei Han & Michelinne Kamber (2006), *Data Mining : Concepts and Techniques* (2nd Ed), The
 5. Morgan Kaufmann Publisher.
 6. Arun K Pujari(2001) , *Data Mining Techniques*, University press.

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DEPARTMENT OF COMPUTER APPLICATIONS

MPL16CE02   **DIGITAL IMAGE PROCESSING**   **3 1 0 4**

OBJECTIVES:
- ➢ Cover the basic theory and algorithms that are widely used in digital image processing
- ➢ Expose students to current technologies and issues that are specific to image processing systems
- ➢ Develop hands-on experience in using computers to process images

UNIT I
12 Hrs

Digital image processing – fundamental steps in image processing – elements of imageprocessing systems. Digital image fundamentals: A simple image model – sampling and quantization – some basic relationships between pixels. Introduction to Fourier transform– the discrete Fourier transform – properties of the two-dimensional Fourier transform. Image Enhancement: nhancement by point processing – spatial filtering – enhancement in the frequency domain – generation of spatial masks form frequency domain specifications – color image processing

UNIT II
12 Hrs

Image restoration: Degradation model – diagonalisation of circulant and block circulant matrics – Algebraic approach to restoration – inverse filtering. Image compression: Fundamentals – image compression models – error-free compression – lossy compression – image compression standards.

UNIT III
12 Hrs

Image segmentation: Detection of discontinuities – edge linking and boundary detection – thresholding - region oriented segmentation. Representation and description: representation schemes – boundary descriptors – regional descriptors. Elements of image analysis – Patterns and Pattern classes – decision theoretic methods – structural methods– interpretation

UNIT IV   **12 Hrs**

Image processing – pattern recognition – relationship between image processing and pattern recognition. Object detection: introduction. Shape analysis: introduction – convex hull – convex hull based representation – fractals – fractals based image shape representation.

UNIT V   **12 Hrs**

Wavelets: introduction – properties of wavelets – fast wavelet transform – wavelet decomposition structures and coefficients – inverse fast wavelet transform – application of wavelets in image processing

Total No. of Hrs: 60

REFERENCES:

1. Rafael, C.,Gonzalez & Richard E. Woods(2002), *Digital Image processing*, Prentice Hall, NJ.
2. Russ J. C.(1999), *The image processing handbook*", CRC Press.

DEPARTMENT OF COMPUTER APPLICATIONS

MPL16CE03   **ADVANCED NETWORKING**   **3 1 0 4**

OBJECTIVES:
  - ➢ To cover and understand the current directions of computer networks.
  - ➢ To encourage a performance perspective towards analysis of computer and communications networks.

UNIT I   **12 Hrs**

Circuit Switching Networks - AT & T's Dynamic Routing Network, Routing in Telephone Network – Dynamic Non Hierarchical Routing – Trunk Status Map Routing – Real Time Network Routing, Dynamic Alternative Routing – Distributed Adaptive Dynamic Routing – Optimized Dynamic Routing.

UNIT II   **12 Hrs**

Packet Switching Networks - Distance Vector Routing-Link State Routing-Inter Domain Routing – Classless Interdomain Routing (CIDR), Interior Gateway Routing Protocols(IGRP) – Routing Information Protocol (RIP), Open Shortest Path First (OSPF), Exterior Gateway Routing Protocol(EGRP)–Border Gateway Protocol(BGP), Apple Talk Routing and SNA Routing

UNIT III   **12 Hrs**

High Speed Networks - Routing in optical networks- The optical layer, Node Designs, Network design and operation, Optical layer cost tradeoffs, Routing and wavelength assignment, Architectural variations, Routing in ATM networks – ATM address structure, ATM Routing, PNNI protocol, PNNI signaling protocol, Routing in the PLANET network and Deflection Routing.

UNIT IV   **12 Hrs**

Security and Cryptography - Introduction to Security - Security Attacks, services and Mechanisms – Data Encryption Standard - Advanced Encryption Standard–Public–Key Cryptography and RSA –Message Authentication and Hash Functions – Hash and MAC algorithms – Digital Signatures and Authentication Protocols

UNIT V   **12 Hrs**

Network Security - Authentication Applications – Electronic Mail security – IP Security – Web security – Intruders – Malicious Software – Firewalls.

