SCHEME OF EXAMINATION

And

SYLLABI

For

BACHELOR OF VOCATION

In

(SOFTWARE DEVELOPMENT)

3rd SEMESTER & 4th SEMESTER

Offered by

University School of Engineering and Technology

**GURU GOBIND SINGH
INDRAPRASTHA
UNIVERSITY**

Guru Gobind Singh Indraprastha University
Dwarka, Delhi – 110078 [INDIA]
www.ipu.ac.in

Scheme and Syllabi for B. Voc. (Software Development)(2nd year) w. e. f. batch 2016-17, approved in the BOS of USET/USICT held on 19th July, 2016 & AC Sub Committee Meeting of USET/USICT held on 27th July, 2016.

NOMENCLATURE OF CODES GIVEN IN THE SCHEME OF B.VOC

1. **ET** stands for Engineering and Technology**.**
2. **AP** stands for Architecture and Planning
3. **V** stands for Vocation.
4. **MC** stands for Mobile Communication**.**
5. **SD** stands for Software Development.
6. **AE** stands for Automobile.
7. **CE** stands for Consumer Electronics.
8. **PT** stands for Printing Technology.
9. **CT** stands for Construction Technology.
10. **RA** stands for Refrigeration & Air-Conditioning.
11. **PD** stands for Power Distribution Management.
12. **ID** stands for Interior Design.
13. **AA** stands for Applied Arts.
14. **CS** stands for Computer Science.
15. **MS** stands for Management Studies.
16. **EN** stands for Environmental Engineering
17. **AS** stands for Applied Science.
18. **HS** stands for Humanities and Social Sciences.
19. **SS** stands for Social Services.
20. **L/T** stands for Lecture and Tutorial
21. **P** stands for Practical.
22. **S/D** stands for Drawing/Studio
23. **P/D** stands for Practical/Drawing

Scheme and Syllabi for B. Voc. (Software Development)(2nd year) w. e. f. batch 2016-17, approved in the BOS of USET/USICT held on 19th July, 2016 & AC Sub Committee Meeting of USET/USICT held on 27th July, 2016.

BACHELOR OF VOCATION
(SOFTWARE DEVELOPMENT)
THIRD SEMESTER EXAMINATION
(LEVEL-VI)

Paper Code	Paper ID	Paper	L	T/P	Credits
THEORY PAPERS					
ETVSD-601		Core Java Programming	3	0	3
ETVSD-603		Networking Fundamentals	3	0	3
ETVSD-605		Database Management Skills-I	3	0	3
ETVSD-607		Operating Systems Concepts	3	0	3
OPEN ELECTIVE-III (Select any one)					
ETVMS-611		Financial Accounting	3	0	3
ETVMS-613		Organizational Behaviour	3	0	3
ETVMS-615		Operations Research	3	0	3
ETVMS-617		Industrial Management	3	0	3
ETVMS-619		Managerial Economics	3	0	3
PRACTICAL/VIVA VOCE					
ETVSD -651		Core Java Programming Lab	0	4	4
ETVSD -653		Networking Fundamentals Lab	0	4	4
ETVSD -655		Database Management Skills-I Lab	0	4	4
ETVSD -659		Industrial Training-II	0	2	4
TOTAL			**15**	**14**	**31**

NOTE:
There are five industrial trainings to be carried out by the student(s) in B.Voc course. Industrial Trainings I, III and V will be with weightage of two credits each. These trainings are to be carried out during winter vacations for the duration of two weeks. Industrial Trainings II and IV will be with weightage of four credits each. These trainings are to be carried out during summer vacations for the duration of four to six weeks. These training may be done from industry/Skill Knowledge Providers (SKPs) /Sector Skill Councils (SSCs) / Training Centers/Institutes. Student should submit training report during evaluation. Industrial Training done at the end of the semester will be evaluated in the subsequent semesters.

Scheme and Syllabi for B. Voc. (Software Development)(2nd year) w. e. f. batch 2016-17, approved in the BOS of USET/USICT held on 19th July, 2016 & AC Sub Committee Meeting of USET/USICT held on 27th July, 2016.

BACHELOR OF VOCATION
(SOFTWARE DEVELOPMENT)
FOURTH SEMESTER EXAMINATION
(LEVEL-VI)

Paper Code	Paper ID	Paper	L	T/P	Credits
THEORY PAPERS					
ETVSD-602		Free and Open Source Software	3	0	3
ETVSD-604		Web Application and Development	3	0	3
ETVSD-606		Software Engineering	3	0	3
CORE ELECTIVE-I (Select any one)					
ETVSD-608		Database Management Skills-II	3	0	3
ETVSD-610		Advance JAVA Programming	3	0	3
ETVSD-612		Network Security	3	0	3
OPEN ELECTIVE-IV (Select any one)					
ETVCT-614		Global Warming & Climate Change	3	0	3
ETVMS-616		Entrepreneurship Development and Planning	3	0	3
ETVMS-618		Business Informatics	3	0	3
CORE ELECTIVE-I LAB (Select any one based on the theory)					
ETVSD-658		Database Management Skills-II Lab	0	4	4
ETVSD-660		Advance JAVA Programming Lab	0	4	4
ETVSD-662		Network Security Lab	0	4	4
PRACTICAL/VIVA VOCE					
ETVSD-652		Free and Open Source Software Lab	0	4	4
ETVSD-654		Web Application and Development Lab	0	4	4
ETVSD-664		Industrial Training-III/Field Work	0	0	2
ETVSD-666		Project-II	0	6	3
TOTAL			**15**	**18**	**32**

NOTE:

There are five industrial trainings to be carried out by the student(s) in B.Voc course. Industrial Trainings I, III and V will be with weightage of two credits each. These trainings are to be carried out during winter vacations for the duration of two weeks. Industrial Trainings II and IV will be with weightage of four credits each. These trainings are to be carried out during summer vacations for the duration of four to six weeks. These training may be done from industry/Skill Knowledge Providers (SKPs) /Sector Skill Councils (SSCs) / Training Centers/Institutes. Student should submit training report during evaluation. Industrial Training done at the end of the semester will be evaluated in the subsequent semesters.

NOTE FOR PROJECT:

The student will submit a synopsis at the beginning of the semester for approval from the departmental committee in a specified format, thereafter he/she will have to present the progress of the work through seminars and progress reports.

Scheme and Syllabi for B. Voc. (Software Development)(2nd year) w. e. f. batch 2016-17, approved in the BOS of USET/USICT held on 19th July, 2016 & AC Sub Committee Meeting of USET/USICT held on 27th July, 2016.

CORE JAVA PROGRAMMING

		L	T/P	C
Paper Code: ETVSD-601		3	0	3
Paper: Core Java Programming				

INSTRUCTIONS TO PAPER SETTERS: **MAXIMUM MARKS: 75**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.

2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be of 12.5 marks.

Objectives & Pre-requisites: *Knowledge of basics of programming- constructs and principles is a prerequisite to this course. Programming through Java is taught in this course to enable secure development of software.*
Learning Outcomes: *The student after completing the course will be able to:*
- *Describe the major features of object oriented programming.*
- *Use Java programming constructs to develop object based programs.*
- *Use inbuilt library functions to enable exception handling and create threads for efficient use of system resource.*

UNIT- I
Concept of Classes and Objects, Encapsulation, Access Control, Inheritance, Polymorphism.
Introduction to Java, Installing Java, JDK Directory Structure, Java Virtual Machine, World Wide Web and Java, Program Structure, Output in Java.
Datatypes and Variables: Primitive Datatypes, Variable Names, Numeric Literals, Character Literals, Java Tokens, String Literals. Conversions Between datatypes, Arithmetic Operators, logical operators, Control flow.
                                                                      [T1][T2][No. of Hrs. 11]

UNIT- II
JAVA Classes, Working with Objects, Packages and Interfaces: Introduction to Packages, Inheritance, Interfaces, Abstract methods and Classes, Calling Methods, Defining Methods, Method Parameters, Method Overriding, Method Overloading, Constructor.
                                                                      [T1][T2][No of Hrs 11]

UNIT- III
Exception Handling: Exceptions Overview, Declaring Exceptions, Defining and Throwing Exceptions, Errors and Runtime Exceptions, Catching Exceptions, The finally Block, Exception Methods, I/O Exceptions vs. Runtime Exceptions. Creating Threads, Life Cycle of a Thread, Thread Methods, Using Threads, Synchronization of Threads.
                                                                      [T1][T2][No. of Hrs. 11]

UNIT- IV
JAVA Applets: Introduction, Applet Examples, java.applet.* Class, The Five Stages of an Applet's Life Cycle, Methods for Adding UI Components, Methods for Drawing and Event Handling. JAVA AWT: Introduction, Control Classes.
                                                                      [T1][T2][No. of Hrs. 12]

Text Book(s):
[T1]   Programming With Java – A Primer - E. Balagurusamy, 3rd Edition, TMH
[T2]   The Complete Reference Java 2 - Patrick Naughton & Hebert Schildt, 3rd ed,TMH
[T3]   Programming With Java – John R. Hubbard, 2nd Edition, TMH.

