

PEOPLE'S UNIVERSITY, BHOPAL

 Programme: **B. Tech. (Information Technology)**

Semester -VII

Subject Title	Subject Code	Credits			Theory		
Wireless and ATM Networks	ITT-701	L	T	P	External (70)	Internal (30)	Total (100)
		3	1	-			Min: 40 (D Grade)

Duration of Theory (Externals): 3 Hours
Theory Internal - Max Marks: 30

Best of Two Mid Semester Test

Assignment / Quiz

–Max Marks: 20

– Max. Marks: 10

Unit	Contents (Theory)
I	Introduction of Wireless Networks, Different Generations of Wireless Networks. Characteristics of the Wireless Medium: Radio Propagation Mechanisms, Path Loss Modeling and Signal Coverage, Effect of Multipath and Doppler, Channel Measurement and Modeling Techniques.
II	Network Planning: Introduction, Wireless Network Topologies, Cellular Topology, Cell Fundamentals, Signal to Interferences Radio Calculations, Network Planning for CDMA Systems. Wireless Network Operations: Mobility Management, Radio Resources and Power Management.
III	Multiple Division Techniques: FDMA, TDMA, CDMA, OFDM, SDMA. Comparison of Multiple Division Techniques, Modulation Techniques – AM, FM, FSK, PSK, QPSK, QAM, 16QAM Mobile Data Networks: Introduction, Data Oriented CDPD Network, GPRS, EDGE and High Data Rates, SMS in GSM, Mobile Application Protocols.
IV	Introduction to Wireless LAN, Evolution of WLAN, Wireless Home Networking, Technologies for Home Area Network (HAN), Overview of IEEE 802.11, Reference Architecture, PHY and MAC Layer, Wireless ATM, HIPERLAN.
V	Asynchronous transfer mode, ATM protocol architecture, ATM Logical Connection, ATM Cells, AAL, High Speed LANS, FAST Ethernet,. High Speed Networks Frame relays, Networks, Packet Switching Vs frame relay network, fiber channel wireless LANS. IEEE 802.15 WPAN, Bluetooth, Interference between Bluetooth and 802.11.

References:

- 1 Jochen Schiller “ Mobile Communications”, PEARSON
- 2 Kaveh Pahlavan, Prashant Krishnamurthy “principles of Wireless Networks”, PHI.
- 3 Dr. KAMILO FEHER “Wireless Digital Communications” , PHI
- 4 Qing- An Zeng, Dharma Prakash Agrawal “Introduction to Wireless and Mobile Systems” CENGAGE Learning.
- 5 Sumit Kasera, Nishit Narang, A P Priyanka “2.5 G Mobile Networks: GPRS and EDGE”, TMH

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Semester -VII

Subject Title	Subject Code	Credit			Theory			Practical		
Object Oriented Analysis and Design	ITT- 703	L	T	P	External (70)	Internal (30)	Total (100)	External (35)	Internal (15)	Total (50)
		3	1	2			Min: 40 (D Grade)			Min:20 (D Grade)

Duration of Theory (Externals): 3 Hours
Theory Internal - Max Marks: 30

Best of Two Mid Semester Test

Assignment / Quiz

–Max Marks: 20

– Max. Marks: 10

Practical internal - max marks: 15

Lab performance/Lab Record/Viva

Assignment / Quiz/ Attendance

–Max. Marks: 10

– Max. Marks: 05

Unit	Contents (Theory)
I	Introduction of Object Oriented approach: Objects and classes, abstraction, generalization, inheritance, encapsulation and polymorphism, multiple inheritance, member access specifier, aggregation abstraction classes, link and association, Need for object oriented approach.
II	Object Oriented Modelling and Analysis: Object Oriented Modeling, an Object Model, Characteristics Object Oriented Modeling, Benefits of OO Modeling, Object Oriented Analysis, Differences between Structured Analysis and Object Oriented Analysis, Analysis Techniques: Object Modeling, Dynamic Modeling and Functional Modeling, Relationship among models.
III	Object Oriented Design: System Design: An Object Oriented Approach, Object Design, Object Design for Processing Object Design Steps, Designing a Solution, Object Representation, Inheritance Adjustment, Design Optimization, Design Documentation, Implementation of control, Design of association.
IV	Object Oriented Implementation, Modeling Implementation: Using Programming Languages, Using Database System, Programming style, Documentation, Dynamic Modeling, Events, State and State Diagram, Elements of State Diagrams, Examples of State Diagrams, Functional Models, Data Flow Diagrams, Design flaws in DFD, A Functional model, Features of a DFD.
V	Unified Modeling Language UML: Introduction, Notations, Basic Concepts, Structural Diagrams: Class, Object, Composite, Component, Deployment, Behavioral Diagrams: Use Case, State, Activity, Sequence.OMG, CORBA, Architecture of CORBA, DCOM, EJB.

