PEOPLE'S UNIVERSITY, BHOPAL

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

Programme: **Diploma in Engineering** **Semester –VI**

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P			Total (100)	External	Internal	Total
DCS16011	Network Management	3	1	-	External (70)	Internal (30)	Min: 40 (D Grade)	(Nil)	(Nil)	Nil

Duration of Theory (Externals): -3hours

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	Nil
Course Outcome	1. Understand concepts and terminology associated with SNMP
	2. Appreciate network management as a typical distributed application
	3. Maintain error logs, handle fault notifications, trace faults, diagnostic tests, correct

Unit	*Contents (Theory)*	Marks Weightage
I	**Network Management**: Communications protocols and Standards, Case Histories of Networking and Management, Challenges of Information Technology Managers, Network Management: Goals, Organization, and Functions, Network and System Management, Network Management System Platform, Current Status and future of Network	**14**
II	**The SNMP Communication Model:** Functional model, SNMP MANAGEMENT: Remote Monitoring, RMON SMI and MIB, RMON1, RMON2, ATM Remote Monitoring	**14**
III	**Telecommunications Management Network**: TMN Conceptual Model, TMN Standards, TMN Architecture, TMN Management Service Architecture.	**14**
IV	**Network Management Tools And Systems**: Network Management Tools, Network Statistics Measurement Systems, History of Enterprise Management, Network Management systems, Commercial Network management Systems, System Management, Enterprise Management Solutions.	**14**
V	**Web-Based Management** : NMS with Web Interface and Web-Based Management, Web Interface to SNMP Management, Embedded Web-Based Management, Desktop management Interface, Web-Based Enterprise Management, WBEM: Windows Management Instrumentation, Java management Extensions, Management of a Storage Area Network	**14**

Text Book/References Books/ Websites:

1.Mani Subrahmanian; Network Management Principles and Practice; 2nd Edition, Pearson Education, 2010.

2. Morris Mano; Network management;1st Edition, Pearson Education; 2008.

3. Mark Burges; Principles of Network System Administration; 1st Edition, Wiley DreamTech, 2008

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

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Programme: **Diploma in Engineering** **Semester –VI**

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P	External	Internal	Total (100)	External (Nil)	Internal (Nil)	Total
DCS16012	Data Mining	3	1	-	70	30	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	To be aware of basic concepts of databases.
Course Outcome	1. Students are able to learn the concepts of database technology evolutionary path which has led to the need for data mining and its applications.• Examine the types of the data to be mined and present a general classification of tasks and primitives to integrate a data mining system.
	2. To Evaluate and implement a wide range of emerging and newly-adopted methodologies and technologies to facilitate the knowledge discovery.

Unit	*Contents (Theory)*	Marks Weightage
I	**Introduction**: Data mining application – data mining techniques – data mining case studiesthe future of data mining – data mining software - Association rules mining: basics- task and a naïve algorithm- apriori algorithm – improve the efficient of the apriori algorithm – mining frequent pattern without candidate generation (FP-growth) – performance evaluation of algorithms.	**14**
II	**Classification** : Introduction – decision tree – over fitting and pruning - DT rules-- naïve bayes method- estimation predictive accuracy of classification methods - other evaluation criteria for classification method – classification software.	**14**
III	**Cluster analysis**: cluster analysis – types of data – computing distances-types of cluster analysis methods - partitioned methods – hierarchical methods – density based methods – dealing with large databases – quality and validity of cluster analysis methods - cluster analysis software.	**14**
IV	**Web Data Mining**: Introduction- web terminology and characteristics- locality and hierarchy in the web- web content mining-web usage mining- web structure mining – web mining software - Search engines: Search engines functionality- search engines architecture – ranking of web pages.	**14**
V	**Data Warehousing:** Introduction – Operational data sources- data warehousing - Data warehousing design – Guidelines for data warehousing implementation - Data warehousing metadata - Online analytical processing (OLAP): Introduction – OLAP characteristics of OLAP system – Multidimensional view and data cube - Data cube implementation - Data cube operations OLAP implementation guidelines!	**14**

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Text Book/References Books/ Websites

1. G.K. Gupta ; Introduction to Data mining with case studies‖; PHI Private limited, New Delhi, 2008.
2. Arun K Pujari ; Data Mining Techniques; University Press.
3. Zaki & Meira; Data Mining and Analysis Fundamental Concepts and Algorithms,2014.

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

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Programme: **Diploma in Engineering** **Semester –VI**

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P			Total (100)			Total
DCS16013	Wireless And Mobile Communication	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 knowledge of basics of computer network
Course Outcome	1. To teach Students wireless telecommunications protocol
	2. Students will be able to Describe the evolution process from GSM to UMTS.

