

PEOPLE'S UNIVERSITY, BHOPAL

 Programme: **B. Tech. (Computer Science & Engineering)**

Semester -V

Subject Title	Subject Code	Credits			Theory		
Entrepreneurship & IPR	BT- 501	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	Entrepreneurship: definition and functions of an entrepreneur, qualities of a good entrepreneur; Role of Entrepreneur in economic development; theories of entrepreneur, socio, economic, cultural and psychological; entrepreneur traits and behavior, roles in economic growth, employment, social stability, export promotion and indigenization, creating a venture, opportunity analysis competitive and technical factors, sources of fund. Forms of business organizations/ownership - formation of a Company - procedures and formalities for setting up of new industry-sources of information to contact for what and where.
II	Management: Importance, definition and functions; dimensions of organizations, size/specialization, behavior formalization, authority centralization, departmentalization, span and line of control, technology and Minzberg organization typology, line, staff & matrix organization. Motivation theories: Maslow, Mc Cullen - Motivation model - need, want, motive and behavior – attitude towards work - self assessment and goal setting - Achievement, motivation and behavior measurement, SWOT analysis and TA analysis - Stress and conflict management; with uncertainty; creativity and innovation.
III	Marketing: Importance, definition, core concepts of need want and demand, Project identification and formulation: Sources of information - opportunity guidance - choice of technology and its evaluation; consumer behavior; market survey and research; preliminary project report, detailed project report, assessing viability and feasibility of a report. Exchange & relationships, product value, cost and satisfaction (goods and services) marketing environment; selling, marketing and societal marketing concepts; four P's, product, price, placement, promotion. Finance: Nature and scope, forms of business ownerships, balance sheet, profit and loss account, fund flow and cash flow statements, breakeven point (BEP) and financial ratio analysis, pay-back period, NPV and capital budgeting. Subsidies and concessions for SSI - role of State and Central Government Agencies in promotion of Small Scale Industry
IV	Concept of Property: Theories of Property, Types of Intellectual Property- Origin and Development, Theories of Intellectual Property Rights, Need for Protecting Intellectual Property, Commercialization of Intellectual Property Rights by Licensing, Determining Financial Value of Intellectual Property Rights, Negotiating Payments Terms in Intellectual Property Transaction
V	Introduction to Patent Law , (a) Paris Convention , (b) Patent Cooperation Treaty, (c) WTO- TRIPS , Indian Patent Law, The Patents Act, 1970, Patentable Subject Matter, Patentability Criteria, Procedure for Filing Patent Applications, Patent Granting Procedure, Revocation, Patent Infringement and Remedies, Relevant Provisions of the Biological Diversity Act, 2002, Access and Benefit Sharing Issues

References:

- 1 Handbook for New Entrepreneurs, EDII, Ahmadabad.
- 2 Entrepreneurial Development by P.Saravanavel.
- 3 Environment and Entrepreneur – Tandon B.C. (Asian Publishers, New Delhi)
- 4 Emerging Trends in Entrepreneurship Development Theories & Practices – Singh P.Narendra Entrepreneurship &
- 5 Growth of Enterprise in Industrial Estates – Rao Gangadhara N