References

- 1 Satzinger, Jackson and Burd, "Object oriented Analysis and design with the Unified Process", CENGAGE Learning.
- 2 Michael Blaha and J. Rumbaugh, "Object oriented Modeling and design with UML", Pearson Education
- 3 O'Docherty, "Object Oriented Analysis and Design Understanding, System Development with UML2.0", Wiley India

List of Experiments

- 1 Draw Object, state, Data flow Diagram of ATM.
- 2 Draw Object, state, Data flow Diagram of Telephone Call.
- 3 Draw Object, state, Data flow Diagram of Library Information System.
- 4 Draw Object, state, Data flow Diagram of Airline reservation System.
- 5 Draw Object, state, Data flow Diagram of Calculator.

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Subject Title	Subject Code	Credit			Theory			Practical		
Artificial Intelligence and Neural Network	BT-714	L	T	P	External (70)	Internal (30)	Total (100)	External (35)	Internal (15)	Total (50)
		3	1	2			Min: 40 (D Grade)			Min:20 (D Grade)

Duration of Theory (Externals): 3 Hours
Theory Internal - Max Marks: 30

Best of Two Mid Semester Test

–Max Marks: 20

Assignment / Quiz

– Max. Marks: 10

Practical internal - max marks: 15

Lab performance/Lab Record/Viva

–Max. Marks: 10

Assignment / Quiz/ Attendance

– Max. Marks: 05

Unit	Contents (Theory)
I	Introduction to Artificial Intelligence Knowledge Representation using Predicate Logic: Meaning and definition of artificial intelligence, Various types of production systems, Characteristics of production systems. Knowledge Representation, Problems in representing knowledge, knowledge representation using propositional and predicate logic, comparison of propositional and predicate logic.
II	Knowledge Representation using Predicate Logic: Resolution, refutation, deduction, theorem proving, inferencing, monotonic and non-monotonic reasoning. Study and comparison of breadth first search and depth first search. Techniques, other Search Techniques like hill Climbing, Best first Search. A* algorithm, AO* algorithms etc, and various types of control strategies.
III	Introduction to Neural Network: Concept, biological neural network, evolution of artificial neural network, McCulloch-Pitts neuron models, Learning (Supervised & Unsupervised) and activation function, Models of ANN-Feed forward network and feedback network, Learning Rules- Hebbian, Delta, Perceptron Learning and Windrow-Hoff, winner take all. Perceptron learning,- Single layer/multilayer, linear Separability, Adaline, Madaline, Back propagation network, RBFN. Application of Neural network in forecasting, data compression and image compression.
IV	Genetic Algorithm: Introduction to GA, Simple Genetic Algorithm, terminology and operators of GA (individual, gene, fitness, population, data structure, encoding, selection, crossover, mutation, convergence criteria). Reasons for working of GA and Schema theorem, GA optimization problems including JSPP (Job shop scheduling problem), TSP (Travelling salesman problem), Network design routing, timetabling problem.
V	Reasoning and game playing techniques: Probabilistic reasoning, Baye's theorem, semantic networks, scripts, schemas, frames, conceptual dependency, fuzzy logic, forward and backward reasoning. Game playing techniques like minimax procedure, alpha-beta cut-offs etc, planning, Study of the block world problem in robotics, Introduction to understanding and natural languages processing.

References

- 1 S.N. Shivnandam, "Principle of soft computing", Wiley.
- 2 Rajshekaran and G.A.V. Pai, "Neural Network , Fuzzy logic And Genetic Algorithm",
- 3 Jack M. Zurada, "Introduction to Artificial Neural Network System" JAico Publication.
- 4 Simon Haykins, "Neural Network- A Comprehensive Foudation"

List of Experiments

- 1 Implement OR, AND Using Perceptron in C
- 2 Implement OR, AND Using Perceptron in MATLAB Command-line Argument
- 3 Implement OR, AND Using Perceptron in MATLAB GUI
- 4 Implement OR, AND, X-OR gate, Using back propagation algorithm in MATLAB using Command-line Argument as well as GUI
- 5 Solve a given problem-1 (Operatons) using Fuzzy Logic in MATLAB.
- 6 Solve a given problem-1 (Max-Min Composition) using Fuzzy Logic in MATLAB.
- 7 To find the solution of the function Maximize, given the constraints using GA approach in C.