Scheme and Syllabi for B. Voc. (Software Development)(2nd year) w. e. f. batch 2016-17, approved in the BOS of USET/USICT held on 19th July, 2016 & AC Sub Committee Meeting of USET/USICT held on 27th July, 2016.

NETWORKING FUNDAMENTALS

Paper Code: ETVSD-603   **L   T/P   C**
Paper: Networking Fundamentals   **3   0   3**

INSTRUCTIONS TO PAPER SETTERS: **MAXIMUM MARKS: 75**
1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be of 12.5 marks.

Objectives and Pre-requisites:.Basic knowledge of computer is expected from the student.
Learning Outcomes: The student will be able to:
- *Appreciate basic networking concepts, protocols and models.*
- *Identify different types of devices, media, Internet, TCP/IP suite.*
- *Configure Router and VLAN.*

UNIT-I
Network Concept, Benefits of Network, Network classification (PAN, LAN, MAN, WAN), Peer to Peer, Client Server architecture,
Transmission media: Guided & Unguided, Network Topologies.
Networking terms: DNS, URL, client server architecture, TCP/IP, FTP, HTTP, HTTPS, SMTP, Telnet
OSI and TCP/IP Models: Layers and their basic functions and Protocols, Comparison of OSI and TCP/IP.
Networking Devices: Hubs, Switches, Routers, Bridges, Repeaters, Gateways and Modems, ADSL.
[T1][T2] [No. of Hrs. 11]

UNIT-II
Ethernet Networking: Half and Full-Duplex Ethernet, Ethernet at the Data Link Layer, Ethernet at the Physical Layer.
Switching Technologies: layer-2 switching, address learning in layer-2 switches, network loop problems in layer-2 switched networks, Spanning-Tree Protocol, LAN switch types and working with layer-2 switches, Wireless LAN
[T1][T2] [No. of Hrs. 11]

UNIT- III
Internet layer Protocol: Internet Protocol, ICMP, ARP, RARP.
IP Addressing: Different classes of IP addresses, Sub-netting for an internet work, Classless Addressing. Comparative study of IPv4 & IPv6.
Introduction to Router Configuration. Introduction to Virtual LAN.
[T1][T2] [No. of Hrs. 11]

UNIT- IV
Transport Layer: Functions of transport layer, Difference between working of TCP and UDP.
Application Layer: Domain Name System (DNS), Remote logging, Telnet, FTP, HTTP, HTTPS.
Introduction to Network Security.
[T1][T2][No. of Hrs. 12]

Text Book(s):
[T1]   Tananbaum A.S, "Computer Networks" 3rd Ed. PHI, 1999
[T2]   Dr. Sanjay Sharma, "A Course in Computer Network" S. K. Kataria & Sons
[T3]   Todd Lammle, "CCNA Cisco Certified Network Associate Study Guide", SYBEX.

References Book(s):
[R1]   William Stallings, "Data and computer communications", Pearson education Asia, 7th Ed., 2002.
[R2]   D. E. Comer, "Internetworking with TCP/IP", Pearson Education Asia, 2001.
[R3]   Networking Complete By BPB Publication
[R4]   B. A Forouzan, "Data Communications & Networking",4th Ed, Tata McGraw Hill, 2007

Scheme and Syllabi for B. Voc. (Software Development)(2nd year) w. e. f. batch 2016-17, approved in the BOS of USET/USICT held on 19th July, 2016 & AC Sub Committee Meeting of USET/USICT held on 27th July, 2016.

DATABASE MANAGEMENT SKILLS-I

		L	**T**	**C**
Paper Code: ETVSD-605				
Paper: Database Management Skills-I		**3**	**0**	**3**

INSTRUCTIONS TO PAPER SETTERS: **MAXIMUM MARKS: 75**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.

2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be of 12.5 marks.

Objective: The objective of the paper is to make the students familiar with the basics of Database concepts aspects, using SQL. This course focuses on the DBMS concepts, Relational data models and SQL languages as well. This is the introductory course on Database. So it does not require any perquisite.

UNIT-I
DBMS Concepts and architecture Introduction, Database approach v/s Traditional file accessing approach, Advantages, of database systems, Data models, Schemas and instances, Data independence, Data Base Language and interfaces, Overall Database Structure, Functions of DBA and designer.

[T1][T2] [No. of Hrs. 11]

UNIT-II
ER data model: Entities and attributes, Entity types, Defining the E-R diagram, Concept of Generalization, Aggregation and Specialization. Transforming ER diagram into the tables.

[T1][T2] [No. of Hrs. 11]

UNIT-III
Relational Data models: Domains, Tuples, Attributes, Relations, Characteristics of relations, Keys, Key attributes of relation, Relational database, Schemas, Integrity constraints. Referential integrity, Intension and Extension, **Relational Query languages:** SQL-DDL, DML, integrity constraints, Complex queries, various joins, indexing, triggers, Relational algebra and relational calculus, Relational algebra operations like select, Project, Join, Division, outer union. Types of relational calculus i.e. Tuple oriented and domain oriented relational calculus and its operations.

[T1][T2] [No. of Hrs. 11]

UNIT-IV
Data Base Design: Introduction to normalization, Normal forms, Functional dependency, Decomposition, Dependency preservation and lossless join, problems with null valued and dangling tuples, multivalued dependencies.

[T1][T2] [No. of Hrs. 12]

Text Book(s):
[T1]   Date C J, "An Introduction to Database System", Pearson Educations
[T2]   Korth, Silbertz,Sudarshan, "Fundamental of Database System", McGraw Hill

Reference Book(s):
[R1]   Rob, "Data Base System:Design Implementation & Management", Cengage Learninig
[R2]   Elmasri, Navathe, "Fundamentals of Database Systems", Pearson Educations
[R3]   Atul Kahate , " Introduction to Database Management System", Pearson Educations
[R4]   Oracle 9i Database Administration Fundamental-I, Volume I, Oracle Press, TMH.
[R5]   Paneerselvam,"DataBase Management System", PHI L earning

OPERATING SYSTEMS CONCEPTS

		L	T/P	C
Paper Code: ETVSD-607		3	0	3
Paper: Operating Systems Concepts		3	0	3

INSTRUCTIONS TO PAPER SETTERS: MAXIMUM MARKS: 75

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.

2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be of 12.5 marks.

Objective: The goal of this course is to provide an introduction to the internal operation of modern operating systems. The course will cover processes and threads, mutual exclusion, CPU scheduling, deadlock, memory management, and file systems.

UNIT-I
Introduction: What is an Operating System, Simple Batch Systems, Multiprogrammed Batches systems, Time-Sharing Systems, Personal-computer systems, Parallel systems, Distributed Systems, Real-Time Systems, OS – A Resource Manager.

Memory Organization & Management: Memory Organization, Memory Hierarchy, Memory Management Strategies, Contiguous versus non- Contiguous memory allocation, Partition Management Techniques, Logical versus Physical Address space, swapping, Paging, Segmentation, Segmentation with Paging

Virtual Memory: Demand Paging, Page Replacement, Page, Performance of Demand Paging, Thrashing, Demand Segmentation, and Overlay Concepts.

[T1] [T2][R2][No. of Hrs. 12]

UNIT-II
Processes: Introduction, Process states, process management, Interrupts, Interprocess Communication

Threads: Introduction, Thread states, Thread Operation, Threading Models.

Processor Scheduling: Scheduling levels, pre emptive v/s no pre emptive scheduling, priorities, scheduling objective, scheduling criteria, scheduling algorithms, demand scheduling, real time scheduling.

Process Synchronization: Mutual exclusion, software solution to Mutual exclusion problem, hardware solution to Mutual exclusion problem, semaphores.

[T1][T2][[R3][No. of Hrs. 11]

UNIT-III
Deadlocks: examples of deadlock, resource concepts, necessary conditions for deadlock, deadlock solution, deadlock prevention, deadlock avoidance.

Device Management: Disk Scheduling Strategies, Rotational Optimization, System Consideration, Caching .

[T1][T2][R1][No. of Hrs.11]

UNIT-IV
File System: Introduction, File Organization, Logical File System, Physical File System , File Allocation strategy, Free Space Management, File Access Control, Data Access Techniques, Data Integrity Protection, Case study on file system viz FAT32, NTFS..