Total No. of Hrs: 60

REFERENCES:

1. Behrouy A Ferouzan(2004), Data Communications and Networking (3rd ed.) TMH.
2. William Stallings(1998),*High Speed Networks TCP/IP and ATM Design Principles*, PHI International.
3. Charlie Kaufman, Radia Rerlman & Mike Specines(2002), "Network Security – Private Communication in a Public World", PHI.
4. William Stallings (2004),*ISDN & Broadband ISDN with Frame Relay and ATM"*, PHI.
5. William Stallings (2006),*Cryptography and Network Security*, PHI.
6. Steen Strub,M (1995), *Routing in Communication Networks*,PHI International.

MPL16CE04 **NATURAL LANGUAGE PROCESSING** **3 1 0 4**

OBJECTIVES:
- ➢ To introduce you to some of the problems and solutions of NLP, and their relation to linguistics and statistics.
- ➢ To introduce various practical skills associated with the design and implementation of NLP systems

UNIT I   **12 Hrs**

Natural Language Processing (NLP) – open problems – major goal – language structure –language analyzer – morphological analyzer – local world grouper (LWG) – core parser requirements of computational grammars – computational aspect – system aspect – large system aspect – morphological analysis – morphological generation using paradigms – morphological analysis using paradigms – speeding up morphological analysis by compilation – morphological analyzer – additional issues – local word grouping – verbgroups – noun groups – strategy for grammar development – semantics in stages.

UNIT II   **12 Hrs**

Paninian grammar – semantic model – free word order and vibhakti – paninian theory – karaka relations – active passive – control – karaka to vibhakti mapping – karaka sharing.

UNIT III   **12 Hrs**

Machine translation – survey – is MT possible? – Possible approaches – current status –anusaraka or language accessor – cutting the Gordian knot – structure of anusaraka systems – user interface – linguistic area – anusaraka output – language bridges.

UNIT IV   **12 Hrs**

Lexical functional grammar – active passive and dative constructions – WH movements
in questions – LFG formalism – well formedness conditions – handling WH movements in questions – computational aspects – features and feature structures – unification – other constraints – CFG and Indian languages – functional specification – lexicalized grammars and locality – lexicalized tree substitution grammar – lexicalized tree adjoining grammar – feature structures – mathematical aspects

UNIT V   **12 Hrs**

Comparing TAG with PG – similarities between TAG and PG – differences between TAG and PG – Government and binding – GB modules – X-bar theory – theta theory – Government – Case theory – bounding theory – empty category principle (ECP) – binding theory – constraints on movement – GB parsing – comparing GB with PG
                                                                                    Total No. of Hrs: 60

REFERENCES:

1. Akshar Bharati, Vineet Chaitanya & Rajeev Sangal(2000) *Natural Language Processing – A Paninian Prespective*”, Prentice Hall of India.
2. James Allen, (2005*) Natural Language Understanding*,(3rd Ed), Pearson Education

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MPL16CE05   **DATA COMPRESSION**   **3 1 0 4**

OBJECTIVES:
- ➢ Presents principles of data compression techniques.
- ➢ Students will learn properties of various data compression methods which is very important when designing new information and communication systems

UNIT I   **12 Hrs**

Introduction - Compression Techniques – Lossy compression & Lossless compression, modeling and compression Mathematical modeling for Lossless compression- Physical models, probability models, Markov Models and composite source models. Mathematical modeling for Lossy compression – physical models, Probablity models and linear systems models.

UNIT II   **12 Hrs**

Different Methods of Compression - Basic Techniques : Run length encoding, RLE Text compression, RLE image compression and scalar quantization. Statistical Methods : Information theory concepts, Huffman coding, Adaptive Huffman coding, facsimile compression Arithmetic coding and Adaptive, Arithmetic coding and Text compression. Dictionary methods : String compression, LZ 77, LZSS, LZ78,LZW, Unix compression, GIF image, ARC and PKZIP, Data compression patterns. Wavelet methods : Fourier Image compression, Multi Resolution decomposition and JPEG 2000.

UNIT III   **12 Hrs**

Image Compression - Intuitive Methods, Image Transforms, JPEG, Progressive Image compression, Vector quantization, Adaptive Vector Quantization, Block Matching, Block Truncation coding. Context Tree weighting, Block Decomposition, Binary Tree predictive coding, Quad Trees and Finite Automata Methods.

UNIT IV   **12 Hrs**

Video Compression - Analog Video, Composite and Components Video, Digital Video, Video compression, MPEG and H.261.

UNIT V   **12 Hrs**

Audio Compression - Sound, Digital Audio, The Human Auditory System, **μ** -Law and A-Law commanding, ADPCM Audio compression and MPEPG-1 Audio Layers.