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Subject Title	Subject Code	Credit			Practical		
Programming Lab -III	BT-715	L	T	P	External (Nil)	Internal (50)	Total (50)
		-	-	2			Min: 20 (D Grade)

Practical internal - max marks: 50

Lab work & Sessional

– Max Marks: 45

Assignment / Quiz/ Regularity

– Max. Marks: 05

Unit	Contents (<i>Practical</i>)
I	Introduction to PHP programming Introduction to PHP, installation and configuration, Variables, String functions, Numeric functions.
II	Operator, Loops and Array Operators, Conditions, Loops, Array, Multidimensional Array, Associative array.
III	Classes and Functions Classes, Regular Expression, Working with Date time, code re-use, require(), include(), and include path; file system functions, and file input and output; file uploads; error handling and logging; sending mail.
IV	Working with database MYSQL, Introducing MYSQL, database design concepts, the Structured Query, Language (SQL), communicating with a MYSQL backend via the PHP, MYSQL API Building Database Applications.
V	Working with Frameworks Working with Wordpress, Mambo, Joomla, OS Commerce, Zend Framework, Drupal.

References

- 1 Beginning PHP, Apache, MySQL Web Development
- 2 Michael K. Glass, Yann Le Scouarnec, Elizabeth Naramore, Gary Mailer, Jeremy Stolz, Jason Gerner References:
- 3 PHP Manua

List of Experiments

- 1 Write the process of installation of web server.
- 2 Write programs to print all details of your php sever. Use phpinfo().
- 3 Write a program to give demo of ECHO and PRINT command
- 4 Write a program sort ten number by using array.
- 5 Create a database in MySql and connect that database from PHP
- 6 Write a program to Update, insert and delete the values of table in MySQL.

PEOPLE'S UNIVERSITY, BHOPALProgramme: **B. Tech. (Information Technology)****Semester -VII**

Subject Title	Subject Code	Credits			Practical		
Major Project-I	ITT-706	L	T	P	External (105)	Internal (45)	Total (150)
		-	-	6			Min: 60 (D Grade)

Practical Internal - Max Marks: 45

Lab work & Sessional
Assignment / Quiz

–Max Marks: 40
– Max. Marks: 05

Contents (Practical)
<p>The Major Project Work provides students an opportunity to do something on their own and under the supervision of a guide. Each student shall work on an approved project, which should be selected from some real life problem as far as possible, which may involve fabrication, design or investigation of a technical problem. The project work involves sufficient work so that students get acquainted with different aspects of manufacturing, design or analysis. The student also have to keep in mind that in final semester they would be required to implement whatever has been planned in the major project in this semester. It is possible that a work, which involves greater efforts and time, may be taken up at this stage and finally completed in final semester, but partial completion report should be submitted in this semester and also evaluated internally. At the end of semester, all students are required to submit a synopsis.</p>

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Subject Title	Subject Code	Credits			Practical		
Industrial Training-II	ITT- 707	L	T	P	External (70)	Internal (30)	Total (100)
		-	-	4			Min: 40 (D Grade)

Practical Internal - Max Marks: 30

Lab work & Sessional

– Max Marks: 25

Assignment / Quiz

– Max. Marks: 05

Contents (Practical)
<p style="text-align: center;">OBJECTIVE OF INDUSTRIAL TRAINING</p> <p>The objective of undertaking industrial training is to provide work experience so that student's engineering knowledge is enhanced and employment prospects are improved. The student should take this course as a window to the real World of Work and should try to learn as much as possible from real life experiences by involving and interacting with industry staff. Industrial training also provides an opportunity to students to select an engineering problem and possibly an industry guide for their Major Project in final Year.</p> <p>Industrial training of the students is essential to bridge the wide gap between the classroom and industrial environment. This will enrich their practical learning and they will be better equipped to integrate the practical experiences with the classroom learning process.</p>

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Semester -VII

Subject Title	Subject Code	Credits			Theory		
Cloud computing	ITT-7101	L	T	P	External (70)	Internal (30)	Total (100)
		3	1	-			Min: 40 (D Grade)

Duration of Theory (Externals): 3 Hours
Theory Internal - Max Marks: 30

Best of Two Mid Semester Test

Assignment / Quiz

–Max Marks: 20

– Max. Marks: 10

Unit	Contents (Theory)
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.
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.
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.
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.
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.

References

- 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, Emereo Pty Limited, July 2008.
- 2 Gautam Shroff, Enterprise Cloud Computing: Technology, Architecture, Application, Cambridge University Press, New Delhi.
- 3 Michael Miller, Cloud Computing: Web-Based Applications That Change the Way You Work and collaborate Online, Que Publishing, August 2008.
- 4 Padam Gulwani and Anshuman Sharma "Information Storage and Management", SCITECH Publications.

