

# PEOPLE'S UNIVERSITY, BHOPAL

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

**Semester -VIII**

Subject Title	Subject Code	Credits			Theory		
Information Storage & Management	ITT-801	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	<b>Introduction to Storage Technology:</b> Evolution of Storage Management, Storage technologies at a glance, Storage Devices, File Allocation Methods, Challenges in Data Storage and Management, Data Storage Infrastructure, Information Lifecycle Management, Data categorization
II	<b>Storage Systems:</b> Architecture Components of a Storage System Environment, Disk drive components, Disk Drive Performance, properties, performance, and specifications, Logical Components, Concept of RAID and its Components, Different RAID levels and their suitability for different application environments: RAID 0, RAID 1, RAID 3, RAID 4, RAID 5, RAID 0+1, RAID 1+0, RAID 6, Comparison of Levels, mapping and operation
III	<b>Introduction to Networked Storage:</b> Evolution of networked storage, Architecture, Overview of JBOD, DAS, NAS, SAN, limitations of DAS, NAS, CAS & SAN. Benefits of NAS, Components, Implementations, CAS Architecture, Storage and Retrieval, Security Criticism in Networked Storage Technologies, Risk Mitigation for Networked Storage
IV	<b>Hybrid Storage solutions:</b> Hybrid Storage Appliance, Virtualization, Types of Virtualization, Storage Virtualization, Virtual Appliance, Industry management standards (SNMP, SMI-S, CIM), standard framework applications, Data Center. Requirement for the design of a secure data center, Key Program Management Metrics, Back up and Disaster Recovery, Importance of disaster recovery planning
V	<b>Introduction of Cloud Computing:</b> Introduction, Types of Cloud Computing, Cloud Computing Model Cloud Computing Characteristics, Advantage & Disadvantage of Cloud Computing, Essential Characteristics of Cloud Computing, Evolution of Cloud Technologies, Cloud Application Services, Cloud Computing Model, Storage on Cloud, Cloud Security and integration, Cloud Architecture, Risk of Cloud Computing, The future of Cloud Computing

## References:

1. W. Rittinghouse and James F. Ransome; Cloud Computing : Implementation, Management and Security, CRC Press, Taylor Frances Pub.
2. Nick Antonopoulos, Lee Gillam; Cloud Computing : Principles, System & Application, Springer.
3. Anthony T. Velete, Toby J. Velk, and Robert Eltenpeter, Cloud Computing : A practical Approach, TMH Pub.

# PEOPLE'S UNIVERSITY, BHOPAL

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

**Semester -VIII**

Subject Title	Subject Code	Credit			Theory			Practical		
Data Mining	BT-813	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	<b>Data Warehousing:</b> Need for data warehousing, Basic elements of data warehousing, Data Mart, Data Warehouse Architecture, extract and load Process, Clean and Transform data, Star, Snowflake and Galaxy Schemas for Multidimensional databases, Fact and dimension data.
II	<b>Data Warehouse and OLAP technology:</b> Multidimensional data models and different OLAP Operations, OLAP Server: ROLAP, MOLAP, Data Warehouse implementation, Efficient Computation of Data CuBEs, Processing of OLAP queries, indexing data.
III	<b>Data Mining:</b> Data Mining: Definitions, KDD v/s Data Mining, DBMS v/s Data Mining , DM techniques, Mining problems, Issues and Challenges in DM, DM Application areas, Association Rules & Clustering Techniques: Introduction, Various association algorithms like A Priori, Partition, Pincer search etc., Generalized association rules, Clustering paradigms; Partitioning algorithms like K-Medoid, CLARA, and CLARANS; Hierarchical clustering, DBSCAN, BIRCH, CURE; categorical clustering algorithms, STIRR, ROCK and CACTUS.
IV	<b>Web Mining:</b> Web Mining, Web content mining, Web structure Mining, Web Usage Mining, Application of Neural Network, AI, Fuzzy logic and Genetic algorithm, Decision tree in DM, Temporal and spatial DM: Temporal association rules, Sequence Mining, GSP, SPADE, SPIRIT, and WUM algorithms, Episode Discovery, Event prediction, Time series analysis, Spatial Mining, Spatial Mining tasks, Spatial clustering and Spatial Trends.
V	<b>Data Mining of Image and Video:</b> Image and Video representation techniques, feature extraction, motion analysis, content based image and video retrieval, clustering and association paradigm, knowledge discovery.