Total No. of Hrs: 60

REFERENCES:

1. Khalid Sayood, *Introduction to Data Compression*,Harcout India(P) Ltd, New Delhi.
2. Mark Nelson & Jean-Loup Gailly, *The Data compression Book*(2nd Ed), BPB publications.
3. David Salomon, *Data compression – The complete Reference*,(2nd Ed), Springer Publications.

DEPARTMENT OF COMPUTER APPLICATIONS

MPL16CE06   **AGENT BASED COMPUTING**   **3 1 0 4**

OBJECTIVES:
- To develop an agent-based system for a particular task.
- To incorporate and share knowledge among software agents
- To be familiar with classic agent based models in complex systems

UNIT I   **12 Hrs**

Introduction to Software Agents: What is a software agent? - Why software agents? - Applications of Intelligent software agents-Practical design of Intelligent agent systems.

UNIT II   **12 Hrs**

Intelligent Agent Learning- Approaches to Knowledge base development-Disciple approach for building Intelligent agents- Knowledge representation-Generalization- Problem solving methods-Knowledge elicitation.

UNIT III   **12 Hrs**

Rule learning: Rule learning problem- Rule learning method- Learned rule characterization. Rule refinement: Rule refinement problem- Rule refinement method- Rule experimentation and verification-Refined rule characterization-Agent interactions.

UNIT IV   **12 Hrs**

Disciple shell: Architecture of Disciple shell- Methodology for building Intelligent Agents- Expert-Agent interactions during knowledge elicitation process- Expert-Agent interactions during rule learning process- Expert-Agent interactions during rule refinement process.

UNIT V   **12 Hrs**

Case studies in building intelligent agents: Intelligent Agents in portfolio management- Intelligent Agents in financial services- Statistical Analysis assessment and support agent- Design assistant for configuring computer systems.

Total No. of Hrs: 60

REFERENCES:

1. Eduardo Alanso & Daniel Kudenko, Dimitar Kazakov(2003) *Adaptive Agents and Multi-Agent Systems*, Springer Publications.
2. Nicholas R Jennings & Michael J Wooldridge(1997) *Agent Technology – Foundations, Applications and Markets*, Springer.
3. Gheorghe Tecuci et al.(2003) *Building Intelligent Agents*, Academic Press.
4. Jeffrey M Bradshaw, *Software Agents*, The MIT Press, Standard Edition.

MPL16CE07   **SOFT COMPUTING**   **3 1 0 4**

OBJECTIVES:
- To learn basic neural networks, fuzzy systems,
- Gain knowledge about optimization algorithms concepts and their relations

UNIT I   **12 Hrs**

Fundamentals of ANN: The Biological Neural Network, Artificial Neural Networks - Building Blocks of ANN and ANN terminologies: architecture, setting of weights, activation functions - McCulloch-pitts Neuron Model, Hebbian Learning rule, Perception learning rule, Delta learning rule.

UNIT II   **12 Hrs**

Models of ANN: Single layer perception, Architecture, Algorithm, application procedure - Feedback Networks: Hopfield Net and BAM - Feed Forward Networks: Back Propogation Network (BPN) and Radial Basis Function Network (RBFN) – Self Organizing Feature Maps: SOM and LVQ

UNIT III   **12 Hrs**

Fuzzy Sets, properties and operations - Fuzzy relations, cardinality, operations and properties of fuzzy relations, fuzzy composition.

UNIT IV   **12 Hrs**

Fuzzy variables - Types of membership functions - fuzzy rules: Takagi and Mamdani – fuzzy inference systems: fuzzification, inference, rulebase, defuzzification.

UNIT V   **12 Hr**

Genetic Algorithm (GA): Biological terminology – elements of GA: encoding, types of selection, types of crossover, mutation, reinsertion – a simple genetic algorithm – Theoretical foundation: schema, fundamental theorem of GA, building block hypothesis.

                                                        T**otal No. of Hrs: 60**

REFERENCES:

1. Satish Kumar(2007) *Neural Networks – A Classroom approach*, Tata McGraw-Hill, New Delhi.
2. Martin T. Hagan, Howard B. Demuth & Mark Beale(2002) *Neural Network Design*, Thomson Learning, India.
3. Sivanandam,S,N,Sumathi,S & Deepa,S.N(2006) *Introduction to Neural Networks using MATLAB 6.0* , Tata McGraw-Hill, New Delhi
4. B. Kosko(1996) *Neural Network and fuzzy systems*, PHI.
5. Klir & Yuan(1996) *Fuzzy sets and fuzzy logic – theory and applications*, PHI.
6. Melanie Mitchell(1996) *An introduction to genetic algorithm*, PHI, India.
7. Sivanandam, S.N. & Deepa,S.N(2008) *Principles of Soft Computing*, Wiley-India.
8. Goldberg,D,E(2000) *Genetic algorithms, optimization and machine learning*, Addison Wesley.