[T1] [T2][R4] [No. of Hrs. 11]

Text Book(s):
[T1]	Deitel & Dietel, "Operating System", Pearson, 3rd Ed., 2011
[T2]	Silbersachatz and Galvin, "Operating System Concepts", Pearson, 5th Ed., 2001

Reference Book(s):
[R1]	Tannenbaum, "Operating Systems", PHI, 4th Edition, 2000
[R2]	Godbole, "Operating Systems", Tata McGraw Hill, 3rd edition, 2014
[R3]	Chauhan, "Principles of Operating Systems", Oxford Uni. Press, 2014
[R4]	Dhamdhere, "Operating Systems", Tata McGraw Hill, 3rd edition, 2012

FINANCIAL ACCOUNTING
(Open Elective-III)

	L	T/P	C
Paper Code: ETVMS-611	3	0	3
Paper: Financial Accounting			

INSTRUCTIONS TO PAPER SETTERS: **MAXIMUM MARKS: 75**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.

2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be of 12.5 marks.

Objectives & prerequisites: *The primary objective of the course is to familiarize the students with the basic accounting principles and techniques of preparing and presenting the accounts for user of accounting information.*

UNIT-I

Meaning and Scope of Accounting: Objectives and Nature of Accounting, Definition and Functions of Accounting, Book Keeping and Accounting, , Interrelationship of Accounting with other Disciplines, Branches of Accounting, Limitation of Accounting, Accounting Equation.

Accounting Principles and Standards: Accounting Principles, Accounting Concepts and Conventions, Accounting cycle system of accounting Introduction to Accounting Standards Issued by ICAI.

Journalizing Transactions: Journal, Rules of Debit and Credit,

Sub Division of Journal: Cash Journal, Petty Cash Book, Purchase Journal, Purchase Return, Sales Journal, Sales Return Journal, Voucher System.

[T1][No. of Hrs. 11]

UNIT-II

Ledger Posting and Trial Balance: Ledger, Posting, Rules Regarding Posting, Trial Balance. Capital and Revenue: Classification of Income, Classification of Expenditure, Classification of Receipts, Difference between Capital Expenditure & Capitalized, Expenditure.

Inventory Valuation: Meaning of Inventory, Objectives of Inventory Valuation, Inventory Systems, Methods of Valuation of Inventories,

Depreciation Provisions and Reserves: Concept of Deprecation, Causes of Depreciation, Basic Features of Depreciation, Meaning of Depreciation Accounting, Objectives of Providing Depreciation, Fixation of Depreciation Amount, Method of Recording Depreciation, Methods of Providing Depreciation, Depreciation Policy, AS-6 (Revised) Provisions and Reserves, Change of Method of Depreciation (by both Current and Retrospective Effect).

[T2][No. of Hrs. 12]

UNIT-III

Shares and Share Capital: Introduction to Joint Stock Company, Shares, Share Capital, Accounting Entries, Under Subscription, Oversubscription, Calls in Advance, Calls in Arrears, Issue of Share at Premium, Issue of Share at Discount, Forfeiture of Shares, Surrender of Shares, Issue of Two Classes of Shares, Right Shares, Re-issue of Shares.

Debentures: Classification of Debentures, Issue of Debentures, Different Terms of Issue of Debentures, Writing off Loss on Issue of Debentures, Accounting Entries, Redemption of Debentures.

[T1][No. of Hrs. 11]

UNIT-IV

Company Final Accounts: Preparation of Final Accounts, Manufacturing Account; Trading Account, Profit and Loss Account; Balance Sheet (with adjustments), Contents of Corporate Annual Reports with Annexures.

[T2][No. of Hrs. 11]

Text Book(s):
[T1]   Tulsian, P.C., (2015), *Financial Accountancy,* Pearson Education.
[T2]   Maheshwari, S.N. and Maheshwari, S. K., (2015), *An Introduction to Accountancy*, Vikas Publishing House.

Reference Book(s):
[R1]   Bhattacharyya, Ashish K., (2015), *Essentials of Financial Accounting*, Prentice Hall of India.
[R2]   Rajasekran, (2015), *Financial Accounting*, Pearson Education.
[R3]   Bhattacharya, S.K. and Dearden, J., (2015), *Accounting for Manager – Text and Cases*, Vikas Publishing House.
[R4]   Glautier, M.W.E. and Underdown, B., (2015), *Accounting Theory and Practice*, Pearson Education.

Scheme and Syllabi for B. Voc. (Software Development)(2nd year) w. e. f. batch 2016-17, approved in the BOS of USET/USICT held on 19th July, 2016 & AC Sub Committee Meeting of USET/USICT held on 27th July, 2016.

ORGANIZATIONAL BEHAVIOR
(Open Elective-III)

		L	T/P	C
Paper Code: ETVMS-613		3	0	3
Paper: Organizational Behavior				

INSTRUCTIONS TO PAPER SETTERS: **MAXIMUM MARKS: 75**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be of 12.5 marks.

Objective: The aim of this paper is to provide managerial skills in the students.

UNIT-I
Introduction: Concept and nature of Organizational Behaviour; Contributing disciplines to the field of O.B.; O.B. Models; Need to understand human behaviour; Challenges and Opportunities, Management functions, Tasks and responsibilities of a professional manager; Managerial skills.

[T1, T2][No. of Hrs. 11]

UNIT-II
Individual & Interpersonal Behaviour: Biographical Characteristics; Ability; Values; Attitudes-Formation, Theories, Organization related attitude, Relationship between attitude and behaviour; Personality – determinants and traits; Emotions; Learning-Theories and reinforcement schedules, Perception –Process and errors.

[T1, T2][No. of Hrs. 11]

UNIT-III
Organization Structure and Process: Organizational climate and culture, Organizational Structure and Design, Managerial Communication, Motivation, Stress and its management, Decision Making: Organizational Context of Decisions, Decision Making Models; Problem Solving.

[T1, T2][No. of Hrs. 11]

UNIT-IV
Interactive Aspects of Organizational Behaviour: Interpersonal Behaviour: Johari Window; Transactional Analysis – ego states, types of transactions, life positions, applications of T.A, Group Dynamics; Management of Organizational Conflicts; Leadership Styles.

[T1, T2][No. of Hrs. 12]

Text Book(s):
[T1]   Luthans Fred., "Organizational Behaviour", McGraw Hill, 2010, 12th ed.
[T2]   Robbins & Judge (15th ed.), "Essentials of Organizational Behaviour", Pearson 2012.

References Book(s):
[R1]   Stoner, R. James A.F., Edward Freeman Daniel R Gilbert Jr., Management 6TH Ed, PHI
[R2]   George, J. M. & Jones, G.R. (2009). Understanding and Managing Organizational Behaviour, 5th Edition, Pearson Education.
[R3]   Green Berg, J. and Baron, R.A. (2008), Behaviour in Organization. Prentice Hall of India.
[R4]   Mcshane, S.L., Von Glinow, M.A., Sharma, R.R. (2006) Organizational Behaviour. Tata McGrawHill

OPERATIONS RESEARCH
(Open Elective-III)

Paper Code: ETVMS-615   **L**   **T/P**   **C**
Paper: Operations Research   **3**   **0**   **3**

INSTRUCTIONS TO PAPER SETTERS: **MAXIMUM MARKS: 75**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be of 12.5 marks.

Objective: The objective of the paper is to acquaint the student with mathematical techniques being adopted in industry which help managers in decision taking.

UNIT-I
Linear Programming: Formulation of LP Problem. Graphical method, Simplex method for maximization and minimization LP Problems. Duality in Simplex Problems,
Queuing Theory: Introduction to probability concept for queuing problems. Basic structure, Terminology, Classification, Birth and Death Process. Queuing Models.

[T1][No. of Hrs. 11]

UNIT-II
Transportation Models: MODI method for optimality check, North West Corner Method, Least-cost Method and Vogel's Approximation Method (VAM) for solving balanced and unbalanced transportation problems. Problems of degeneracy and maximization.
Assignment Models: Assignment model for maximization & minimization problems. Travelling Salesman Problems, Industrial Problems.

[T2][No. of Hrs. 11]

UNIT-III
Sequencing Theory: Processing of n-jobs through m-machines with each job having same processing order. Processing of two jobs through m-machines with each job having different processing order.
Decision Theory: Decision making under uncertainty and under risk, Multistage decision making, Multi criteria decision making.

[T1][No. of Hrs. 11]

UNIT-IV
Network Models: Introduction to PERT and CPM. Fundamental concept of Network models and construction of network diagrams. Activity time estimates. Critical path and project time duration. Probability of completing the project on or before specified time. Concept of Float and slack.
Game Theory: Two person zero-sum games. Minimax and Maximin principle. Arithmetic, Algebraic, Matrix Algebra method. Solution by Dominance, Subgame, Graphical method, Linear programming method.