PEOPLE'S UNIVERSITY, BHOPAL

 Programme: **B. Tech. (Computer Science & Engineering)**

Semester -V

Subject Title	Subject Code	Credit			Theory		
Discrete Mathematics	BT-512	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	Set theory and Relations : Definition of Sets, countable and uncountable sets, finite and infinite sets, Venn Diagrams, principles of inclusion and exclusion, proofs of some general identities on sets multi-sets and ordered pairs, Relation, Definition, Types of relation, Composition of relations, Equivalence relation, Equivalence class, partial ordering relation and job -scheduling problem.
II	Functions & Pigeon Hole Principle : Definition, Domain, Co-Domain and Range of a Function, Image of an Element, Everywhere Defined Function, Equal Function, type of function , Invertible Function, Composition of Functions, Identity Function, Inverse Function, Recursively Defined Function, pigeonhole principle, Theorem proving Techniques, Mathematical induction and proof by contradiction
III	Propositional Logic & Finite State Machines : Proposition, First order logic, Basic logical operations, Truth tables, tautologies, Contradictions, Algebra of prepositions, logical implications, logical equivalence, predicates, normal forms, Universal and existential quantifiers, Introduction to finite state machine and Finite state machines as models of physical system equivalence machines.
IV	Graph Theory : Introduction and basic terminology of graphs, planer graphs, Multigraph and weighted graphs, Isomorphic graphs, Paths, Cycles and connectivity, Shortest path in weighted graph, Introduction to Eulerian paths and circuits, chromatic numBEr, Somorphism and Homomorphism of graphs
V	Combinatorics & Recurrence Relations : Introduction Permutation and combination, Binomial Theorem, Multimonial Coefficients Recurrence Relation and Generating Function, Introduction to Recurrence Relation and Recursive algorithms, Linear recurrence relations with constant coefficients, Homogeneous Solutions, Particular solutions, Total solutions, Generating functions, Solution by method of generating functions

References

- 1 D.C. Aggarwal “Discrete Mathematics”
- 2 Lipschutz; Discrete mathematics (Schaum); TMH
- 3 S k Sarkar “ Discrete Mathematics”, S. Chand .
- 4 Discrete Mathematics, Harish Mittal, I.K International Publishing House PVT.LTD
- 5 Discrete Mathematics, Geetha, Scitech Publication PVT.LTD. Chennai

PEOPLE'S UNIVERSITY, BHOPAL

 Programme: **B. Tech. (Computer Science & Engineering)**

Semester -V

Subject Title	Subject Code	Credit			Theory			Practical		
Data Modeling with UML	CST-503	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	Basics of Data Modeling, Types of data Modeling, CDM, EDM, LDM, PDM, RDM, Data Modeling Tools, Logical v/s Physical Data Modeling, Data Modeling Standards, Data Modeler Role and Data Modeling Techniques
II	Basic concepts of UML Use case diagrams, Class diagrams, Sequence diagrams, State chart diagrams and Activity diagrams.
III	System Models and Views. Notations, Concepts and Phenomena. Data Types, Abstract Data Types and instances. Classes, Abstract Classes, and Objects and Event Classes
IV	Object-Oriented Modeling - Application domain, Solution domain, Object Oriented analysis, Object Oriented design, Falsification and Prototyping
V	Basics of Relationships, Communication relationships, Extend relationships, Generalization relationships, Associations and links, Multiplicity, Association class, Aggregation, Generalization and Specialization.

References

- 1 G.Booch, Object-Oriented Analysis and Design with Applications, 2nd ed.
- 2 P.Coad,D.North,&M.Mayfield,Objectmodels:Strategies,Patterns,&Applications, Prentice Hall, Englewood Cliffs,NJ,1995.
- 3 K.Popper, Objective Knowledge: An Evolutionary Approach, Clarendon, Oxford B
- 4 Daminni Grover, Object Oriented Analysis & Design with UML, IK Publications

List of Experiments

- 1 Class diagram without attributes
- 2 Class diagram with attributes
- 3 Use case diagram for Mechanic.
- 4 Activity diagram for Cellular Company
- 5 Sequence diagram ATM
- 6 State Transition diagram for ATM
- 7 Online Book shop of class diagram without attributes
- 8 Use case diagram of Online Book Shop
- 9 Activity diagram of Online Book Shop
- 10 Draw an Activity diagrams