## References

1. Data Mining Techniques by Arun K. Pujari, Pearson Publications
2. Data Mining by Han & Kamber, Morgan Kaufman Publications
3. Data Warehousing and Mining by Vishwanathan, Scitech Publication PVT.LTD. Chennai

## List of Experiments

- 1 Implement A-priori Algorithm
- 2 Implement CLARA
- 3 Implement CLARANS
- 4 Implementation DB-SCAN
- 5 Implementation OF GSP
- 6 Implementation CACTUS

# PEOPLE'S UNIVERSITY, BHOPAL

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

**Semester -VIII**

Subject Title	Subject Code	Credit			Theory			Practical		
Web Engineering	BT-814	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	<b>Web Engineering:</b> History of web Development, Evolution and Need, Categories, Web Engineering Models, Web Applications: Characteristics of Web Applications, Software Engineering v/s Web Engineering, World Wide Web, Introduction to TCP/IP and WAP, DNS, Email, Tel Net, HTTP and FTP, Introduction to Browser and search engines, Working of the search engines, Introduction to Web Servers, Features of web servers, IIS, Apache and Configuring web servers.
II	<b>Information Architecture:</b> The role of the Information Architect, Collaboration and Communication, Organizing Information, Organizational Challenges, Organizing Web sites parameters and Creating Cohesive Websites, Website Development, Website Design issues, Conceptual Design, High-Level Design, Navigation Systems, Searching Systems, Good & bad web design, Process of Web Publishing, Phases of Web Site development, enhancing your web-site and submission of website to search engines.
III	<b>Web Security:</b> Encryption schemes, Secure Web document, Digital Signatures and Firewalls, Cyber crime and laws, IT Act, Web effort estimation, Productivity, Measurement, Quality usability and reliability, Requirements Engineering for Web Applications, Introduction, Requirements Engineering Activities and Adapting RE Methods to Web Application.
IV	<b>E Commerce:</b> E- Commerce, E-commerce Business Models, The Internet and World Wide Web, E-commerce Infrastructure, Building an E-commerce Web Site , Electronic Commerce environment and opportunities, Modes of Electronic Commerce, Approaches to safe Electronic Commerce, Electronic Cash and Electronic Payment Schemes , Online Security and Payment Systems, Ecommerce Marketing Concepts, Advertising on the Internet, Ecommerce Marketing Concepts, Electronic Publishing issues, approaches, legalities and technologies ,Privacy and Security.
V	<b>PHP:</b> Introduction to PHP, Syntax, Basic Programming, include(), require(), Introduction to Forms, Developing Static & Dynamic Web Pages, GET Method, POST Method, mail(), Database Connectivity with MySQL, Crating Web Applications in PHP and Introduction to Content Management System.

## References

- 1 Internet & World Wide Web – How to Program by Dietal & Dietal
- 2 Web Technologies by Atul Kahate
- 3 PHP by Complete Reference Steven Holzner

## List of Experiments

- 1 Study of Configuration of Web Servers
- 2 Study of PHP for Deigning and Development of Web Applications
- 3 Implementation of include() and require() in PHP
- 4 Implementation of GET Method and POST Method in PHP
- 5 Study of mail() in PHP
- 6 Implementing a Database Application in PHP
- 7 Study of Content Management System
- 8 Design Web Page using XML

# **PEOPLE'S UNIVERSITY, BHOPAL**

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

**Semester -VIII**

Subject Title	Subject Code	Credits			Practical		
Programming Lab -IV	BT- 815	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>Theory</i> )
I	Introduction to MATLAB Creating Variables Some Useful MATLAB Functions Data Types
II	Script Files Introduction to Arrays Graphing.
III	Input Statements Output Statements Exercises: Input/Output Statements Arrays Some Useful Functions for Arrays.
IV	Conditional Statements: Logical Operators Conditional Statements: if, else, and elseif Conditional Structures: Switch.
V	Repetition Structure: Introduction to Loops Repetition Structure: For Loops Repetition Structure: While Loop.