Unit	Contents (Theory)	Marks Weightage
I	**Introduction:** 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, Wireless Network Topologies.	**14**
II	**Wireless Lan And Wireless Communication:** Cellular systems- Frequency Management and Channel Assignment. Types of handoff and their characteristics, dropped call rates & their evaluation - MAC – SDMA – FDMA – TDMA – CDMA – Cellular Wireless Networks IEEE 802.11 Standards , Architecture , Services.	**14**
III	**Mobile Network And Transport Layers:**Mobile IP – Dynamic Host Configuration Protocol- Mobile Ad Hoc Routing Protocols–Multicast routing-TCP over Wireless Networks – Indirect TCP – Snooping TCP – Mobile TCP. Transaction Oriented TCP- TCP over 2.5 / 3G wireless Networks.	**14**
IV	**Cellular Topology:** Cell Fundamentals, Signal to Interferences Radio Calculations, Network Planning for CDMA Systems, Wireless Network Operations, Mobility Management, Radio Resources and Power Management.	**14**
V	**Application Layer:** Bluetooth, Interference between Bluetooth and 802.11, Adhoc Networks, Introduction to 2.5 G and 3 G Networks, WAP Model- Mobile Location based services -WAP Gateway –WAP protocols. IEEE 802.15	**14**

Text Book/References Books/ Websites

1. Jochen Schiller; Mobile Communication; Second Edition, Pearson Education; 2003.
2. William Stallings; Wireless Communications and Networks; Pearson Education, 2002
3. David Tse and Pramod Viswanath; Fundamentals of Wireless Communication.

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

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Programme: **Diploma in Engineering** **Semester –VI**

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P			Total (100)			Total
DCS1602	Neural Networks	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	Nil
Course Outcome	1. Understand the learning and generalization issue in neural computation.
	2. Apply neural networks to classification and recognition problems.

Unit	*Contents (Theory)*	Marks Weightage
I	**Neuro computing and Neuroscience**-Historical notes, human Brain, neuron Model, Knowledge representation, Al and NN. Learning process: Supervised and unsupervised learning, Error correction learning, competitive learning, adaptation, statistical nature of the learning process.	**14**
II	**Data processing**-Scaling, normalization, Transformation (FT/FFT), principal component analysis, regression, co-variance matrix, Eigen values & Eigen vectors. Basic Models of Artificial neurons, activation Functions, aggregation function, single neuron computation, multilayer perceptron, least mean square algorithm, gradient descent rule, nonlinearly separable problems and bench mark problems in NN.	**14**
III	**Multilayered network architecture**, back propagation algorithm, heuristics for making BP-algorithm performs better. Accelerated learning BP (like recursive least square, quick prop, RPROP algorithm), approximation properties of RBF networks and comparison with multilayer perceptron.	**14**
IV	**Recurrent network** and temporal feed-forward network, implementation with BP, self-organizing map and SOM algorithm, properties of feature map and computer simulation. Principal component and Independent component analysis, application to image and signal processing.	**14**
V	**Complex valued NN and complex valued BP**, analyticity of activation function, application in 2D information processing. Complexity analysis of network models. Soft computing. Neuro - Fuzzy-genetic algorithm Integration.	**14**

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Programme: **Diploma in Engineering** **Semester –VI**

Text Book/References Books/ Websites

1. S. Haykin, Neural Networks; Comprehensive Foundation 2nd edition; (Prentice Hall, 1999)
2. K. Mehrotra, C. Mohan, and S. Ranka; Elements of Artificial Neural Networks; MIT Press, 1997.
3. C. Looney, Pattern Recognition Using Neural Networks; Oxford University Press, 1997

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

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Programme: **Diploma in Engineering** **Semester –VI**

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P			Total (100)			Total (50)
DCS1603	Computer and Network Security	3	1	1	External (70)	Internal (30)	Min: 40 (D Grade)	External (35)	Internal (15)	Min: 20 (D Grade)

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: 15	Lab work & Sessional – Max Marks: 10	Assignment / Quiz/Attendance Max. Marks: 05

Pre-Requisite	To have basic knowledge of computer networking
Course Outcome	1. Demonstrate knowledge of network tools.
	2. To introduce students to standards and guidelines in computer and data communication network.
	3. Analyze and differentiate networking protocols used in TCP/IP protocol suite.

