PEOPLE'S UNIVERSITY, BHOPAL

(Applicable for Admitted from Academic Session 2019-20 onwards)

Programme: **Master of Technology Specialization: Computer Science and Engineering Semester –II**

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P	External (70)	Internal (30)	Total (100)	External (Nil)	Internal (Nil)	Total
MTCS12101	Cloud Computing	3	1	-			Min: 40 (D Grade			Nil

Duration of Theory (Externals): 3 Hours

Theory Internal- Max Marks: 30	Best of Two Mid Semester Test-- Max Marks: 15	Assignment/Quiz/Attendance Max. Marks: 15
Practical Internal Max Marks: Nil	Lab work & Sessional – Max Marks: Nil	Assignment/ Quiz/Attendance Max. Marks: Nil

Pre-Requisite	Basic Knowledge of concepts of storage.
Course Outcome	1.To learn how to use Cloud Services.
	2 .To learn how to use Cloud Services.
	3. To build Private Cloud.

Unit	Contents *(Theory)*	Marks Weightage
I	**Understanding Cloud Computing:** Cloud Computing, History of Cloud Computing, Cloud Architecture, Cloud Storage, Why Cloud Computing Matters, Advantages of Cloud Computing, Disadvantages of Cloud Computing and Cloud Computing Services	**14**
II	**Developing Cloud Services:** Web-Based Application, Pros and Cons of Cloud Service Development, Types of Cloud Service Development, Software as a Service, Platform as a Service, Web Services, On-Demand Computing, Discovering Cloud Services Development Services and Tools	**14**
III	**Cloud Computing For Everyone:** Centralizing Email Communications, Collaborating on Schedules, Collaborating on To-Do Lists, Collaborating Contact Lists, Cloud Computing for the Community, Collaborating on Group Projects and Events, Cloud Computing for the Corporation	**14**
IV	**Using Cloud Services:** Collaborating on Calendars, Schedules and Task Management, Exploring Online Scheduling Applications, Exploring Online Planning and Task Management, Collaborating on Event Management, Collaborating on Contact Management, Collaborating on Project Management, Collaborating on Word Processing, Collaborating on Databases, Storing and Sharing Files	**14**
V	**Other Ways To Collaborate Online:** Collaborating via Web-Based Communication Tools, Evaluating Web Mail Services, Evaluating Web Conference Tools, Collaborating via Social Networks and Groupware	**14**

Text Book/References Books/ Websites

1. Haley BEard,; Cloud Computing BEst Practices for Managing and Measuring Processes for On-demand Computing, Applications and Data Centers in the Cloud with SLAs
2. Gautam Shroff, Enterprse; Cloud Computing; Technology,Architecture,Application, Cambridge University Press,New Delhi.

Suggested List of Laboratory Experiments :- (Expandable):Nil

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(Applicable for Admitted from Academic Session 2019-20 onwards)

Programme: **Master of Technology Specialization: Computer Science and Engineering Semester –II**

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P			Total (100)			Total
MTCS12102	Mobile Network System	3	1	-	External (70)	Internal (30)	Min: 40 (D Grade)	External (Nil)	Internal (Nil)	Nil

Duration of Theory (Externals): 3 Hours

Theory Internal- Max Marks: 30	Best of Two Mid Semester Test-- Max Marks: 15	Assignment/Quiz/Attendance Max. Marks: 15
Practical Internal Max Marks: Nil	Lab work & Sessional – Max Marks: Nil	Assignment/ Quiz/Attendance Max. Marks: Nil

Pre-Requisite	Student should have basic knowledge of Computer Network
Course Outcome	1. Able to understand the infrastructure to develop mobile communication systems (cellular theory) and the characteristics of different multiple access techniques in mobile communication.
	2.To motivate the students to pursue research in the area of wireless communication.