## References

- 1 MATLAB: A Practical Introduction to Programming and Problem Solving, 3rd edition
- 2 G. H. Golub and C. F. Van Loan, Matrix Computations, 3rd Ed., Johns Hopkins University Press,
- 3 B. N. Datta, Numerical Linear Algebra and Applications, Brooks/Cole, 1994 (out of print) 3. L. Elden,

## List of Experiments

- 1 Introduction to MATLAB
- 2 Implement basic arithmetic operations
- 3 Implement matrix operations
- 4 Implement decimal to binary conversion
- 5 Implement 2D pi chart
- 6 Implement generation of Sine wave

# **PEOPLE'S UNIVERSITY, BHOPAL**

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

**Semester -VIII**

Subject Title	Subject Code	Credits			Practical		
Major Project-II	ITT-806	L	T	P	External (140)	Internal (60)	Total (200)
		-	-	8			Min: 40 (D Grade)

**Practical Internal - Max Marks: 60**

Lab work & Sessional

Assignment / Quiz

–Max Marks: 55

– Max. Marks: 05

## **Contents (Practical)**

The student should prepare a working system or some design or understanding of a complex system that he has selected in the seventh semester using system analysis tools and submit the same in the form of a write-up i.e. detail project report. The student should maintain proper documentation of different stages of project such as need analysis, market analysis, concept evaluation, requirement specification, objectives, work plan, analysis, design, implementation and test plan wherever applicable. Each student is required to prepare a project report based on the above points and present the same at the final examination with a demonstration of the working system.

# **PEOPLE'S UNIVERSITY, BHOPAL**

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

**Semester -VIII**

Subject Title	Subject Code	Credit			Practical		
<b>Professional Ethics and Proficiency</b>	<b>BT- 807</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>External (35)</b>	<b>Internal (15)</b>	<b>Total (50)</b>
		-	-	2			Min: 20 (D Grade)

**Practical Internal - Max Marks: 15**

Lab work & Sessional

–Max Marks: 10

Assignment / Quiz

– Max. Marks: 05

Unit	Contents (Practical)
<b>I</b>	Ethics- Business ethics, Etiquettes in social and office settings, Email etiquettes, Telephone Etiquettes, Engineering ethics, Managing time, Role and responsibility of engineer, Work culture in jobs, Personal memory, Rapid reading, Taking notes, Complex problem solving, Creativity.
<b>II</b>	Communication and personality development covering, Psychological aspects of communication, cognition as a part of communication; Emotional Intelligence; Politeness and Etiquette in communication; Cultural factors that influence communication; Mannerisms to be avoided in communication; Language and persuasion; Language and conflict resolution;
<b>III</b>	Career Oriental Communication covering, Resume and Biodata: Design & style; Applying for a job: Language and format of job application. Job Interviews: purpose and process;
<b>IV</b>	Advanced Techniques in Technical Communication covering, Interview through telephone/video-conferencing;
<b>V</b>	Power-point presentation: structure and format; Using e-mail for business communication; Standard e-mail practices; Language in e-mail; Using internet for collecting information; Referencing while using internet materials for project reports.

# PEOPLE'S UNIVERSITY, BHOPAL

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

**Semester -VIII**

Subject Title	Subject Code	Credits			Theory		
Human Computer Interaction	BT-8111	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	<b>Introduction:</b> Importance of user Interface – definition, importance of good design. Benefits of good design. A brief history of Screen design, The graphical user interface – popularity of graphics, the concept of direct manipulation, graphical system, Characteristics, Web user – Interface popularity, characteristics- Principles of user interface.
II	<b>Design process:</b> Human interaction with computers, importance of human Characteristics human consideration, Human interaction speeds, understanding business Junctions.
III	<b>Screen Designing:</b> Design goals Screen planning and purpose, organizing screen elements, ordering of screen data and content – screen navigation and flow – Visually pleasing composition – amount of information focus and emphasis presentation information simply and meaningfully information retrieval on web –statistical graphics Technological consideration in interface design
IV	<b>Windows:</b> New and Navigation schemes selection of window, selection of devices based and screen based controls.
V	<b>Components:</b> text and messages, Icons and increases – Multimedia, colors, uses Problems, choosing colors. Software tools – Specification methods, interface – Building Tools

## References

1. Human – Computer Interaction. Alan Dix, Janet Fincay, Gre Goryd, Abowd, Russell
2. The essential guide to user interface design, WilBERT O Galitz, Wiley DreamTech..
3. User Interface Design, Soren Lauesen , Pearson Education

