For Batch 2016-17 Onwards
SCHEME OF EXAMINATION

for

BACHELOR OF VOCATION

In

(SOFTWARE DEVELOPMENT)

5th SEMESTER and 6th SEMESTER

Offered by

University School of Information, Communication & Technology

GURU GOBIND SINGH INDRAPRASTHA UNIVERSITY

Guru Gobind Singh Indraprastha University
Dwarka, Delhi – 110078 [INDIA]
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The Scheme and Syllabus for B.Voc (Software Development) (3rd Year) has been approved in 45th BOS Meeting of USICT held on 16th March, 2017 and 43rd Academic Council Meeting held on 25th May, 2017. The Scheme and Syllabus is applicable for the batch admitted in the Academic Session 2016-17 onwards, w.e.f., 1st August, 2018.

NOMENCLATURE OF CODES GIVEN IN THE SCHEME OF B.VOC

1. **ET** stands for Engineering and Technology.
2. **V** stands for Vocation.
3. **MC** stands for Mobile Communication.
4. **SD** stands for Software Development.
5. **AE** stands for Automobile.
6. **CE** stands for Consumer Electronics.
7. **PT** stands for Printing Technology.
8. **CT** stands for Construction Technology.
9. **RA** stands for Refrigeration & Air-Conditioning.
10. **PD** stands for Power Distribution Management.
11. **ID** stands for Interior Design.
12. **AA** stands for Applied Arts.
13. **CS** stands for Computer Science.
14. **MS** stands for Management Studies.
15. **EN** stands for Environmental Engineering
16. **PH** stands for Physics
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 Practicals.
22. **S/D** stands for Drawing/Studio
23. **P/D** stands for Practical/Drawing

BACHELOR OF VOCATION
(SOFTWARE DEVELOPMENT)
FIFTH SEMESTER EXAMINATION
(LEVEL-VII)

Paper Code	Paper ID	Paper	L	T/P	Credits
THEORY PAPERS					
ETVHS-701		Technical English (Common to all disciplines)	3	0	3
ETVSD-701		Advance Computer Network	3	0	3
CORE ELECTIVE-II (Select any one)					
ETVSD-703		Multimedia and Animation	3	0	3
ETVSD-705		Enterprise Resource Planning	3	0	3
ETVSD-707		Software Project Management	3	0	3
CORE ELECTIVE-III (Select any one)					
ETVSD-709		Mobile Application Development	3	0	3
ETVSD-711		Cloud Computing	3	0	3
ETVSD-713		Cyber Security & Cyber Law	3	0	3
GENERAL ELECTIVE-II (Select any one)*					
ETVSS-751		NCC	0	2	1
ETVSS-753		NSS	0	2	1
ETVSS-755		Sports	0	2	1
ETVSS-757		Community Services	0	2	1
ETVSS-759		ECO Club	0	2	1
ETVSS-761		YOGA	0	2	1
PRACTICAL/VIVA VOCE (Select any one Lab based on CORE ELECTIVE-II)					
ETVSD-753		Multimedia and Animation Lab	0	3	3
ETVSD-755		Enterprise Resource Planning Lab	0	3	3
ETVSD-757		Software Project Management Lab	0	3	3
PRACTICAL/VIVA VOCE (Select any one Lab based on CORE ELECTIVE-III)					
ETVSD-759		Mobile Application Development Lab	0	3	3
ETVSD-761		Cloud Computing Lab	0	3	3
ETVSD-763		Cyber Security & Cyber Law Lab	0	3	3
PRACTICAL/VIVA VOCE					
ETVHS-751		Language Lab (Common to all disciplines)	0	3	3
ETVSD-751		Advance Computer Network	0	3	3
ETVSD-765		Minor Project	0	8	4
ETVSD-767		Industrial Training-IV	0	2	4
TOTAL			**12**	**24**	**33**

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.