Unit	Contents (Theory)	Marks Weightage
I	Introduction to wireless, mobile and cellular mobile systems- cellular mobile telephone Systems, analog and digital cellular systems- - fre,.quency reuse, co-channel interference.	**14**
II	Medium access control - MAC, SDMA, FDMA, TDMA, CDMA, Hand offs and dropped calls-initiation of handoff, power difference, mobile assisted cell-site and Intersystem handoff.	**14**
III	Mobile Telecommunication standards, satellite and broadcast systems - GSM, DECT,TETRA, IMT-2000, CTEO, LEO and MEO, - IEEE 802.11, HIPERLAN, Bluetooth	**14**
IV	Network support for mobile systems - Cellular analog, MTSO interconnection, reverse tunneling, IPV6, DHCP, Wireless ATM-W ATM services, functions, radio access layer.	**14**
V	Mobile transport and application layer protocol - Review of traditional TCP, fast retransmit/fast recovery, transmission/timeout freezing, file systems, W W W, WAP.	**14**

Text Book/References Books/ Websites

1. Jochen Sciiiller, ;Mobile Communications; Pearson Education Publications
2. William C.Y Lee; Mobile Cellular Telecommunications; McGraw Hill International 'Editions
3. William Stallings; Wireless Communications and Networks ;PHI/Pearson Education,
4. Kaveh Pahlavan, Prasanth Krishnamoorthy ;Principles of Wireless Networks ;PHI/Pearson Education.

Suggested List of Laboratory Experiments :- (Expandable):Nil

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Programme: **Master of Technology Specialization: Computer Science and Engineering Semester –II**

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P			Total (100)			Total
MTCS12103	High Performance Computing	3	1	-	External (70)	Internal (30)	Min: 40 (D Grade)	External (Nil)	Internal (Nil)	Nil

Duration of Theory (Externals): 3 Hours

Theory Internal- Max Marks: 30	Best of Two Mid Semester Test – Max Marks: 15	Assignment/Quiz/Attendance Max. Marks: 15
Practical Internal Max Marks: Nil	Lab work & Sessional – Max Marks: Nil	Assignment/Quiz/ Attendance Max. Marks: Nil

Pre-Requisite	Student should have basic knowledge of Computer architecture and computational logic.
Course Outcome	1. To demonstrate a basic knowledge of numerical computing using an appropriate programming language.
	2. Able to reason about the accuracy of mathematical and numerical models of real physical phenomena.
	3. To understanding of the various paradigms of high performance computing and their potential for performance and programmability.

Unit	Contents (Theory)	Marks Weightage
I	**Introduction to high performance computing**: Aim, Architectures, Cluster, Grid ,Meta-computing Middle ware, Examples of representative applications. Programming models: Parallel programming paradigms, task partitioning and mapping, shared memory, message passing, peer-to-peer, broker-based. Introduction to PVM and MPI.	**14**
II	**Architecture of cluster-based systems**: Issues in cluster design: performance, single-system-image, fault tolerance, manageability, programmability, load balancing, security, storage. High performance sequential computing: Effects of the memory hierarchy, Out-of-order execution, superscalar processors, Vector processing.	**14**
III	**Shared-memory processing**: Architectures (extensions of the memory hierarchy), Programming paradigms, OpenMP. Distributed-memory processing: Architectural issues (networks and interconnects), Programming paradigms, MPI (+MPI2).	**14**
IV	**Grids**: Computational grids, Data grids, Architecture of Grid systems, Grid security infrastructure, Examples of Grids: Globus. The productivity crisis & future directions: Development overheads, Petaflops programming, New parallel languages: UPC, Titanium, Co-Array FORTRAN.	**14**

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Programme: **Master of Technology Specialization: Computer Science and Engineering Semester –II**

V	**Performance Issues and Techniques**: Cost and Frequency Models for I/O, paging, and caching. Notion of Caching; temporal and spatial locality models for instruction and data accesses; Intra-process parallelism and pipelining. Typical Compiler Optimizations of Programs; Improving Performance: Identifying program bottlenecks - profiling, tracing; simple high-level-language optimizations - locality enhancement, memory disambiguation, moving loop-invariants.	**14**

Text Book/References Books/ Websites

1. Jochen Sciiiller, ;Mobile Communications; Pearson Education Publications
2. William C.Y Lee; Mobile Cellular Telecommunications; McGraw Hill International Editions
3. William Stallings; Wireless Communications and Networks ;PHI/Pearson Education,
4. Kaveh Pahlavan, Prasanth Krishnamoorthy ;Principles of Wireless Networks ;PHI/Pearson Education.