PEOPLE'S UNIVERSITY, BHOPAL

 Programme: **B. Tech. (Computer Science & Engineering)**

Semester -V

Subject Title	Subject Code	Credit			Theory			Practical		
Data Base Management system	BT-514	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 & Basic Models: DBMS Concepts, architecture & Advantages, Database approach v/s Traditional file accessing approach, Data models, Schemas and instances, Data independence, Data Base Language and interfaces, Functions of DBA and designer, types of database users. Various other data models object oriented data Model, Network data model, and Relational data model, Comparison Between the three types of models.
II	Design: Introduction to ER modeling, entity, entity sets & types, attributes, relation and relationship sets in ER models, ER diagrams, and reducing ER diagrams to tables, generalization and aggregation in ER models, Introduction to normalization, Normal forms, Functional dependency, Decomposition, Dependency preservation and lossless join, problems with null valued and dangling tuples, multivalued dependencies.
III	Relational Data models: Domains, Tuples, Attributes, Relations, Characteristics of relations, Keys, Relational database, Referential integrity, Intension and Extension, Relational Query languages: SQL-DDL, DML, integrity constraints, Complex queries, various joins, indexing, triggers, assertions, deletion and modification anomalies. Relational algebra and relational calculus, Relational algebra operations like select, Project, Join, Division, outer union and Introduction to Query Optimization
IV	Data definitions in SQL Queries, update statements and views in SQL, QUEL and QBE , data and storage definition, data retrieval queries and update statements etc. Methods of storing relational database record in files, various types of files like sequential files, indexed files, indexed sequential files etc. buffer management, data dictionary, physical storage media etc. needed for these file. Introduction to indexing and hashing: indexing techniques using B -Trees, B+ -Trees etc., static hashing function, dynamic hashing function etc, overview of query processing and cost estimation.
V	Transaction Processing Concepts: Transaction System, Testing of Serializability, Serializability of schedules, conflict & view serializable schedule, recoverability, Recovery from transaction failures. Log based recovery, Concurrency Control Techniques: - Concurrency Control, locking Techniques for concurrency control, time stamping protocols for concurrency control, validation based protocol, multiple granularity. Multi version schemes, Recovery with concurrent transaction. Introduction to Distributed databases, datamining, data warehousing, Object Technology and DBMS, Comparative study of OODBMS Vs DBMS . Temporal, Deductive, Multimedia, Web & Mobile database .Comparison of various database models, comparison of some existing DBMS

References

- 1 Fundamentals of Database Systems By Elmasri & Navathe
- 2 Database System Concepts by SilBERSchatz, Korth & Sudershan
- 3 An introduction to Database Systems By C.J.Date
- 4 Atul Kahat "Introduction to Database Management System", Pearson Educations.

PEOPLE'S UNIVERSITY, BHOPALProgramme: **B. Tech. (Computer Science & Engineering)****Semester -V**

List of Experiments

- 1 Study and Implementation of Create table Command
- 2 Study and Implementation of Insert Command
- 3 Study and Implementation of Delete Command
- 4 Study and Implementation of Drop Table Command
- 5 Study and Implementation of Alter Table Command
- 6 Study and Implementation of Update Command
- 7 Study and Implementation of Select Clause
- 8 Study and Implementation of From Clause
- 9 Study and Implementation of Where Clause
- 10 Delete Duplicate Rows from the Table
- 11 Query for Join Operation
- 12 Query for Cartesian Product

PEOPLE'S UNIVERSITY, BHOPAL

 Programme: **B. Tech. (Computer Science & Engineering)**

Semester -V

Subject Title	Subject Code	Credit			Theory			Practical		
System Programming & Operating System	CST-505	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: Introduction to Language Processors, Language Processing Activities and Language Processors Development Tools, Translators, Interpreters, Assemblers, Compiler, Macros and Macro Processors, Linkers, Loaders, Software Tools, Introduction to Operating Systems, Types of operating Systems, system protection and Operating system services.
II	Process Scheduling & IPC: Basic concepts of CPU scheduling, Scheduling criteria, Scheduling algorithms, algorithm evaluation, multiple processor scheduling, Process concept, operations on processes, threads, interprocess communication, precedence graphs, critical section problem, semaphores and classical problems of synchronization
III	Deadlock & Memory Management : Deadlock problem, deadlock characterization, deadlock prevention, deadlock avoidance, deadlock detection, recovery from deadlock, Methods for deadlock handling, Concepts of memory management, logical and physical address space, swapping, Fixed and Dynamic Partitions, BEst-Fit, First-Fit and Worst Fit Allocation, paging, segmentation and paging combined with segmentation.
IV	Virtual Memory & OS Security: Concepts of virtual memory, Cache Memory Organization, demand paging, page replacement algorithms, allocation of frames, thrashing, demand segmentation, Role of Operating System in Security, System Protection, Password Management and Trusted Systems
V	Disk Scheduling & Files: Disk scheduling, file concepts, File manager, File organization, access methods, allocation methods, free space managements, directory systems, file protection, file organization & access mechanism, file sharing implement issue and introduction to distributed systems.