[T2][No. of Hrs. 12]

Text Book(s):
[T1] Hira and Gupta, "Operation Research" S. Chand Publications
[T2] H.A. Taha, "Operations Research", Prentice-Hall India, 6th Edition, 2004.

Reference Book(s):
[R1] S.Kalavathy, "Operations Research", Vikas Publication, 4th Edition, 2013.
[R2] N.D. Vohra, "Operations Research", Tata McGraw Hill, 2004.
[R3] Richard Bronson, Govindasami Naadimuthu, "Operations Research", Tata McGraw Hill, 2004
[R4] A.P. Verma, "Operations Research", S.K. Kataria & Sons, 2004.
[R5] J.K. Sharma, "Operation Research", Macmillan India Ltd. 2005.

INDUSTRIAL MANAGEMENT
(Open Elective-III)

Paper Code: ETVMS-617	**L**	**T/P**	**C**
Paper: Industrial Management	**3**	**0**	**3**

INSTRUCTIONS TO PAPER SETTERS: **MAXIMUM MARKS: 75**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.

2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be of 12.5 marks.

Objective: The course provides a broad introduction to some aspects of business management and running of business organization.

UNIT-I
Industrial relations- Definition and main aspects. Industrial disputes and strikes. Collective bargaining.
Labour Legislation- Labour management cooperation/worker's participation in management. Factory legislation. International Labour Organization.
[T1, T2][No. of Hrs. 11]

UNIT-II
Trade Unionism- Definition, Origin, Objectives of Trade Unions. Methods of Trade unions. Size and finance of Indian Trade unions-size, frequency distribution, factors responsible for the small size. Finance-sources of income, ways of improving finance.
[T1, T2][No. of Hrs. 11]

UNIT-III
Work Study-Method study and time study. Foundations of work study. Main components of method study. Time study standards. Involvement of worker's unions. Work Sampling. Application of work study to office work.
[T1, T2][No. of Hrs. 11]

UNIT-IV
Quality Management- What is Quality? Control Charts. Quality is everybody's job. Taguchi Philosophy. Service Quality. What is Total Quality Management (TQM)? Roadmap for TQM. Criticism of TQM. Six Sigma.
[T1, T2][No. of Hrs. 12]

Text Book(s):
[T1]   Sinha, P.R.N., Sinha I.B. and Shekhar S.M.(2013), Industrial Relations, Trade Unions and Labour Legislation. Pearson Education
[T2]   Chary, S.N. (2012), Production and Operations Management. Tata McGraw Hill Education.

Reference Books:
[R1]   Srivastava, S.C. (2012), Industrial Relations and Labour Laws, Vikas Publishing
[R2]   Shankar R (2012), Industrial Engineering and Management. Galgotia Publications
[R3]   Telsang, M. (2006), Industrial Engineering and Production Management. S.Chand
[R4]   Thukaram, Rao (2004), M.E. Industrial Management. Himalaya Publishing House.

Scheme and Syllabi for B. Voc. (Software Development)(2nd year) w. e. f. batch 2016-17, approved in the BOS of USET/USICT held on 19th July, 2016 & AC Sub Committee Meeting of USET/USICT held on 27th July, 2016.

MANAGERIAL ECONOMICS
(Open Elective-III)

Paper Code: ETVMS-619
Paper: Managerial Economics

	L	T/P	C
	3	0	3

INSTRUCTIONS TO PAPER SETTERS: **MAXIMUM MARKS: 75**
1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be of 12.5 marks.

Objectives: The objective of this subject is to give understanding of the basic concepts and issues in economics and their application in business decisions.

UNIT-I
Introduction: Nature, Scope and Significance of Managerial Economics, its Relationship with other Disciplines, Role of Managerial Economics in Decision Making; Opportunity cost Principle, Production Possibility Curve, Incremental Concept, Cardinal and Ordinal Approaches to Consumer Behaviour: Equimarginal principle, Law of Diminishing Marginal Utility, Indifference curve Analysis.
[T1][No. of Hrs. 11]

UNIT-II
Demand Analysis and Theory of Production: Demand Function, Determinants of Demand, Elasticity of Demand, Demand Estimation and Forecasting, Applications of Demand Analysis in Managerial Decision Making; Theory of Production: Production Function, Short Run and Long Run Production Analysis.
[T2][No. of Hrs. 11]

UNIT-III
Theory of Cost and Market Structures: Traditional and Modern Theory of Cost in Short and Long Runs, Economies of Scale and Economies of Scope; Market Structures: Price-Output decisions under Perfect Competition, Monopoly, Monopolistic Competition.
[T1][No. of Hrs. 11]

UNIT-IV
Introduction to Macro Economics: Nature and Importance; Economic Growth and Development, Methods of Measurement of National Income; Inflation: meaning, Theories, and Control measures.
[T2][No. of Hrs. 12]

Text Book(s):
[T1]   Samuelson, Paul and Nordhaus, William, (2016), *Economics*, McGraw Hill Education.
[T2]   Dwivedi, D.N., (2015), *Managerial Economics*, Vikas Publishing House.

Reference Book(s):
[R1]   Salvatore, Dominick, (2015), *Managerial Economics in a Global Economy*, Oxford University Press.
[R2]   Kreps, David, (2015), *MicroEconomics for Managers,* Viva Books Pvt. Ltd.
[R3]   Peterson, Lewis and Jain, (2016), *Managerial Economics*, Pearson Education.
[R4]   Colander, David, C., (2015), *Economics*, McGraw Hill Education.

Scheme and Syllabi for B. Voc. (Software Development)(2nd year) w. e. f. batch 2016-17, approved in the BOS of USET/USICT held on 19th July, 2016 & AC Sub Committee Meeting of USET/USICT held on 27th July, 2016.

CORE JAVA PROGRAMMING LAB

Paper Code: ETVSD-651   **L   T/P   C**
Paper: Core Java Programming Lab   **0   4   4**

Note:-   *The required list of Experiments is provided as under. The example cited here are purely indicative and not exhaustive. Attempt shall be made to perform all experiments. However, at least 8 experiments should be done in the semester. More experiments may be designed by the respective institutes as per their choice.*

List of Experiments:

1. Program to Create classes and use of different types of functions.
2. Programming using constructor.
3. Program to show different access level in java.
4. Programming using interfaces.
5. Programming creating packages and their use.
6. Programs using function overloading.
7. Programs using inheritance.
8. Programs using IO streams.
9. Programs using exception handling mechanism.
10. Program to illustrate functioning of multiple thread**s.**
11. Programs to create and use the Applet.
12. Programs on swing to create Forms or GUI.

NETWORKING FUNDAMENTALS LAB

Paper Code: ETVSD-653   **L**   **T/P**   **C**
Paper: Networking Fundamentals Lab   **0**   **4**   **4**

Note:- *The required list of Experiments is provided as under. The example cited here are purely indicative and not exhaustive. Attempt shall be made to perform all experiments. However, at least 8 experiments should be done in the semester. More experiments may be designed by the respective institutes as per their choice.*

List of Experiments:

1. Identification of Connectors and Cables:

    a. Connectors: BNC, RJ-45, I/O box

    b. Cables: Co-axial, twisted pair, Optical fibre.

2. Identification of various networks components

    a. NIC (network interface card)

    b. Hub, Switch, Router.

3. Execution of basic networking Commands:

    Netstat, IPConfig, IfConfig, Ping, Arp-a, Nbtstat-a, Netdiag, Nslookup, Traceroute, Pathping

4. Design Ethernet Cables: Cross Cable, Straight Cable, Rollover Cable.

5. Demonstration to connect two computers with/without connecting device.

6. Demonstration of File sharing & Printer sharing.

7. Study of various topologies using topology trainer

8. Detailed study of Network and Internet Settings on PC.

9. Trouble shooting of networks & Installation of network device drivers.

10. Study of Router Configuration.

11. Logging into a router, Editing and Help features and Saving Router configuration.

12. Setting the Hostname, Descriptions, IP Address, and Clock Rate on a Router.

DATABASE MANAGEMENT SKILLS –I LAB

Paper Code: ETVSD-655   **L**   **T/P**   **C**
Paper: Database Management Skills-I Lab   **0**   **4**   **4**

Note:- *The required list of Experiments is provided as under. The example cited here are purely indicative and not exhaustive. Attempt shall be made to perform all experiments. However, at least 8 experiments should be done in the semester. More experiments may be designed by the respective institutes as per their choice.*

List of Experiments:

1. Design a Database and create required tables. For e.g. Bank, College Database

2. Apply the constraints like Primary Key, Foreign key, NOT NULL to the tables.

3. Write a SQL statement for implementing ALTER, DROP

4. Perform the following operation for demonstrating the insertion, updation and deletion

5. Write the query for implementing the following functions: MAX(), MIN(),AVG(),COUNT()

6. Write the queries to implement the joins

7. Write the query to implement the concept of Integrity constraints

8. Delete duplicate row from the table (From a table having no Primary KEY)

9. Display the alternate row from table.

10. Delete alternate row from table.

11. Update multiple rows in using single update statement.

12. Find the third highest paid and third lowest paid salary.

13. Display the ename, which is start with j, k, l or m.

FREE AND OPEN SOURCE SOFTWARE

		L	T/P	C
Paper Code: ETVSD-602		3	0	3
Paper: Free and Open Source Software				

INSTRUCTIONS TO PAPER SETTERS:　　　　　　**MAXIMUM MARKS: 75**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be of 12.5 marks.