Suggested List of Laboratory Experiments :- (Expandable):Nil

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Programme: **Master of Technology Specialization: Computer Science and Engineering Semester –II**

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P			Total (100)			Total
MTCS1202	Artificial Intelligence and Soft Computing	3	1	-	External (70)	Internal (30)	Min: 40 (D Grade)	External (Nil)	Internal (Nil)	Nil

Duration of Theory (Externals): 3 Hours

Theory Internal- Max Marks: 30	Best of Two Mid Semester Test – Max Marks: 15	Assignment/Quiz/Attendance Max. Marks: 15
Practical Internal Max Marks: Nil	Lab work & Sessional – Max Marks: Nil	Assignment Quiz/ Attendance Max. Marks: Nil

Pre-Requisite	Student should have basic knowledge of Basic math, Science and Computer programming
Course Outcome	1. Able to understand the various searching techniques, constraint satisfaction problem and example problems- game playing techniques
	2. Able to Apply these techniques in applications which involve perception, reasoning and learning.
	3 .Able to explain the role of agents and how it is related to environment and the way of evaluating it and how agents can act by establishing goals.
	4.Able to acquire the knowledge of real world Knowledge representation..

Unit	Contents (Theory)	Marks Weightage
I	**Artificial Intelligence**: Introduction, Various types of production systems, characteristics of production systems, breadth first search, depth first search techniques, other Search Techniques like hill Climbing, Best first Search, A* algorithm, AO* Algorithms and various types of control strategies. Knowledge representation issues, Prepositional and predicate logic, monotonic and non monotonic reasoning, forward Reasoning, backward reasoning, Weak & Strong Slot & filler structures, NLP.	**14**
II	**Neural Network:** Introduction to Soft Computing, Soft Computing Vs Hard Computing, Basic concept of neural networks, Mathematical model, Properties of neural network, Typical architectures: single layer, multilayer, competitive layer; Different learning methods: Supervised, Unsupervised & reinforced; Common activation functions; Feed forward, Feedback & recurrent N.N, Application of Neural Network	**14**
III	**Neural Network Architecture**: Models Of Neural Network Architecture, Algorithm & Application of - McCulloh-Pitts, Hebb Net, Perceptron (with limitations & Perceptron learning rule Convergence theorem), Back propagation NN, ADALINE, MADALINE, Discrete Hopfield net, BAM, Maxnet , Kohonen Self Organizing Maps, ART1,ART2	**14**

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Programme: **Master of Technology Specialization: Computer Science and Engineering Semester –II**

IV	**Fuzzy Logic:** Fuzzy Sets, Fuzzy versus Crisp; Fuzzy sets—membership function, linguistic variable, basic operators, properties; Fuzzy relations—Cartesian product, Operations on relations; Crisp logic—Laws of propositional logic, Inference; Predicate logic—Interpretations, Inference; Fuzzy logic—Quantifiers, Inference; Fuzzy Rule based system; Defuzzification methods	**14**
V	**Genetic Algorithm**: Genetic Algorithm Basic concept; role of GA in optimization, Fitness function, Selection of initial population, Cross over(different types), Mutation, Inversion, Deletion, Constraints Handling; Evolutionary Computation; Genetic Programming; Schema theorem; Multi objective & Multimodal optimization in GA; Application— Traveling Salesman Problem, Graph Coloring problem, Hybrid systems, GA based BPNN (Weight determination, Application); Neuro Fuzzy Systems—Fuzzy BPNN--fuzzy Neuron, architecture, learning, application; Fuzzy Logic controlled G.A	**14**

Text Book/References Books/ Websites

1. S. Rajasekaran & G.A. Vijaylakshmi Pai;Neural Networks, Fuzzy Logic & Genetic Algorithms Synthesis & applications;T PHI Publication
2. Elaine Rich & Kevin Knight; Artificial Intelligence; McGraw Hill Publishing.
3. Timothy J.Ross ;Fuzzy Logic with Engineering Applications ; McGraw-Hill
4. Davis E.Goldberg ;Genetic Algorithms: Search, Optimization and Machine Learning; Addison Wesley.