References

- 1 Dhamdhare, System Programming and Operating System, Tata McGraw Hill Publications
- 2 Peter Galvin Operating System Concepts
- 3 Rajiv Chopra, Operating System, S.Chand New Delhi

List of Experiments

- 1 Program to implement FCFS CPU Scheduling Algorithm.
- 2 Program to implement SJF CPU Scheduling Algorithm.
- 3 Program to implement Round Robin CPU Scheduling Algorithm.
- 4 Program to implement FIFO Page Replacement Algorithm.
- 5 Program to implement LRU Page Replacement Algorithm.
- 6 Program to implement Optimal Page Replacement Algorithm.
- 7 Program to implement Banker's Algorithm for Deadlock Avoidance.

PEOPLE'S UNIVERSITY, BHOPAL

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Semester -V

Subject Title	Subject Code	Credit			Practical		
Hardware Linux Lab	CST-506	L	T	P	External (35)	Internal (15)	Total (50)
		-	-	2			Min: 20 (D Grade)

Practical internal - max marks: 15

Lab work & sessional

– Max. Marks: 10

Assignment / Quiz/ Regularity

– Max. Marks: 05

Unit	Contents (Practical)
I	Basic Computer Hardware: History, Introduction to Computer Hardware, Introduction to Peripheral Devices and their Types, Introduction to Memory, Types and Classification and Introduction to Semiconductor Memories
II	Ports & PC Cards: Introduction to Ports, Interfacing with Ports, Types of Ports, Introduction to PC Cards, Interfacing with PC Cards, Identification of various Ports on PC Cards and Troubleshooting
III	Formatting & Partitioning: Introduction to Hard Disks, Formatting of Hard Disks, Partitioning of Hard Disks, Introduction to Software, Installation of System Software, Installation of Operating System and Application Software
IV	General Overview of the Unix/Linux System: History, System structure, Operating system services, Assumptions about hardware, Introduction to the Kernel, Grub ,Boot Loader , Architecture of the UNIX operating system, Use of Unix/Linux, User Commands, Editors, Shell programming, Use of system calls, files, processes, I/O, IPC
V	System Calls for the File System in Linux: Open, Read, Write, File and record locking, Adjusting the position of file I/O, Close, File creation, Creation of special files, Changing directory, root, owner, mode – stat and file systems, link, unlink. Server Overview.

References

- 1 Craig & Zacker , Hardware Complete Reference, Tata McGraw Hill Publications
- 2 Padam Gulwani & Anshuman Sharma, Elementary Concepts of Computer Design and Hardware, Kamal Prakashan, Indore
- 3 LINUX Complete Reference by Peterson, Tata McGraw Hill Publications
- 4 Fundamentals of LINUX by O Reilly Publications
- 5 PC Hardware A Beginners Guide by Ron Gilster, Mc Graw Hill Publications

List of Experiments

- 1 Installation of Operating System
- 2 Assembling of resources
- 3 Introduction of Hard disk.
- 4 Study of CD/DVD.
- 5 Introduction of RAM
- 6 Study of Mother board
- 7 Study of Sound/Video Driver
- 8 Installation of LINUX
- 9 Study of squid server
- 10 Study of DHCP server
- 11 Study of FTP server
- 12 Study of HTTP server