Unit	*Contents (Theory)*	Marks Weightage
I	**Data and Computer Communication Networks:**Data Communication, Transmission Methodologies, Data Link Layer, Multiple Access & Local Area Networks, Connecting Devices and Backbone Networks, Network Layer and Transport Layer, Application Layer.	**14**
II	**Network Topologies and Networking Devices:**Type of Topology - Bus Topology, Ring Topology, Star Topology, Mesh Topology, Tree Topology, Hybrid Topology. Network Control Devices -Hubs, Switches, Routers, Bridges, Repeaters, Gateways, Modems	**14**
III	**Mobile & Wireless Networks** :Wireless networking, wireless LANS & PANS, ad-hoc wireless networks & security, wireless sensor networks, Cellular Mobile Wireless Networks, Evolution of Modern Mobile Wireless Communication System.	**14**
IV	**Cryptography and Network Security:** Introduction to the Concept of Security, Cryptographic Techniques, Computer-based Symmetric and Asymmetric Key Cryptographic Algorithms, Public Key Infrastructure (PKI), Internet Security Protocols, Network Security.	**14**
V	**Software Security:**Defining a discipline, A Risk Management Framework, Code review with a tools, Architectural risk analysis, Software penetrating testing, Risk Based security Testing, An Enterprise S/W security program, Security knowledge.	**14**

Text Book/References Books/ Websites

1. Charles P. Pfleeger; Security in Computing;Prentice Hall.
2. William Stallings; Cryptography and Network Security: Principles and Practice; Prentice-Hall.
3. Richard A. McMohan; Introduction to Networking

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Suggested List of Laboratory Experiments :- (Expandable):

1. Study of different wireless network components and features of any one of the Mobile Security Apps.
2. Study of the features of firewall in providing network security and to set Firewall Security in windows.
3. Steps to ensure Security of any one web browser (Mozilla Firefox/Google Chrome)
4. Study of different types of vulnerabilities for hacking a websites / Web Applications.
5. Analysis the Security Vulnerabilities of E-commerce services.
6. Study how the browsers manage the digital certificates for various secured websites for making secured communication.
7. Implement RSA encryption-decryption algorithm.

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Programme: **Diploma in Engineering** **Semester –VI**

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P			Total (100)			Total (50)
DCS1604	Web Engineering	3	1	1	External (70)	Internal (30)	Min: 40 (D Grade)	External (35)	Internal (15)	Min: 20 (D Grade)

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: 15	Lab work & Sessional – Max Marks: 10	Assignment / Quiz Max. Marks: 05

Pre-Requisite	Nil
Course Outcome	1. To Learn about different web models.
	2. To learn and use some of the client side and server side languages used to manipulate information.
	3. To learn techniques and evaluation matrics for ensuring the proper operability and maintenance of web applications.

Unit	*Contents (Theory)*	Marks Weightage
I	**Web Engineering:** History of web Development, Evolution and Need, Categories, Web Engineering Models, Web Applications: Characteristics of Web Applications, World Wide Web, Introduction to TCP/IP and WAP, DNS, Email, TelNet, HTTP and FTP, Introduction to Browser and search engines, Working of the search engines, Introduction to Web Servers, Features of web servers.	**14**
II	**Information Architecture:** 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, Process of Web Publishing, Phases of Web Site development.	**14**
III	**Web Security :**Web security issues, security audit of websites, Web Security, Encryption schemes, Secure Web document, Digital Signatures and Firewalls, Cyber Crime and laws, IT Act.	**14**
IV	**Introduction to HTML and Tags:** Introduction Head section – Prologue, Link, Base, Meta, Script, Style Body Section – Header, Paragraphs, Text Formatting, Linking, Internal Linking, Embedding Images, Lists, Tables, Frames. Other Special Tags and Characters HTML Forms	**14**

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V	**E-Commerce:**E-Commerce, E-commerce Business Models, The Internet and World Wide Web, E-commerce Infrastructure, 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.	**14**

Text Book/References Books/ Websites

1. Pressman ;Web Engineering
2. Chris Bates ;Web Programming; Building Internet Applications
3. Atul Kahate ;Web Technologies

Suggested List of Laboratory Experiments :- (Expandable):

1. Design a home page which will display your information, i.e. Bio data, using Image Link and File Link to upload images and necessary documents.
2. Create a HTML web page with the following: i) To embed an image map in a web page ii) To fix the hot spots iii) Show all the related information when the hot spots are click.
3. Design a Signup form with validation using HTML.
4. Create a webpage with HTML describing your department. Use paragraph and list tags.
5. Apply various colors to suitably distinguish key words. Also apply font styling like italics, underline and two other fonts to words you find appropriate. Also use header tags.
6. Create links on the words e.g. "Wi-Fi" and "LAN" to link them to Wikipedia pages.
7. Insert an image and create a link such that clicking on image takes user to other page.
8. Change the background color of the page. At the bottom create a link to take user to the top of the page