Suggested List of Laboratory Experiments :- (Expandable): Nil

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Programme: **Master of Technology Specialization: Computer Science and Engineering Semester –II**

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P			Total (100)			Total
MTCS1203	Network security and Wireless Sensor Network	3	1	-	External (70)	Internal (30)	Min: 40 (D Grade)	External (Nil)	Internal (Nil)	Nil

Duration of Theory (Externals): 3 Hours

Theory Internal- Max Marks: 30	Best of Two Mid Semester Test Max Marks: 15	Assignment/Quiz/Attendance Max. Marks: 15
Practical Internal Max Marks: Nil	Lab work & Sessional – Max Marks: Nil	Assignment/Quiz/ Attendance Max. Marks: Nil

Pre-Requisite	Should have basic knowledge about Computer Network.
Course Outcome	1.Student will State and understand memory hierarchy design, memory access time formula, performance improvement techniques, and trade-offs.
	2. Student will State and compare properties of shared memory and distributed multiprocessor systems and cache coherency protocols..
	3. Student will learn from additional topics in computer architecture, such as VLIW, thread-level parallelism.

Unit	Contents (Theory)	Marks Weightage
I	**Introduction to Classical and Modem techniques** - Attacks, services and mechanisms, classical encryption techniques, DES, Block cipher design principles and modes of operation, - Triple DES, RC5, key management, Public key. Cryptography RSA Algorithm, Digital signatures and authentication protocols. Encryption Algorithms and Hash Functions.	**14**
II	**System Security and Network Security** - Backups, integrity management, protecting against programmed threats, viruses and worms, physical security, personnel security Protection against eavesdropping, security for modems, IP security, web security, electronic mail security, authentication applications	**14**
III	**Security tools** - Firewalls, wrappers, proxies, discovering a break-in, denial of service attacks and solutions, Cryptographic security tools: KERBEROS, PGP, SSH, SRP, OPIE.	**14**
IV	**Fundamentals of wireless communication technology and adhoc/sensor networks:-**Characteristics of wireless channels, modulation techniques, multiple access techniques, wireless LANs, PANs, WANs, and MANs, Wireless Internet. Key definitions of adhoc/ sensor networks, unique constraints and challenges, advantages of ad-hoc/sensor network, driving applications, issues in adhoc wirelesss networks, issues in design of sensor network, sensor network architecture, data dissemination and gathering .	**14**
V	**MAC Protocols and Routing Protocols** : Issues in designing MAC protocols for adhoc wireless networks, design goals, classification of MAC protocols, MAC protocols for sensor network, location discovery, quality, other issues, S-MAC, IEEE 802.15.4. Issues in designing a routing protocol, classification of routing protocols, table-driven, on-demand, hybrid, flooding, hierarchical, and power	**14**

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	aware routing protocols.	

Text Book/References Books/ Websites

1. William Stallings Cryptography and Network Security Principles and Practice; Pearson Education Asia Publishers
2. Steve Burnett and Stephene Paine; RSA Press, RSA Security 's official guide to cryptography; Tata McGraw Hill Edition
3. Wade Trappe, Lawrence; Introduction to Cryptography with coding theory; Pearson Education
4. William Stallings; Cryptography and Network security Principles and Practices; Pearson/PHI.
5. C. Siva Ram Murthy, and B. S. Manoj; AdHoc Wireless Networks; Pearson Education
6. Feng Zhao and Leonides Guibas ;Wireless sensor networks; Elsevier publication