***Non University Examination System (NUES)**

BACHELOR OF VOCATION
(SOFTWARE DEVELOPMENT)
SIXTH SEMESTER EXAMINATION
(LEVEL-VII)

Paper Code	Paper ID	Paper	L	T/P	Credits
THEORY PAPERS					
ETVSD-702		Software Testing	3	1	4
ETVHS-702		Human Values & Profession Ethics-II	3	0	3
CORE ELECTIVE-IV (Select any one)					
ETVSD-704		Search Engine Optimization & Digital Marketing	3	0	3
ETVSD-706		Data Warehouse and Data Mining	3	0	3
ETVSD-708		Internet of Things	3	0	3
PRACTICAL/VIVA VOCE (Select any one Lab based on CORE ELECTIVE-IV)					
ETVSD-754		Search Engine Optimization & Digital Marketing Lab	0	3	3
ETVSD-756		Data Warehouse and Data Mining Lab	0	3	3
ETVSD-758		Internet of Things Lab	0	3	3
PRACTICAL/VIVA VOCE					
ETVSD-752		Software Testing Lab	0	4	4
ETVSD-760		Industrial Training-V	0	2	4
ETVSD-762		Major Project#*	0	24	12
TOTAL			**09**	**34**	**33**

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.

#*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. Seminar related to major project should be delivered one month after staring of Semester. The progress will be monitored through seminars and progress reports. ***The students may be allowed to do Industrial Major Project on-site during 5 days in a week and class work should be completed in 2 working days in the respective institution. If in case, the classes are held during Saturday /Sunday then faculty should be given off in lieu of Saturday/Sunday.***

For Award of Diploma:
1. The total number of the credits of the Diploma (Software Development) Programme = 63
2. Student shall be required to appear in examinations of all courses. However, to award the Diploma (Software Development) a student shall be required to earn a minimum of 60 credits.

For Award of Advanced Diploma:
1. The total number of the credits of the Advance Diploma (Software Development) Programme = 126
2. Student shall be required to appear in examinations of all courses. However, to award the Advanced Diploma (Software Development) a student shall be required to earn a minimum of 120 credits.

For Award of B. Voc Degree:
1. The total number of the credits of the B. Voc. (Software Development) Programme = 192.
2. Student shall be required to appear in examinations of all courses. However, to award the degree a student shall be required to earn a minimum of 180 credits.

TECHNICAL ENGLISH
(Common to all Disciplines)

Paper Code: ETVHS-701	**L**	**T/P**	**C**
Paper: Technical English	**3**	**0**	**3**

INSTRUCTIONS TO PAPER SETTER: **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:

- *To equip students to recognize, explain, and use the rhetorical strategies and the formal elements of specific genres of technical communication, such as technical abstracts, data based research reports, instructional manuals, technical descriptions etc.*
- *To help students understand the process of collection, analysis, documentation, and reporting of research clearly, concisely, logically, and ethically and understand the standards for legitimate interpretations of research data within scientific and technical communities.*
- *To initiate students into critical and creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information towards meaningful and effective communication*
- *To help students understand ethical considerations in technical and professional writing, realizing the consequences of various communication acts.*

Learning Outcomes: *Upon successful completion of the course the student shall be able to:*

- *Understand and demonstrate composing processes through invention, organization, drafting, revision, editing, and presentation as evidenced in satisfactory completion of all the written, visual, web-based, and oral discourses to be submitted in this course.*
- *To recognize and use the rhetorical and stylistic elements necessary for the successful practice of scientific and technical communication;*
- *Create various products most frequently used in scientific and technical communication.*
- *Develop ethical problem-solving communication skills in professional situations.*

UNIT-I

Technical Writing: Definition, Purpose and Characteristics of Technical Writing.
Technical Writing Skills: Methods and means of the Pre-writing stage, the Writing Stage and the Post-writing Stage.

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

UNIT-II

Formal Formatting: Arrangement of Formal Elements, Front Material, Format Devices in the Body of Formal Report-Heading, Pagination, End Material – Citations, References and Bibliography, Appendix.

[T1, T2][No. of Hrs. 10]

UNIT-III

Writing and Designing for Electronic Media: Use of Internet as a Writing tool; designing and writing for multimedia applications and the World Wide Web.

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

UNIT-IV

Research and Writing Ethics: Explaining Forms and Consequences of Plagiarism, Introduction to Intellectual Property Right and Copy Right Laws.

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

Text Book(s):

[T1] Sides, Charles H., "How to Write and Present Technical Information", Cambridge Univ. Press, 1999.
[T2] Basu, B. N., "Technical Writing", PHI Learning Pvt. Ltd., 2007.

Reference Book(s):

[R1] Beer, David F. and David A. McMurrey, "A Guide to Writing as an Engineer", New York: Wiley, 2005.
[R2] Gibaldi, Joseph, and Walter S. Achtert, "MLA Handbook for Writers of Research Papers, Thesis, and Dissertations", Modern Language Association, 1980.
[R3] Rubens, Philip, "Science and Technical Writing: A Manual of Style", Routledge, 2002.
[R4] Anderson, Marilyn, Pramod K. Nayar, and Madhucchandra Sen, "Critical Thinking, Academic Writing and Presentation Skills", Pearson. 2010.