Objective: The objective of the paper is to make the students familiar with the Free and Open Sources available. This course focuses on the various common and mostly used free software's and language. This Student must have knowledge of Computers and languages.

By the end of this course the students will be able to: Understand FOSS, Use and operate free operating systems, learn programming in free language Python.

UNIT-I
Introduction: The philosophy of OSS – Advantages of Open Sources – Applications – FOSS – FOSS usage - commercial software vs OSS, free software vs freeware . Open source development models.
History: Free Software Movement, BSD, The Free Software Foundation and the GNU Project, Commercial aspects of Open Source movement. Certification courses issues - global and Indian.
[T1, T2][No. of Hrs. 11]

UNIT-II
Community Building: Importance of Communities in Open Source Movement. JBoss Community. Developing blog, group, forum, social network for social purpose.
[T1, T2, T3][No. of Hrs. 11]

UNIT-III
Open Source Operating Systems: LINUX – Introduction – General Overview – Kernel mode and User mode process. The Shell Basic Commands, Shell Programming:-Shell Variables, Branching Control, Structures, Loop-Control Structure, Continue and break Statements, Sleep Command, Debugging Script.
Linux Advanced Concepts: Scheduling, Time Accounting – Personalities – Cloning and Backup your Linux System – Linux Signals – Development with Linux.
Linux Networking: Configuration Files – Red Hat Linux network GUI configuration tools– Assigning an IP address – Subnets – Route – Tunnelling – Useful Linux network commands – Enable Forwarding
[T1, T2, T3][No. of Hrs. 11]

UNIT-IV
Basic features of Python: Overview – Installing – Running in windows/Linux
Variables and Strings: Data types - Operators – Decision Control - Conditional Statements - Loops – Example Programs
Sequences: Lists: Introduction –Fixed size lists and arrays – Lists and Loops – Assignment and references - Identity and equality – Sorted lists – Tuples: Tuples and string formatting – String functions - Sets: Unordered Collections – Simple programs Dictionaries– File Handling -Exception – Handling exception
Dictionaries: Introduction – Combining two dictionaries with UPDATE – Making copies – Persistent variables – Internal Dictionaries
Functions and Files: Functions - File Handling – Exception – Handling Exception
[T1, T2, T3][No. of Hrs.12]

Text/Reference Books:
[T1]　　The Linux Kernel Book Rem Card,Eric Dumas and Frank Mevel Wiley Publications sons, 2003
[T2]　　Neil Matthew and Richard Stones "Beginning Linux Programming, 4th Ed",Jhon Wiley & Sons.
[T3]　　Mike Mcgrath "Python in Easy Steps: Makes Programming Fun! 1st Edition", TMH

Scheme and Syllabi for B. Voc. (Software Development)(2nd year) w. e. f. batch 2016-17, approved in the BOS of USET/USICT held on 19th July, 2016 & AC Sub Committee Meeting of USET/USICT held on 27th July, 2016.

WEB APPLICATION AND DEVELOPMENT

Paper Code: ETVSD-604   **L   T   C**
Paper: Web Application and Development   **3   0   3**

INSTRUCTIONS TO PAPER SETTERS: **MAXIMUM MARKS: 75**
1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be of 12.5marks.

Objectives & Pre-requisites: Knowledge of basics of programming- constructs and principles is a prerequisite to this course. Programming through Java script is taught in this course to enable secure Web development.

UNIT-I
Introduction to HTML & CSS:
HTML: HTML Basics, HTML Responsive, HTML Entities, HTML Forms, HTML5 Canvas, HTML5 SVG, HTML5 Data Storage, HTML5 Audio and Video
CSS: CSS Introduction, CSS Syntax, CSS Text, CSS Backgrounds, CSS Fonts, CSS Links, CSS Lists, CSS Tables, CSS Box Model, CSS Margins, Dimensions, Display, CSS Navigation Bar, CSS Attribute Selectors, CSS Rounded Corners, CSS Border Images, CSS Backgrounds, CSS Colors, CSS Animations
                                                                        [T1][No. of Hrs. 11]

UNIT-II
Introduction to JavaScript and JQuery
Introduction to JavaScript: JavaScript Introduction, JavaScript Output, JavaScript Variables, JavaScript Operators, JavaScript Arithmetic, JavaScript DataTypes, JavaScript Assignment, JavaScript Functions, JavaScript Objects, JavaScript Scope, JavaScript Events, JavaScript Strings and String Methods, JavaScript Numbers and Number Methods, JavaScript Math, JavaScript Dates: Formats and Methods, JavaScript Booleans , JavaScript Comparisons, JavaScript Conditions, JavaScript Switch, JavaScript Loops, JavaScript Break, JavaScript Type, JavaScript Forms (API and Validation), JavaScript Objects, JavaScript Functions, JavaScript DOM, JavaScript Browser BOM, JavaScript Frameworks
Introduction to JQuery: JQuery Introduction, JQuery Syntax, JQuery Selectors, JQuery Events, JQuery Effects- JQuery Hide/Show, JQuery Fade, JQuery Slide(), JQuery Animate, JQuery Stop(), JQuery Callback, JQuery Chaining, JQuery AJAX- JQuery AJAX Introduction, JQuery Load, JQuery Get/Post, JQuery HTML, JQuery Get, JQuery Set, JQuery Add, JQuery Remove, JQuery CSS Classes, JQuery css().
                                                                        [T1][No. of Hrs. 12]

UNIT-III
Bootstrap and PHP: Introduction to Bootstrap: Bootstrap Introduction, Bootstrap Components, Bootstrap Plugins, Bootstrap Grids, Bootstrap JS
PHP: PHP Introduction-Installing PHP, PHP Syntax, PHP Variables, PHP Data Types, PHP Strings, PHP Constants, PHP Operators, PHP Programming Loops, PHP Functions, PHP Arrays, PHP Superglobals, PHP Forms and XML- PHP Form Handling, PHP Form Validation (Server side), PHP Required, PHP XML Parsers, PHP SimpleXML Parser, PHP SimpleXML Get, PHP XML DOM, PHP XML Expat
PHP with Mysql: PHP Mysql Database, PHP Connecting to Database, PHP Creating Records, PHP Selecting Records, PHP Deleting Records, PHP Updating Records, PHP Limit Data, PHP Insert Multiple.
AJAX with PHP: AJAX Introduction, AJAX PHP, AJAX Database, AJAX XML, AJAX Live Search
                                                                        [T1][No. of Hrs. 11]

UNIT-IV
Introduction of advance concepts
Brief Introduction of concepts: Async and Parallel execution in JavaScript, JavaScript Design Pattern, SPA or Web App's, Data binding, MVC or MVVM Frameworks, Introduction- Backbone and angular Js, GitHub, Node JS, Express & Meteor framework.
                                                                        [T1][No. of Hrs. 11]

Text Book(s):
[T1]   Wrox Professional ASP.NET using C Sharp

Scheme and Syllabi for B. Voc. (Software Development)(2nd year) w. e. f. batch 2016-17, approved in the BOS of USET/USICT held on 19th July, 2016 & AC Sub Committee Meeting of USET/USICT held on 27th July, 2016.

SOFTWARE ENGINEERING

Paper Code: ETVSD-606   L   T   C
Paper: Software Engineering   3   0   3

INSTRUCTIONS TO PAPER SETTERS: **MAXIMUM MARKS: 75**
1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be of 12.5 marks.