DEPARTMENT OF COMPUTER APPLICATIONS

MPL16CE08   EMBEDDED AND REAL TIME OPERATING SYSTEM   3 1 0 4

OBJECTIVES:
➢ To introduce the basic concepts of Embedded Systems and the various techniques
➢ To discuss the real time models, languages and operating systems
➢ To analyze real time examples

UNIT I

12 Hrs

Introduction to Embedded Systems-Categories of embedded Systems-specialties of embedded systems-requirements of embedded systems –challenges and issues in embedded software development – recent trends in embedded systems-Architecture of embedded systems: Hardware architecture – software architecture-application software – communication software –Embedded systems on a Chip (SoC) and the use of VLSI designed circuits.

UNIT II

12 Hrs

Hardware Fundamentals- Terminology-Gates-Timing Diagrams-Memory- Advanced Hardware Fundamentals-Microprocessors-Microprocessor Architecture-Direct Memory Access - Interrupts and Software Architecture-Interrupts- Interrupts Basics – Interrupt Service Routines- Survey of Software Architectures- Round Robin with interrupts- Function-Queue-Scheduling Architecture-Real Time Operating Systems Architecture.

UNIT III

12 Hrs

Applications of Embedded Systems-Application market segments-consumer electronics control system and industrial automation – biomedical systems- field instrumentation – handheld computers – data communication – networked information appliances – telecommunications – wireless communication.

UNIT IV

12 Hrs

Introduction to real time theory-Scheduling theory-rate monotonic scheduling-utilization bound theorem-Introduction to Real time Operating System –Desktop OS vs. RTOS – need for BSP in embedded systems – Issues in Real time computing –Structure of a real time system – task management – race condition – priority inversion – RTOS under the hood – ISRs and scheduling – Inter task communication – timers – programming language and tools.

UNIT V

12 Hrs

Case Study-QNX Neutrino, VxWorks, MicroC/OS-II, RTLinux, POSIX, Embedded NT, and Windows XP embedded.

Total No. of Hrs: 60

REFERENCES:

1. Ahmed M Ibrahim (2004), *Fuzzy logic for Embedded Systems Applications,* Newness an imprint of
2. Elsevier.
3. David E.Simon(2000) ,*An Embedded Software Primer*, Pearson Education Asia.
4. Sriram Iyer & Pankaj Gupta(2004), *Embedded Real time Systems Programming*, Tata McGraw Hill
5. Publishing Company Limited.
6. Lewin A.R.W.Edwards, *Embedded System Design on a Shoestring*, Newness an imprint of Elsevier
7. Krishna,C,M & Kang G.Shin, *Real Time Systems*, The McGraw Hill International .
8. **1.** Rajkamal(2003), *Embedded Systems Architecture, Programming and Design*, TATA McGraw- Hill.

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MPL16CE09   SOFTWARE TESTING AND QUALITY ASSURANCE   3 1 0 4

OBJECTIVES:
- Understand the fundamental concepts and theory of Software testing and Software Quality Management
- Implement process that ensures the Software is developed with good quality standards

UNIT I   **12 Hrs**

Introduction to software quality – Software modeling – Scope of the software quality program – Establishing quality goals – Purpose, quality of goals – SQA planning software – Productivity and documentation, Software quality assurance plan – Purpose and Scope, Software quality assurance management - Organization – Quality tasks – Responsibilities – Documentation. Standards, Practices, Conventions and Metrics, Reviews and Audits – Management, Technical review – Software inspection process – Walk through process – Audit process – Test processes – ISO, CMM compatibility – Problem reporting and corrective action.

UNIT II   **12 Hrs**

Tools, Techniques and methodologies, Code control, Media control, Supplier control, Records collection, Maintenance and retention, Training and risk management. ISO 9000 model, CMM model, Comparisons, ISO 9000 weaknesses, CMM weaknesses, SPICE – Software Process Improvement and Capability determination.