PEOPLE'S UNIVERSITY, BHOPAL

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Semester -V

Subject Title	Subject Code	Credit			Practical		
Programming Lab -1	BT-517	L	T	P	External (Nil)	Internal (50)	Total (50)
		-	-	2			Min: 20 (D Grade)

Practical internal - max marks: 50

Lab work & sessional

– Max Marks: 25

Assignment / Quiz/ Regularity

– Max. Marks: 25

Unit	Contents (Practical)
I	Overview of Internet Introduction to Internet and WWW, Concept of Networking and Layers of OSI Model, Internet protocols like TCP/IP, http, telnet and ftp, URL, email, domain name, Web Browsers.
II	Principles of Web Design Key issues to be considered in web site design. Structure of a Web Page: Introduction to HTML, Elements of HTML syntax, Head and Body sections, Building HTML documents, Inserting text, images, hyperlinks, Backgrounds and Color Control, HTML Editors & Tools: Use of different HTML editors and tools like Netscape Communicator and Microsoft Front Page etc
III	HTML Tags Use of Different HTML tags in web pages. Table Handling: Table layout & presentation, constructing tables in a web page, developing a web page in a table. Ordered and unordered lists. Frames: Developing Web pages using frames. Advantages and disadvantages of frames. Creating forms, Role of Databases in web applications. Use of Different graphical and animation tools like Adobe Photoshop, Gif Animator etc
IV	Introduction to Java Script/VBScript Role of java script in a web page, Script writing basics, Adding interactivity to a web page, creating dynamic web pages, Similarities to java, embedding JavaScript code, embedding java applets in a web page Form validation using java script
V	Introduction to ASP Role of ASP in a web page, working of Active server pages, configure IIS, embedding ASP code in a Web page, Integrating objects and components into active server pages, working with forms, connectivity with database, maximizing ASP pages performances Security: Concept of various methods of Internet security like firewalls etc

References

- 1 Rick Dranell, —HTML4 unleashed||, Techmedia Publication
- 2 Shelly Powers, —Dynamic Web Publishing Unleashed||, Techmedia
- 3 Don Gosselin, —JavaScript||, Vikas Publication
- 4 Mark Swank & Drew Kittel, —World Wide Web Database||, Sams net

PEOPLE'S UNIVERSITY, BHOPALProgramme: **B. Tech. (Computer Science & Engineering)****Semester -V**

List of Experiments

- 1 Design a HTML page using all the basic tags
- 2 Design a page containing your educational qualification in a table.
- 3 Design a page containing an ordered list/unordered list.
- 4 Design a HTML page for your resume.
- 5 Design a form in HTML to enter different attribute of student information.
- 6 Design a home page for ASE using Frame.
- 7 Design another page and connect these to the home page.
- 8 Write a function in Javascript for input validation.
- 9 Write a function in Javascript to calculate monthly installation of the loan.
- 10 Write an input form and save its data in a database using ASP.
- 11 Display the data stored in database in tabular form on the page

PEOPLE'S UNIVERSITY, BHOPAL

Programme: **B. Tech. (Computer Science & Engineering)**

Semester -V

Subject Title	Subject Code	Credits			Practical		
Industrial Training- I	CST-508	L	T	P	External (Nil)	Internal (50)	Total (50)
		-	-	2			Min: 20 (D Grade)

Practical Internal - Max Marks: 50

Assignment /Quiz

– Max Marks: 50

Duration: 2 weeks after the IV semester in the summer break. Assessment in V semester.

Marks of various components in industry should be awarded to the student, in consultation with the Training and Placement Officer (TPO)/ Faculty of the institute, who must establish contact with the supervisor/ authorities of the organization where, students have taken training, to award the marks for term work. During training, students will prepare a first draft of the training report in consultation with the section in charge. After training they will prepare final draft with the help of the TPO/ faculty of the institute. Then, they will present a seminar on their training and will face viva-voce on training in the institute.