Objectives and Pre-requisites:.*Basic knowledge of computer and basics of software is expected from the student.*
Learning Outcomes: *The student will be able to:*
- *Appreciate basic principles of software development life cycle.*
- *Identify the importance of modeling and modeling languages.*
- *Identify different types of devices, media, Internet, TCP/IP suite.*
- *Design and develop correct and robust software products.*

UNIT-I
Introduction: Software Processes, Software life cycle models: Waterfall, Prototype, Evolutionary, and Spiral models, Agile Software Process. Overview of Quality Standards like ISO 9001, SEI-CMM.
Software Metrics: Size Metrics like LOC, Token Count, Function Count, Design Metrics, Data Structure Metrics, Information Flow Metrics.
                                                                                              [T1, T2][No. of Hrs. 10]

UNIT-II
Software Project Planning:
Cost estimation, static, Single and multivariate models, COCOMO model, Putnam Resource Allocation Model.
Software Requirement Analysis and Specifications: Problem Analysis, Software Requirement and Specifications, Behavioural and non-behavioural requirements, SRS & its Characteristics. **Analysis Model:** Entity-Relationship diagrams, Data Flow Diagrams, Data Dictionaries. **System Modelling**: UML Diagram
                                                                                         [T1, T2, T3][No. of Hrs. 11]

UNIT-III
Software Design: Cohesion & Coupling, Classification of Cohesiveness & Coupling, Function Oriented Design, Object Oriented Design, User Interface Design.
Software Reliability: Failure and Faults, Reliability Models: Basic Model, Logarithmic Poisson Model, Calender time Component, Reliability Allocation.
                                                                                         [T1, T2, T3][No. of Hrs. 12]

UNIT-IV
Software Testing: Software process, Functional testing: Boundary value analysis, Equivalence class testing, Decision table testing, Structural testing: Path testing, Data flow testing, Unit testing, integration and system testing, Debugging, Testing Tools & Standards.
Software Maintenance: Management of Maintenance, Maintenance Process, Maintenance Models, Reverse Engineering, Software Configuration Management, Documentation.
                                                                                         [T1, T2, T3][No. of Hrs. 12]

Text Book(s):
[T1]   R. S. Pressman, "Software Engineering – A practitioner's approach", 3rd ed., McGraw Hill Int. Ed., 1992.
[T2]   K.K. Aggarwal & Yogesh Singh, "Software Engineering", New Age International, 2001
[T3]   I. Sommerville, "Software Engineering", Addison Wesley, 1999.

Reference Book(s):
[R1]   R. Fairley, "Software Engineering Concepts", Tata McGraw Hill, 1997.
[R2]   P. Jalote, "An Integrated approach to Software Engineering", Narosa, 1991.
[R3]   Stephen R. Schach, "Classical & Object Oriented Software Engineering", IRWIN, 1996.
[R4]   James Peter, W Pedrycz, "Software Engineering", John Wiley & Sons

Scheme and Syllabi for B. Voc. (Software Development)(2nd year) w. e. f. batch 2016-17, approved in the BOS of USET/USICT held on 19th July, 2016 & AC Sub Committee Meeting of USET/USICT held on 27th July, 2016.

DATABASE MANAGEMENT SKILLS –II
(Core Elective-I)

Paper Code: ETVSD-608		**L**	**T/P**	**C**
Paper: Database Management Skills-II		**3**	**0**	**3**

INSTRUCTIONS TO PAPER SETTERS: **MAXIMUM MARKS: 75**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.

2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be of 12.5 marks.

Objective: *The objective of the paper is to make the students familiar with the Advance concepts of Databases, using SQL. This course focuses on the Advance DBMS concepts, Transaction management, Cursor, Triggers and PL/SQL languages as well. This Student must have knowledge of Basic databases. By the end of this course the students will be able to: Write simple and advanced PL/SQL code blocks, use advanced features such as cursors and bulk fetches, and create triggers.*

UNIT-I
Transaction Processing Concepts: Transaction System, Testing of Serilizability, Serializability of schedules, conflict & view serializable schedule, recoverability, Recovery from transaction failures. Log based recovery. Checkpoints deadlock handling.
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.
                                                                        [T1, T2][No. of Hrs. 11]

UNIT-II
Study of RDBMS through PostgreSql/ MySQL: Architecture, physical files, memory structures, background process. Concept of table spaces, segments, extents and block. Dedicated server, multi threaded server. Distributed database, database links, and snapshot. Data dictionary. Security, role management, SQL queries, Data extraction from single, multiple tables equi-join, non equi-join, self-join, outer join. Usage of like, any, all, exists, in Special operators.
                                                                        [T1, T2, T3][No. of Hrs. 10]

UNIT-III
PL/SQL programming language: Basics of PL / SQL, Declare, begin statements, Variables, Data types. Control Structures: Conditional, Iterative, Sequential.
Concepts of exception handling: Predefined Exceptions, User defined exceptions.
Cursors: Static (Implicit & Explicit), Dynamic, nested and parameterized cursors.
Procedure & Functions: User defined functions their limitations, Stored procedures, in, out, in out type parameters, usage of parameters in procedures. Fundamentals of Database Triggers: mutating errors, instead of triggers, Creating Triggers,
Types of Triggers: Before, after for each row, for each statement.
                                                                        [T1, T2, T3][No. of Hrs. 14]

UNIT IV
Emerging Database Management System Technologies: Basics of Object Oriented Deductive, Spatial, Temporal and constraint database management systems. Basics of New database applications and environments: e.g. Data Warehousing; Multimedia.
                                                                        [T1, T2, T3][No. of Hrs. 10]

Text Book(s):
[T1]   Date C J, "An Introduction to Database System", Pearson Educations
[T2]   Korth, Silbertz,Sudarshan, "Fundamental of Database System", McGraw Hill
[T3]   Rob, "Data Base System: Design Implementation & Management", Cengage Learning
Reference Book(s):
[R1]   Elmasri, Navathe, "Fundamentals of Database Systems", Pearson Educations
[R2]   Atul Kahate, "Introduction to Database Manage ment System", Pearson Educations
[R3]   Singh, S. K. "Database Systems Concepts, design and Applications", Pearson Education.
[R4]   Bayross, Ivan "Sql/ Pl/SQL", BPB
[R5]   Paneerselvam, "DataBase Management System", PHI L earning

Scheme and Syllabi for B. Voc. (Software Development)(2nd year) w. e. f. batch 2016-17, approved in the BOS of USET/USICT held on 19th July, 2016 & AC Sub Committee Meeting of USET/USICT held on 27th July, 2016.

[R6]   dev.mysql.com
[R7]   www.postgressql.org

ADVANCED JAVA PROGRAMMING
(Core Elective-I)

Paper Code: ETVSD-610	**L**	**T/P**	**C**
Paper: Advance Java Programming	**3**	**0**	**3**

Objectives & Pre-requisites: *Knowledge of basics of java programming- constructs and principles is a prerequisite to this course. Programming through Java is taught in this course to enable web related software development an to access the database.*
Learning Outcomes: *The student after completing the course will be able to:*
* *Use Java programming interface to access database.*
* *Create website using server and client programming.*

UNIT- I
Introduction to JDBC: Overview of Database Driver Architecture, JDBC Driver Types, Introduction to JDBC Standard Extension API (javax.sql), Connecting to the Database, Creating an SQL Query, Getting the Results, Updating Database Data, Error Checking and the SQL Exception Class. Introduction to J2EE, J2EE Overview, J2EE Architecture, J2EE APIs, J2EE Containers.
[T1, T2][No. of Hrs. 11]

UNIT- II
Web Application Basics, Architecture and challenges of Web Application, Introduction to servlet, Servlet life cycle, Developing and Deploying Servlets, Exploring Deployment Descriptor, Handling Request and Response, Initializing a Servlet, Accessing Database, Servelet chaining, Session Tracking & Management, Dealing with cookies, Transferring Request, Sharing information using scope object, Controlling concurrent access, User Authentication, Servlet Listeners, Introduction to Java Swing Programming, Layout Manager, GUI Builder.
[T1, T2][No of Hrs 11]

UNIT- III
Java Server Pages Technology (JSP): Basic JSP Architecture, Life Cycle of JSP, JSP Tags and Expressions, JSP with Database, JSP Implicit Objects, Tag Libraries, JSP Expression Language (EL), Exception Handling, Session Management, Directives.
[T1, T2][No. of Hrs. 11]

UNIT- IV
Enterprise JAVA Beans (EJB): Enterprise Bean overview, types of enterprise beans, advantages of enterprise beans, The Life Cycles of Enterprise Beans, Working with Session Beans, Stateful vs. Stateless Session Beans, Working with Entity Beans, Message Driven Beans, JSP with JAVA beans.
JNDI (Java Naming and Directory Interface): JNDI overview, JNDI API, Using JNDI in J2EE applications.
[T1, T2][No. of Hrs. 12]

Text Book(s):
[T1]   E. Balagurusamy, "Programming with Java", 4th Edition, Tata McGraw Hill.
[T2]   Herbert Schildt, "Java: The Complete Reference", ninth Edition, Oracle Press.