UNIT III   **12 Hrs**

Purpose of Software testing – Some Dichotomies – a model for testing – Playing pool and consulting oracles – Is complete testing possible – The Consequence of bugs – Taxonomy of Bugs. Software testing Fundamentals – Test case Design – Introduction of Black Box Testing and White Box testing – Flow Graphs and Path testing – Path testing Basics - Predicates, Path Predicates and Achievable Paths - Path Sensitizing – Path Instrumentation – Implementation and Application of Path Testing.

UNIT IV   **12 Hrs**

Transaction Flow testing – Transaction Flows – techniques – Implementation Comments – Data Flow Testing – Basics – Strategies – Applications, Tools and effectiveness – Syntax Testing – Why, What, How – Grammar for formats – Implementation – Tips. Logic Based Testing – Motivational Overview – Decision tables – Path Expressions – KV Charts – Specifications – States, State Graphs and transition Testing – State Graphs – Good & bad states – state testing Metrics and Complexity.

UNIT V   **12 Hrs**

Testing GUIs – Testing Client – Server Architecture – Testing for Real-time System – A Strategic Approach to Software testing – issues – unit testing – Integration Testing – Validation testing – System testing – The art of Debugging.

Total No. of Hrs: 60

REFERENCES:

1. Watt. S. Humphrey(1998), *Managing Software Process*, Addison Wesley.
2. Mordechai BenMeachem & Garry S.Marliss(1997), *Software Quality–Producing Practical, Consistent Software*, International Thompson Computer Press.
3. Philip.B.Crosby(1992) ,*Quality is Free:The Art of making quality certain,* Mass Market.
4. Myers & Glenford.J(1979),*The Art of Software Testing* ,John-Wiley & Sons.
5. Roger.S.Pressman(2001), *Software Engineering – A Practitioner's Approach*(5th Ed),Mc-Graw Hill.
6. Marnie.L. Hutcheson(2007), *Software Testing Fundamentals*, Wiley-India.
7. Boris Beizer(2003), *Software Testing Techniques*,(2ND Ed) ,Dreamtech Press.

DEPARTMENT OF COMPUTER APPLICATIONS

MPL16CE10   **KNOWLEDGE MANAGEMENT**   **3 1 0 4**

OBJECTIVES:
➢ Identify the different types of knowledge and the ways in which knowledge is created
➢ Get more knowledge about Knowledge management tools

UNIT I   **12 Hrs**

Basics - What is Knowledge Management? - Key Challenges - KM Life Cycle - Understanding Knowledge – Definitions - Cognition and Knowledge Management - Data, Information, and Knowledge - Types of Knowledge - Expert Knowledge.

UNIT II   **12 Hrs**

Knowledge Management System Life Cycle - Challenges in Building KM Systems - Conventional Versus KM System Life Cycle - KM System Life Cycle - System Justification - Role of Rapid Prototyping - Role of Knowledge Developer – User Training.

UNIT III   **12 Hrs**

Knowledge Creation - Nonaka's Model of Knowledge Creation and Transformation - Knowledge Architecture - Capturing Tacit Knowledge – Evaluating the Expert – Developing a relationship with Expert – Fuzzy Reasoning and the Quality of Knowledge Capture – Interview as a tool – Brainstorming – Repertory Grid - Nominal- Group Techniques(NGT) – Delphi method – Concept mapping

UNIT IV   **12 Hrs**

Knowledge Codification - Codification Tools and Procedures – Knowledge Developers Skill Set - Knowledge Transfer - Transfer Methods - Role of the Internet in Knowledge Transfer - Knowledge Transfer in the E-World - E-Business – KM Tools :- Personal KM Tools, What next – from GUI to CIM, Software – Knowledge Technologies :- State of Technology, KM Gets Unconventional, Application is the Key, Content Mgmt, Technology components of KM, ERP and BPR, Meta-data Architecture.

UNIT V   **12 Hrs**

Knowledge Management Tools and Knowledge Portals - Portals Basics - Business Challenge - Knowledge Portal Technologies - Ethical and Legal Issues - Knowledge Owners - Legal Issues - The Ethical Factors – Futuristic KM.

                                                    Total No. of Hrs: 60

REFERENCES:

1. Kai Mertins, Peter Heisig & Jens Vorbeck ,*Knowledge Management: Concepts and Best Practices*(2nd Ed) Springer Publications.
2. A Thothathri Raman(2004), *Knowledge Management a resource book, EXCEL Books*,
3. Amrit Tiwana, *The Essential Guide to Knowledge Management – E-Business and CRM Applications,* Pearson Education Asia.
4. Elias M.Awad, Hassan M.Ghaziri(2004) , *Knowledge Management*", Pearson Education.