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Programme: **Diploma in Engineering** **Semester –VI**

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P			Total (100)			Total (250)
DCS1605	Major Project	-	-	5	External (Nil)	Internal (Nil)	(Nil)	External (175)	Internal (75)	Min: 100 (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: 75	Lab work & Sessional – Max Marks: -70	Assignment / Quiz/Attendance Max. Marks: 05

Pre-Requisite	Knowledge of Concerned Subjects
Course Outcome	The student will be able to-An ability to utilize technical resources:
	1. Identify, analyze & define the problem.
	2. Generate alternative solutions to the problem identified.
	3. Compare & select feasible solutions from alternatives generated.
	4. Design, develop, manufacture & operate equipment/program.
	5. Acquire higher-level technical knowledge by studying recent development in Engineering field.
	6. Compare machines/devices/apparatus for performance practices.
	7. Work effectively in a team.

Unit	*Contents (Theory)*	Marks Weightage
I	The student should prepare a working system or some design or understanding of a complex system that he has selected for his project work 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 if applicable.Evaluation will be based on his performance in technical work pertaining to the solution of a small size problem, project report, and presentation of work and defending it in a viva-voce.	**250**

Text Book/References Books/ Websites: Nil

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

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Programme: **Diploma in Engineering** **Semester –VI**

Subject Code	Subject Title	Credit			Theory			Practical		
		L	T	P	External	Internal	Total (Nil)	External	Internal	Total (50)
DPE1606	Development of Professional Ethics	-	-	1	(Nil)	(Nil)	Nil	(35)	(15)	Min: 20 (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: 50	Lab work & Sessional – Max Marks: Nil	Assignment/Quiz Attendance Max. Marks: 50

Pre-Requisite	**Nil**
Course Outcome	Ability to use of presentation aids, Presentation skills, INTERVIEW TECHNIQUE , Task Management and ethics

Unit	*Contents (Theory)*	Marks Weightage
I	**Presentation Skills** Body Language -- Dress Like The Audience, Posture, Gestures, Eye Contact And Facial Expression. Presentation Skill – Stage Fright, Voice And Language – Volume, Pitch, Inflection, Speed, Pause; Pronunciation, Articulation, Language, Practice Of Speech; Use Of Aids –OHP,LCD Projector, White Board	**50**
II	**Group discussion and Interview technique** – Introduction to group discussion, Ways to carry out group discussion, Parameters— Contact, body language, analytical and logical thinking, decision making **INTERVIEW TECHNIQUE** Necessity, Tips For Handling Common Questions.	
III	**Working in Teams:** Understand and work within the dynamics of a groups. Tips to work effectively in teams, Establish good rapport, interest with others and work effectively with Them to meet common objectives, Tips to provide and accept feedback in a constructive and considerate way, Leadership in teams, handling frustrations in group. **Task Management: Introduction**, Task identification Task planning, organizing and execution, Closing the task.	
IV	**Professional Ethics:** The foundations and norms of professional ethics. The need for separate code of conduct for professionals. The relation between professional and general ethics. Moral conflict and the issue of autonomy of professional ethics. Impact of Violation of Professional Ethics on Society, Remedies.	

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Text Book/References Books/ Websites

1. Michael Hatton ; Presentation Skills (Canada – India Project) ;ISTE New Delhi
2. Richard Hale,Peter; Target setting and Goal Achievement; Whilom Kogan page India
3. Chakravarty, Ajanta ;Time management ;Rupa and Company.
4. Harding ham; Working in Teams; .A Orient Longman.
5. Koehn, D.; The Ground of Professional Ethics, Routledge, 1995.
6. Wuest, D.E; Professional Ethics and Social Responsibility, Rowman & Littlefield, 1994.

Suggested List of Laboratory Experiments :- (Expandable):

1. Deliver a seminar for 10-12 minutes using presentation aids on the topic given by your teacher.
2. Watch/listen an informative session on social activities. Make a report on topic of your interest using audio/visual aids.
3. Mini Project on Task Management. Decide any task to be completed in a stipulated time with the help of teacher. Write a report on the group task assigned by teacher related to social and technical activities.
4. Conduct an interview of a personality and write a report on it.
5. Discuss a topic in a group and prepare minutes of discussion. Write thorough description of the topic discussed.
6. Arrange an exhibition, displaying flow-charts, posters, paper cutting, photographs etc on the topic given by your teacher.