Suggested List of Laboratory Experiments :- (Expandable): Nil

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Programme: **Master of Technology Specialization: Computer Science and Engineering Semester –II**

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P			Total (100)			Total
MTCS1204	Parallel Computer Architecture	3	1	-	External (70)	Internal (30)	Min: 40 (D Grade)	External (Nil)	Internal (Nil)	Nil

Duration of Theory (Externals): 3 Hours

Theory Internal- Max Marks: 30	Best of Two Mid Semester Test Max Marks: 15	Assignment/Quiz/Attendance Max. Marks: 15
Practical Internal Max Marks: Nil	Lab work & Sessional – Max Marks: Nil	Assignment/Quiz/ Attendance Max. Marks: Nil

Pre-Requisite	Should have basic knowledge about Computer Architecture.
Course Outcome	1.Student will State and understand memory hierarchy design, memory access time formula, performance improvement techniques, and trade-offs.
	2. Student will State and compare properties of shared memory and distributed multiprocessor systems and cache coherency protocols..
	3. Student will learn from additional topics in computer architecture, such as VLIW, thread-level parallelism.

Unit	Contents (Theory)	Marks Weightage
I	**Task of a Computer Designer** - Measuring and Reporting Performance Quantitative Principles of Computer Design.	**14**
II	**Shared-memory and distributed memory architectures** - Taxonomy of MIMD computers Parallel processing applications - Performance metrics - Speedup performance laws.Instruction set architecture - Design considerations - CISC & RISC processors –Virtual Memory - Cache memory organization.	**14**
III	**Review of the ABCs of Cache Performance issues** - Main Memory and Organization for Improving Performance - Memory Technology.	**14**
IV	**Instruction Level Parallelism** - Concepts and Challenges - Dynamic Scheduling: Examples and Algorithm - Dynamic Hardware Prediction - Multiple Issue - Harware Based Speculation.	**14**
V	**Basic Complier Techniques for Exposing ILP**-Static Branch Prediction - the VLIW Approach - Advanced Compiler Support of Exposing ILP Hardware Support for Exposing More Parallelism at Compile Time Hardware Vs Software Speculation.	**14**

Text Book/References Books/ Websites

1. D.A. Patterson, JL.Hennessy, Computer Architecture: A Quantitative approach; Elsevier Publication
2. K.Hwang; Advanced Computer Architecture, Parallelism, Scalability, Programmability; McGraw Hill,
3. Flynn M.J; Computer architecture and parallel processor Design ; Naros Publication

Suggested List of Laboratory Experiments :- (Expandable): Nil

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Programme: **Master of Technology Specialization: Computer Science and Engineering Semester –II**

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P			Total (100)			Total
MTCS1205	Advance Computer Graphics and Multimedia	3	1	-	External (70)	Internal (30)	Min: 40 (D Grade)	External (Nil)	Internal (Nil)	Nil

Duration of Theory (Externals): 3 Hours

Theory Internal- Max Marks: 30	Best of Two Mid Semester Test – Max Marks: 15	Assignment/Quiz/Attendance Max. Marks: 15
Practical Internal Max Marks: Nil	Lab work & Sessional – Max Marks: Nil	Assignment/Quiz/ Attendance Max. Marks: Nil

Pre-Requisite	Should have basic knowledge about basics of maths and Computer.
Course Outcome	1.To provide comprehensive introduction about computer graphics system, design algorithms and two dimensional transformations.
	2. To make the students familiar with techniques of clipping, three dimensional graphics and three dimensional transformations
	3. Prepares students for activities involving in design, development and testing of modeling, rendering, shading and animation.