NETWORK SECURITY
(Core Elective-I)

Paper Code: ETVSD-612   **L**   **T/P**   **C**
Paper: Network Security   3   0   3

INSTRUCTIONS TO PAPER SETTERS: **MAXIMUM MARKS: 75**
1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be of 12.5 marks.

Objective: *The objective of the paper is to make the students familiar with the basics of security concepts aspects, of networking. This course focuses on the networking security concepts, cryptography, algorithm, IDS. This is the introductory course on Security. So it requires Computer Network knowledge.*

UNIT-I
Introduction to Network Security, Computer Security and Cyber Security. Security Terminologies and Principle, Security Threats, Types of attacks (Operating System, application level, Shrink Wrap code, Misconfiguration attacks etc.). Introduction to Intrusion, Terminologies, Intrusion Detection System (IDS), Types of Intrusion Detection Systems.

[T1, T2][No. of Hrs. 11]

UNIT-II
Cryptography, Classical Cryptographic Techniques, Encryption, Decryption, Code Breaking: Methodologies, Cryptanalysis, Cryptography Attacks, Brute-Force Attack, Use of Cryptography. Public key cryptography, Principles of Public key Cryptosystems, Cryptographic Algorithms RSA, Data Encryption Standard (DES), RC4, RC5, RC6, Blowfish, Key Management, Diffie- Hellman key exchange, elliptic curve cryptography.

[T1, T2][No. of Hrs. 11]

UNIT-III
Hash Functions, One-way Hash Functions, SHA (Secure Hash Algorithm), Authentication Requirements, Authentication Functions, Kerberos. Message Authentication codes, Message Digest Functions, MD5, SSL (Secure Sockets Layer), SSH (Secure Shell), Algorithms and Security.
Digital Signature: Analysis, Components, Method, Applications, Standard, Algorithm: Signature Generation/Verification, Digital Certificates.

[T1, T2][No. of Hrs. 11]

UNIT IV
Trojans and Backdoors: Overt and Covert Channels, Working, Types (Remote Access Trojans, Data-Sending Trojans, Destructive Trojans, Trojans, Proxy Trojans, FTP Trojans, Security Software Disablers).
Viruses and Worms: Characteristics, Working, Infection Phase, Attack Phase. Sniffers: Definition, spoofing, Sniffing, Vulnerable Protocols, Types.
Phishing: Methods, Process, Attacks Types (Man-in-the-Middle Attacks, URL Obfuscation Attacks, Hidden Attacks, Client-side Vulnerabilities, Deceptive Phishing, Malware-Based Phishing, DNS Based Phishing, Content-Injection Phishing, Search Engine Phishing).

[T1, T2][No. of Hrs. 12]

Text Books:
[T1]   William Stallings, "Cryptography and Network Security: Principles and Practice" Pearson
[T2]   Atul Kahate,"Cryptography and Network Security" Mc Graw Hill

Reference Books:
[R1]   Charlie Kaufman, Radia Perlman, Mike Speciner, Michael Speciner, "Network Security Private Communication in a Public World" TMH
[R2]   Fourozon, "Cryptography & Network Security" TMH
[R3]   Joseph Migga Kizza, Computer Network Security, Springer International Edition
[R4]   Atul Kahate,"Cryptography and Network Security" Mc Graw Hill
[R5]   Carl Endorf, Eugene Schultz, Jim Mell **"Intrusion Detection & Prevention"** TMH
[R6]   Neal, Krawetz, Introduction to Network Security, Cengage Learning

Scheme and Syllabi for B. Voc. (Software Development)(2nd year) w. e. f. batch 2016-17, approved in the BOS of USET/USICT held on 19th July, 2016 & AC Sub Committee Meeting of USET/USICT held on 27th July, 2016.

GLOBAL WARMING & CLIMATE CHANGE
(Open Elective-IV)

		L	T/P	C
Paper Code: ETVCT-614		**3**	**0**	**3**
Paper: Global Warming & Climate Change				

INSTRUCTIONS TO PAPER SETTERS: **MAXIMUM MARKS: 75**
1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 12.5 marks.

Objectives & Pre-requisites: *To study concepts of global warming & climatic change. To study factors responsible for global warming, impact of climatic change, national and international policies. To study and understand Kyoto mechanism. Basic knowledge of environmental studies subject is a pre requisite.*

Learning outcomes: Understanding of philosophy of global warming and climatic change. Able to realize the factors responsible for global warming and corresponding climatic change. Understanding the importance and nuances of Kyoto mechanism.

UNIT-I
The Climate system: Sun, Atmosphere, Ocean, Ice and energy balance of the earth, history of climate change, human-caused climate change, impacts of climate change on human well-being and the natural world.
[T1, T2][No. of Hrs. 11]

UNIT-II
Key concepts of global warming, climate change, greenhouse gas effect, Interrelationship between these three phenomenon, Green-House Effect as a Natural Phenomenon and increase in Greenhouse gas effect because of anthropogenic activities, Green House Gases (GHGs) and their Emission Sources, Global Warming Potential (GWP) of GHGs, Past Present and Future trends of global warming.
[T1, T2][No. of Hrs. 11]

UNIT-III
Impacts of climate change Extreme weather events, Temperature Rise, Sea Level rise, Coastal Erosion and landslides; future impacts of global warming, global warming and the hydrological cycle, climate change impact on ecosystems and agriculture.
[T1, T2, T3][No. of Hrs. 11]

UNIT-IV
Possible remedies of global warming- various mitigation and adaptation measures taken/ proposed to combat global warming; National and International policies to combat global warming and climate change-UNFCC-Kyoto Protocol, Paris agreement its role in Climate Change; IPCC- its role in global climate protection Role of countries and citizens in containing Global Warming.
[T1, T2, T3][No. of Hrs. 12]

Text Books
[T1]   Current trends in Global Environment by A.L. Bhatia (2005) Energy Sources
[T2]   Global Warming – A Very Short Introduction, Mark Maslin, oxford.
[T3]   UNFCC & IPCC reports (www.unfccc.int & http://www.ipcc.ch/)

Reference Books
[R1]   Global Warming The Complete Briefing - John T Houghton Cambridge press
[R2]   Climate Change: A Multidisciplinary Approach, by William James Burroughs, Cambridge press
[R3]   Contemporary climatology-Robinson, Taylor and Francis group

NOTE: Seminars/ discussions should be carried out on issues pertaining to global warming and climate change among the students.

Scheme and Syllabi for B. Voc. (Software Development)(2nd year) w. e. f. batch 2016-17, approved in the BOS of USET/USICT held on 19th July, 2016 & AC Sub Committee Meeting of USET/USICT held on 27th July, 2016.

ENTREPRENEURSHIP DEVELOPMENT AND PLANNING
(Open Elective-IV)

		L	T/P	C
Paper Code: ETVMS-616		3	0	3
Paper: Entrepreneurship Development and Planning				

INSTRUCTIONS TO PAPER SETTERS: **MAXIMUM MARKS: 75**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.

2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be of 12.5 marks.

Objectives: *The Course Aims at Instituting Entrepreneurship Skills in the Students by giving an overview of the process of entrepreneurship. The Course aims at inculcating entrepreneurial spirit among the students.*

UNIT-I
Foundations of Entrepreneurship: What is an Entrepreneur? The benefits of Entrepreneurship. The power of small business. Class exercise- case discussion on entrepreneurs like - Dhirubhai Ambani, Karsenbhai Patel, Ramesh Babu, Kailash Katkar, Patricia Narayan etc.
[T1, T2][No. of Hrs.11]

UNIT-II
Launching Entrepreneurial Ventures: Creativity and innovation. Methods to initiate ventures. Legal challenges in Entrepreneurship ventures. The search for Entrepreneurial capital. Class exercise- Survey your locality and come up with at least one entrepreneurial venture. Discuss in class about ways to enhance the business in most innovative manner.
[T1, T2][No. of Hrs.11]

UNIT-III
Formulation of the Entrepreneurial Plan: The assessment functions with opportunities. The marketing Aspects of new ventures. Business plan preparation for new ventures. Class Exercise- Building your own Business Plan.
[T1, T2][No. of Hrs.11]

UNIT-IV
Institutions Supporting Small Business Enterprises: Central level institutions. State level institutions. Other agencies. Industry Associations. Class exercise- discussions on current government schemes supporting entrepreneurship and finding out which scheme will most suit the business plan devised by the student.
[T1, T2][No. of Hrs.12]

Text Books
[T1]   Kuratko, D.F. & Rao T.V. (2012). Entrepreneurship: A South Asian Perspective. Cengage
[T2]   Charantimath, P. (2009). Entrepreneurship Development: Small Business Enterprises. Pearson

References Books
[R1]   Naggendra S.and Manjunath V.S. (2009). Entrepreneurship and Management. Pearson

Scheme and Syllabi for B. Voc. (Software Development)(2nd year) w. e. f. batch 2016-17, approved in the BOS of USET/USICT held on 19th July, 2016 & AC Sub Committee Meeting of USET/USICT held on 27th July, 2016.