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Semester -VII

Subject Title	Subject Code	Credits			Theory		
Distributed Operating System	ITT- 7102	L	T	P	External (70)	Internal (30)	Total (100)
		3	1	-			Min: 40 (D Grade)

Duration of Theory (Externals): 3 Hours
Theory Internal - Max Marks: 30

Best of Two Mid Semester Test

Assignment / Quiz

–Max Marks: 20

– Max. Marks: 10

Unit	Contents (Theory)
I	Distributed Systems: Distributed system, Architecture, Goals, and Advantages & Disadvantage, designing Issues, examples of Distributed system, Hardware and Software concepts, Distributed Computing Model.
II	Synchronization in Distributed Systems: Clock Synchronization, Mutual exclusion, Election algorithm, The Bully algorithm, a ring algorithm, Atomic Transaction, Deadlock overview & prevention technique in Distributed systems, Processes & Processors in Distributed Systems, Threads, system models, Processor allocation, Scheduling in distributed systems, fault tolerance & real time distributed systems.
III	File System of Distributed Systems: Distributed Share Memory: Architecture & its Types, Implementations & Designing issues, Structure of Share Memory Space, Consistency Model, and Thrashing, Distributed File System, File Service Architecture & features, File Accessing Model, File Sharing Semantics, File Caching Scheme, File Application & Fault tolerance.
IV	Distributed databases & Scheduling: Distributed databases, Features & its types, levels of distribution transparency, data fragmentation & integrity constraints, various types of Transaction management, concurrency control, reliability, distributed database administration, locks, time stamping, Distributed Scheduling, Issues in Load Distributing, Components for Load Distributing Algorithms.
V	Distributed Multimedia & security techniques: Distributed Multimedia, Characteristics of multimedia Data, Quality of Service Managements, Security techniques, cryptographic Algorithms, use of digital signature methods for security enhancement, Case Study of Distributed System, Amoeba, Mach, Chorus.

References

- 1 Singhal & Shivratri, Advance Concept in Operating System, McGraw Hill
- 2 Attiya & Welch, Distributed Computing, Wiley Pub.
- 3 Tanenbaum, Andrew.S. , Distributed Operation System, PHI
- 4 Distributed systems and networks by Buchanan.
- 5 Distributed Systems Concepts and Design by George Coulouris, Jean Dollimore and Tim KindBERg, Pearson Education.
- 6 Sinha, Distributed Operating System Concept & Design, PHI
- 7 Singhal & Shivratri, Advance Concept in Operating System, McGraw Hill

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Semester -VII

Subject Title	Subject Code	Credits			Theory		
Mobile Ad-hoc Network	ITT-7103	L	T	P	External (70)	Internal (30)	Total (100)
		3	1	-			Min: 40 (D Grade)

Duration of Theory (Externals): 3 Hours
Theory Internal - Max Marks: 30

Best of Two Mid Semester Test

Assignment / Quiz

–Max Marks: 20

– Max. Marks: 10

Unit	Contents (Theory)
I	Ad-hoc Wireless N/WS: Introduction, Cellular Vs Ad-hoc wireless Networks, Applications of Ad-hoc wireless Networks, Issues in Ad-hoc wireless N/WS. Heterogeneity in Mobile devices, Wireless Sensor N/WS, traffic Profiles, Types of Ad-hoc Mobile Communications, Types of Mobile Host movements, Challenges facing Ad hoc mobile networks.
II	Ad-hoc Wireless Media Access Protocols: Introduction Synchronous MAC Protocol & Asynchronous MAC protocol, Problems in Ad-hoc channel Access Receiver Initiated MAC protocols, Sender. Initiated MAC Protocol, Existing Ad-hoc MAC Protocol.
III	Multicast routing In Ad Hoc Networks: Introduction, Issues in Designing a Multicast Routing Protocol, Operation of Multicast Routing Protocols, An Architecture Reference Model for Multicast Routing Protocols, Classifications of Multicast Routing Protocols, Tree-Based Multicast Routing Protocols, Mesh-Based Multicast Routing Protocols, Application Dependent Multicast Routing, Comparisons of Multicast Routing Protocols. Overview of Ad-hoc Routing Protocols: - Table Driver Approaches: - DSDV, WRP, CSGR, Source Initiated On demand Approaches: AODV, DSR, RDMAR.
IV	Communication Performance of Ad-hoc Networks: Route discovery time, End to End Delay Performance, Communication throughput performance, Packet loss performance, Route reconfiguration time, Energy Conservation & Power life issues.
V	High Speed Networks: Frame relays, Packet Switching Vs frame relay N/WS. Asynchronous transfer node, ATM protocol architecture, ATM Logical Connection, ATM Cells, AAL, High Speed LANS, FAST Ethernet, fiber channel wireless LANS.

References

- 1 Muthukumaran, Introduction to high Performance Network, TMH
- 2 CK Toh, Adhoc Mobile Wireless Networks Protocols & Systems, Pearson. Pearson Publication
- 3 C-Siva Ram Murthy & B S Majo , Adhoc Wireless Networks, Architectures Protocols, Pearson Publication.
- 4 High speed N/WS & Internals, Performance & QOS William Stalling., IInd Edition. Pearson