Unit	Contents (Theory)	Marks Weightage
I	**Introduction to raster & random graphics fundamentals**, Display devices & comparison Point plotting, line drawing & circle drawing & their algorithm like DDA & Bresenham's, Video Basics, Adapter Cards (MCA, CGA, EGA, VGA, etc.)	**14**
II	**2-D Transformation and clipping**: Translation, Rotation, Scaling, Shearing reflection, Inverse transformation, Homogeneous co-ordinate system, Matrices transformation, Composite transformation, Windowing and clipping, World co-ordinate system, Screen co-ordinate system, Viewing transformation, Line clipping, Cohen Sudherland, Midpoint line clipping algorithms, Polygon clipping: Sudherland- Hodgeman, Weliler-Atherton algorithms.	**14**
III	**3-D Transformation**: Translation, Rotation, Scaling, Parallel and perspective projection, Types of parallel and perspective projection, Hidden surface elimination: Depth comparison, Back face detection algorithm, Painters algorithm, Z-buffer algorithm, Curve generation, Bezier and B-spline methods	**14**
IV	**Basic Illumination Model**: Diffuse reflection, Specular reflection, Phong Shading, Gourand shading, ray tracing, color models like RGB, YIQ, CMY, HSV	**14**

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V	**An Introduction to Multimedia**:Multimedia hardware, Multimedia System Architecture. Data & File Format standards. i.e RTF, TIFF, MIDI, JPEG, DIB, MPEG, Audio: digital audio, MIDI, processing sound, sampling, compression. Video: Avi, 3GP,MOV,MPEG , compression standards, compression through spatial and temporal redundancy. Multimedia Authoring tools	**14**

Text Book/References Books/ Websites

1. Donald Hearn and M.P. Becker;Computer Graphics; Pearson Pub.
2. William M. Newman ;Principles of Interactive Computer Graphics;McGraw Hill
3. Rogers;Procedural Elements of Computer Graphics; Tata McGraw Hill

Suggested List of Laboratory Experiments :- (Expandable): Nil

PEOPLE'S UNIVERSITY, BHOPAL

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Programme: **Master of Technology Specialization: Computer Science and Engineering Semester –II**

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P			Total			Total (100)
MTCS1206	Artificial Intelligence and Network Security Lab	-	-	2	External Nil	Internal Nil	Nil	External (70)	Internal (30)	Min: 40 (D Grade)

Duration of Theory (Externals): Nil

Theory Internal- Max Marks: Nil	Best of Two Mid Semester Test – Max Marks: Nil	Assignment/Quiz/Attendance Max. Marks: Nil
Practical Internal Max Marks: 30	Lab work & Sessional – Max Marks: 15	Assignment / Quiz/ Attendance Max. Marks: 15

Pre-Requisite	Should have basic knowledge of artificial intelligence and network security.
Course Outcome	1.Able to implement concepts of Artificial Intelligence
	2.Student will be able to implement concepts of Network Security.

Unit	*Contents (Theory)*	Marks Weightage
I	Breadth first search, Depth first search techniques, other Search Techniques like hill Climbing, Best first Search, A* algorithm, AO* Algorithm Classical Encryption Techniques, DES, Block cipher design principles and modes of operation. Backups, integrity management, protecting against programmed threats, viruses, Firewalls.	**100**

Text Book/References Books/ Websites: Nil

Suggested List of Laboratory Experiments :- (Expandable):

1. Simulate A*, AO*.
2. Simulate 8-Puzzle Problem.
3. To Implement And Function Using Adaline With Bipolar Inputs And Outputs.
4. To Implement And Function Using Madaline With Bipolar Inputs And Outputs.
5. To Implement Discrete Hopfield Network And Test For Input Pattern.
6. To Implement Back Propagation Network For A Given Input Pattern.
7. To Implement Data Encryption Standard Algorithm.
8. To Implement RSA algorithm.
9. To Implement RC5 algorithm.
10. To Implement MD5 algorithm.

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Programme: **Master of Technology Specialization: Computer Science and Engineering Semester –II**

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P			Total			Total (100)
MTCS1207	Computer Architecture and Multimedia Lab	-	-	2	External (Nil)	Internal (Nil)	Nil	External (70)	Internal (30)	Min: 40 (D Grade)

Duration of Theory (Externals): Nil

Theory Internal- Max Marks: Nil	Best of Two Mid Semester Test – Max Marks: Nil	Assignment/Quiz/Attendance Max. Marks: Nil
Practical Internal Max Marks: 30	Lab work & Sessional – Max Marks: 15	Assignment/ Quiz/Attendance Max. Marks: 15

Pre-Requisite	Prior knowledge of networking and basic concepts of programming.
Course Outcome	Students will be able to do networking and will be able to do programming based on scheduling ,memory management and other programming concepts.