BUSINESS INFORMATICS
(Open Elective-IV)

		L	T/P	C
Paper Code: ETVMS-618		3	0	3
Paper: Business Informatics				

INSTRUCTIONS TO PAPER SETTERS: **MAXIMUM MARKS: 75**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be of 12.5 marks.

Objective and pre-requisite: The objective of this paper is to provide understanding of business processes and managing these processes through improved information management and better use of business intelligence systems

Learning Outcomes: After this course the student is expected to understand how the information in the organizations can be handled effectively using various information types of information systems

UNIT-I
Foundations of Information Systems in Business: Data, Information and Knowledge, Information system and its components, Uses of IS in Business, Types of Information systems, Using Information Systems for competitive advantage, Porter's competitive forces model

[T1, T2][No. of Hrs. 09]

UNIT-II
Functional Business Systems: Overview of system analysis and design; Role of Information systems in marketing, Human Resource Management, Accounting and Finance, manufacturing.

[T1, T2][No. of Hrs. 09]

UNIT-III
Enterprise Business Systems: Customer Relationship Management -Benefits and Challenges of CRM, Trends in CRM; Supply Chain Management-Benefits and Challenges of SCM, Trends in SCM; Enterprise Resource Planning-Benefits and Challenges of ERP, Causes of ERP failures, Trends in ERP;e-Commerce-Categories of e-commerce, Essential e-Commerce processes, Electronic payment processes

[T1, T2][No. of Hrs. 12]

UNIT-IV
Decision Support in Business: Management Information Systems, Decision Support Systems, Online Analytical Processing, Executive Information Systems, Knowledge Management Systems, Expert Systems

[T1, T2][No. of Hrs. 12]

Text Book(s):
[T1]   James A O'Brien, George M Marakas and Ramesh Behl (2013). Management Information Systems, Tenth Edition, Tata McGraw Hill Education, New Delhi.
[T2]   Ken Laudon and Jane Laudon (2014). Management Information Systems, Twelft Edition, Pearson, New Delhi.

Reference Book(s):
[R1]   D.P.Goyal (2014). Management Information Systems-Managerial Perspectives, Fourth Edition, Vikas Publishing House, New Delhi.
[R2]   Waman S Jawadekar(2009). Management Information Systems. Fourth Edition, Tata McGraw Hill, New Delhi

FREE AND OPEN SOURCE SOFTWARE LAB

Paper Code: ETVSD-652   **L**   **T/P**   **C**
Paper: Free and Open Source Software Lab   **0**   **4**   **4**

Note:- *The required list of Experiments is provided as under. The example cited here are purely indicative and not exhaustive. Attempt shall be made to perform all experiments. However, at least 8 experiments should be done in the semester. More experiments may be designed by the respective institutes as per their choice.*

List of Experiments:

1. Installation of Linux, and Customization of Linux.

2. To Study basic & User status Unix/Linux Commands.

3. To Study & use commands for performing arithmetic operations with Unix/Linux.

4. Creating a Text file in Linux. Writing and appending in that file.

5. Study & use of the Command for changing file permissions.

6. Execute shell commands through vi editor.

7. To use control statements in shell programming.

8. To assign and use IP addresses in Linux.

9. Installation of python and its related libraries.

10. Write and execute simple program in python

11. Use of loops in python

12. Working with matrix by using file in Python.

WEB APPLICATION AND DEVELOPMENT LAB

		L	T/P	C
Paper Code: ETVSD-654				
Paper: Web Application and Development Lab		0	4	4

Note:- *The required list of Experiments is provided as under. The example cited here are purely indicative and not exhaustive. Attempt shall be made to perform all experiments. However, at least 8 experiments should be done in the semester. More experiments may be designed by the respective institutes as per their choice.*

List of Experiments:

1. Create a simple HTML Form covering major form elements
2. Create a CSS3 based button
3. Use CSS3 to make an image rounded shape
4. Exercises on animations in CSS
5. Use the Bootstrap grids classes to create this webpage with a sidebar and main content:
6. Use the Bootstrap base CSS classes to add a quote, table, and search form to the page
7. Use the Bootstrap alert component to add a danger alert. Use the thumbnails classes to give the images borders.
8. Exercises on Javascript basics
9. Exercises on Javascript functions
10. Exercises on Javascript arrays
11. Exercises on Javascript Strings
12. Exercises on Javascript Basic Validation
13. Exercises on JQuery Core
14. Exercises on JQuery CSS
15. Exercises on JQuery Events
16. Exercises on php
17. Exercise on AJAX with php

1

DATABASE MANAGEMENT SKILLS –II LAB
(Core Elective-I)

Paper Code: ETVSD-658	**L**	**T/P**	**C**
Paper: Database Management Skills-II Lab	**0**	**4**	**4**

Note:- *The required list of Experiments is provided as under. The example cited here are purely indicative and not exhaustive. Attempt shall be made to perform all experiments. However, at least 8 experiments should be done in the semester. More experiments may be designed by the respective institutes as per their choice.*

List of Experiments:

1. Practical on Transaction Control Language

   Transactional Control: Commit, Save point, Rollback,

2. Practical on Data Control Language

   DCL Commands: Grant and Revoke

3. Practical based on Natural Join.

4. Practical based on Outer Join.

5. Practical based on the locks on database

   Row level locks, Table level locks, Shared lock, Exclusive lock

6. Create views and test it on a database.

7. Write and execute basic PL/SQL programs.

8. Implement PL/SQL programmes using control structures

9. Implement PL/SQL programmes using Cursors

10. Implement PL/SQL programmes using exception handling.

11. Implement user defined procedures and functions using PL/SQL blocks

12. Implement triggers.

13. Create a data base trigger, which performs the action of the on delete cascade

14. Write a data base trigger, which acts just like primary key and does not allow duplicate values.

ADVANCE JAVA PROGRAMMING –LAB
(Core Elective-I)

Paper Code: ETVSD-660   **L   T/P   C**
Paper: Advance Java Programming Lab   **0   4   4**

Note:-   *The required list of Experiments is provided as under. The example cited here are purely indicative and not exhaustive. Attempt shall be made to perform all experiments. However, at least 8 experiments should be done in the semester. More experiments may be designed by the respective institutes as per their choice.*

List of Experiments:

1. Program to create calculator in Applet.

2. Program using JDBC to connect to database and querying it.

3. Program to update the database contents.

4. Program to create a Servelet and demonstrate use of httpservletrequest and httpservletresponse.

5. Program to show validation of user using Servlet

6. Program of calling one Servlet by another Servlet

7. Program to show validation of user using JSP.

8. Program to display message on browser using JSP.

9. Program to insert data into table using JSP.

10. Program to implement RMI server.

11. Program to demonstrate use of beans.

12. Program to set scope of beans.

13. Program to use Struts framework.

14. Program to implement application by using Swing.

Scheme and Syllabi for B. Voc. (Software Development)(2nd year) w. e. f. batch 2016-17, approved in the BOS of USET/USICT held on 19th July, 2016 & AC Sub Committee Meeting of USET/USICT held on 27th July, 2016.

NETWORK SECURITY LAB
(Core Elective-I)

		L	T/P	C
Paper Code: ETVSD-662		0	4	4
Paper: Network Security Lab				

Note:- *The required list of Experiments is provided as under. The example cited here are purely indicative and not exhaustive. Attempt shall be made to perform all experiments. However, at least 8 experiments should be done in the semester. More experiments may be designed by the respective institutes as per their choice.*

List of Experiments:

1. Scanning for vulnerabilities using any one of the Open Source Software like Angry IP, HPing2, IPScanner, Global Network Inventory Scanner.

2. NetBIOS Enumeration Using any one Tool like NetView Tool, Nbtstat Enumeration Tool (Open Source).

3. Steganography using any one tool like Merge Streams, Image Hide, Stealth Files, Blindside, STools, Steghide, Steganos, Pretty Good Envelop, Stegdetect,

4. Steganalysis using any of the tool Stego Watch- Stego Detection Tool, StegSpy.

5. How to Detect Trojans by using – Netstat, fPort, TCPView, CurrPorts Tool, Process Viewer.

6. Lan Scanner using look@LAN, wireshark.

7. Understanding DoS Attack Tool (any two)- Jolt2 , Bubonic.c, Land and LaTierra, Targa, Nemesy Blast

8. Understanding of any two tools-Panther2, Crazy Pinger, Some Trouble, UDP Flood, FSMax.