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**Semester -VIII**

Subject Title	Subject Code	Credits			Theory		
<b>Digital Image Processing</b>	<b>ITT- 8102</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>External (70)</b>	<b>Internal (30)</b>	<b>Total (100)</b>
		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 ( <i>Theory</i> )
<b>I</b>	<b>Introduction</b> Digital Image Processing, Applications, Image Processing Operations, Parts of Digital Image Processing Systems, Image Sampling and Quantization, Neighbors, Connectivity, Distance Measures Between pixels, Linear and Non Linear Operations
<b>II</b>	<b>Image Transformations</b> Introduction to Gray Level Transformations, Histogram Processing, Enhancement Using Arithmetic and Logic operations, Introduction to Spatial Filters, Types, Techniques, Introduction to Fourier Transform and the frequency Domain, Image Enhancements in Frequency Domain, Frequency Domain Filters, Types, Techniques and Image Restoration
<b>III</b>	<b>Image Degradation &amp; Restoration</b> Introduction to Image Degradation, Image Restoration, Restoration and Degradation Models, Noise Models, Restoration and Degradation by Filtering, Estimation of Degradation Function and various Filtering Techniques and Geometric Transformations
<b>IV</b>	<b>Image Compression and Segmentation</b> Introduction to Image Compression, Codings, Intermixed and Psycho visual Redundancy, Introduction to Image Segmentation, Edge linking and boundary detection, Thresholding and Types of Segmentation
<b>V</b>	<b>Multimedia</b> Introduction to multimedia, system architecture & technologies, Objects for multimedia systems, Multimedia interface standards, data and file format standards, RTF, TIFF, RIFF, MIDI, JPEG, MPEG, Multimedia communication protocols (UDP, RTP, RTCP, XTP, TELNET, IP Multicast etc), Multimedia Applications, VRML (Virtual reality modeling language), Streaming, Hypermedia and its applications

## References

1. “Digital Image Processing” by A.K.Jain
2. Multimedia system Design by Prabhat K Andleigh and Kiran Thakrar (PHI Publications).
3. Multimedia Communications by Fred Halsall (Pearson Publications).

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**Semester -VIII**

Subject Title	Subject Code	Credits			Theory		
Simulation & Modeling	ITT- 8103	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 ( <i>Theory</i> )
I	<b>Introduction to Storage Technology</b> :Evolution of Storage Management, Storage technologies at a glance, Storage Devices, File Allocation Methods, Challenges in Data Storage and Management, Data Storage Infrastructure , Information Lifecycle Management, Data categorization
II	<b>Storage Systems</b> :Architecture Components of a Storage System Environment , Disk drive components, Disk Drive Performance, properties, performance, and specifications ,Logical Components, Concept of RAID and its Components, Different RAID levels and their suitability for different application environments: RAID 0, RAID 1, RAID 3, RAID 4, RAID 5, RAID 0+1, RAID 1+0, RAID 6, Comparison of Levels, mapping and operation
III	<b>Introduction to Networked Storage</b> :Evolution of networked storage, Architecture, Overview of JBOD, DAS, NAS, SAN, limitations of DAS, NAS, CAS & SAN. Benefits of NAS, Components, Implementations, CAS Architecture, Storage and Retrieval, Security Criticism in Networked Storage Technologies, Risk Mitigation for Networked Storage
IV	<b>Hybrid Storage solutions:</b> Hybrid Storage Appliance, Virtualization, Types of Virtualization, Storage Virtualization, Virtual Appliance, : Industry management standards (SNMP, SMI-S, CIM), standard framework applications, Data Center. Requirement for the design of a secure data center, Key Program Management Metrics, Back up and Disaster Recovery, Importance of disaster recovery planning
V	<b>Introduction of Cloud Computing</b> :Introduction, Types of Cloud Computing, Cloud Computing Model Cloud Computing Characteristics, Advantage & Disadvantage of Cloud Computing, Essential Characteristics of Cloud Computing, Evolution of Cloud Technologies, Cloud Application Services, Cloud Computing Model, Storage on Cloud, Cloud Security and integration, Cloud Architecture, Risk of Cloud Computing, The future of Cloud Computing

## References

1. Gorden G., System simulation, Prentice Hall.
2. Seila, Simulation Modeling, Cengage Learning
3. Law .,Simulation Modeling And Analysis, McGraw Hill