Unit	Contents (Theory)	Marks Weightage
I	Shared-memory and distributed memory architectures - Taxonomy of MIMD computers Parallel processing applications - Performance metrics - Speedup performance laws. Instruction set architecture - Design considerations - CISC & RISC processors -Virtual Memory - Cache memory organization. 2D and 3 D Transformation- Translation, Rotation, Scaling, Parallel and perspective projection, Types of parallel and perspective projection	**100**

Text Book/References Books/ Websites: Nil

Suggested List of Laboratory Experiments :- (Expandable):

1. Write a program to add two 8 bit number (A+B=RESULT with a carry and without a carry).
2. Write a program to subtract one 8 bit number from another (A-B=RESULT with a borrow and without a borrow).
3. Write a program to find out AND, OR, NOT, XOR, NAND, NOR, XNOR of two 8 bit number.
4. Write a program to find out addition of two 16 bit numbers. 2. Write a program to find out subtraction of two 16 bit numbers Write a program to implement Round Robin Algorithm.
5. Program to Implement Line Using Bresenham's Algorithm
6. A Program to Implement Circle Using Midpoint Algorithm
7. Program to Implement Translation of a line and Triangle
8. Program to Implement Rotation of Line and Triangle
9. Program to Implement Cohen Sutherland Line Clipping algorithm.
10. Program to draw Bezier Curve.

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Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P			Total (50)			Total
MT1208	Audit Course - II (English For Research Paper Writing)	-	-	-	External (35)	Internal (15)	Min: 20 (D Grade)	External (Nil)	Internal (Nil)	Nil

Duration of Theory (Externals): 2 Hours

Theory Internal- Max Marks: 15	Best of Two Mid Semester Test – Max Marks: Nil	Assignment/Quiz/Attendance Max. Marks: 15
Practical Internal Max Marks: Nil	Lab work & Sessional – Max Marks: Nil	Assignment/ Quiz/Attendance Max. Marks: Nil

Pre-Requisite	**Nil**
Course Outcome	1. Student will understand that how to improve your writing skills and level of readability.
	2. Learn about what to write in each section of research article.
	3. Understand the skills needed when writing a Title.

Unit	Contents (Theory)	Marks Weightage
I	Planning and Preparation; Word Order; Breaking up long sentences; Structuring Paragraphs and Sentences; Being Concise and Removing; Redundancy; Avoiding Ambiguity and Vagueness.	**07**
II	Clarifying Who Did What; Highlighting Your Findings; Hedging and Criticizing; Paraphrasing and Plagiarism; Sections of a Paper; Abstracts; Introduction.	**07**
III	Review of the Literature; Methods; Results; Discussion; Conclusions; The Final Check.	**07**
IV	Key skills are needed when writing a Title; key skills are needed when writing an Abstract; key skills are needed when writing an Introduction; skills needed when writing a Review of the Literature.	**07**
V	Skills are needed when writing the Methods; skills needed when writing the Results; skills are needed when writing the Discussion; skills are needed when writing the Conclusions; useful phrases; how to ensure paper is as good as it could possibly be the first- time submission	**07**

Text Book/References Books/ Websites

1. R. Goldbort (2006) Writing for Science; Yale University Press (available on Google Books).
2. R. Day (2006) How to Write and Publish a Scientific Paper; Cambridge University Press
3. N Highman (1998); Handbook of Writing for the Mathematical Sciences; SIAM. Highman's book
4. Adrian Wallwork ; English for Writing Research Papers; Springer New York Dordrecht Heidelberg London; 2011

Suggested List of Laboratory Experiments :- (Expandable): Nil