ADVANCED COMPUTER NETWORKS

Paper Code: ETVSD-701	**L**	**T/P**	**C**
Paper: Advanced Computer Networks	**3**	**0**	**3**

INSTRUCTION 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 and Learning Outcomes: *After learning the course the students should have understanding of various IP protocols wireless LAN. They should know types of encryptions used for network security.*

UNIT-I

Overview of Networking, TCP/IP and OSI Layer

Application Layer: DHCP, DNS, Electronic Mail: Different Scenarios, MTA, SMTP- POP and IMAP.

TCP: TCP Services & Features, TCP Segment Format, TCP Connection and scenarios, Flow control in TCP, Error Control.

[T1][T2][T3][No. of Hrs.: 15]

UNIT-II

Network Layer: Routing Algorithms, Optimality principle, Shortest path routing, Flooding, Distance Vector Routing, Link State Routing, Hierarchical Routing, Broadcast and Multi Cast Routing, Routing for Mobile hosts, Routing in Adhoc Networks.

Packet Switching Protocols: Introduction to Packet Switching, Introduction to Virtual Circuit, Packet Switching, Introduction to X.25, Introducing switched multimegabit data service.

[T1][T2][T3][No. of Hrs.: 10]

UNIT-III

Wireless LAN (IEEE 802.11): Infrared vs. Radio transmission, Infrastructure and Ad hoc Networks: System architecture, Protocol architecture, Physical layer, Medium Access Control layer, MAC management

Introduction to IrDA, Zigbee, RFID, HYPERLAN, Wi-Max

Bluetooth: User Scenarios, Physical Layer, MAC layer, networking

[T1][T2][T3][No. of Hrs.: 10]

UNIT-IV

Optical Networking: Introduction to Optical Networking, SONET / SDH Standard, DWDM

Network Security: Introduction, Traditional Ciphers, Modern ciphers (DES Algorithm), asymmetric ciphers, RAS Cryptosystem, Digital Signature, concepts of Firewalls.

[T1][T2][T3][T5][No. of Hrs.: 10]

Textbooks:

[T1] B. A Forouzan, "TCP/IP Protocol Suite", Fourth Edition, Tata McGrawHill.

[T2] Tananbaum A.S., "Computer Networks", 5th Edition, PHI.

[T3] Jeffrey S. Beasley, Piyasat Nilkaew, "A Practical Guide to Advanced Networking", 3rd Edition, Pearson Education.

[T4] B. A Forouzan, "Data Communications & Networking", 4th Edition, Tata McGraw Hill.

[T5] Uyless Black, "Optical Networks: Third Generation Transport Systems", 1st Edition. Pearson India.

Reference Books:

[R1] Yi Bang Lin and Imrich Chlamtech, "Wireless and Mobile Network Architecture", Wiley.

[R2] P. Nicopolitidis, "Wireless Networks", John Wiley.

[R3] C Siva Ram Murty & BS Manoj, "Ad HOC Wireless Networks: Architectures & Protocols", 2nd Ed, Pearson Education

MULTIMEDIA AND ANIMATION
(Core Elective-II)

	L	T/P	C
Paper Code: ETVSD-703			
Paper: Multimedia and Animation	**3**	**0**	**3**

INSTRUCTION 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 and Learning Outcomes*: After learning the course the students should have understanding of various tools and its operation used for MM. They should know types of Compression techniques for storing information.*

UNIT-I

Introduction to Multimedia: Media and data stream, Multimedia System and its properties, Use of Multimedia, Delivering Multimedia, Hardware and software requirements for multimedia product development, Multimedia Development Team.

Authoring System: Authoring Tools, Categories of Authoring tools, Need of Authoring tools.

[T1][T2][No. of Hrs.: 15]

UNIT-II

Multimedia Building Blocks: Text: Font and faces, Multimedia sounds, MIDI , Digital audio, MIDI vs Digital Audio, Audio File system,

Basic concepts of images and video, Digital image representation, Image data format, File system for images, Importance of Video in multimedia, how video worked and displayed, File formats.

[T1][T2][No. of Hrs.: 10]

UNIT-III

Compression Techniques: Lossless and Lossy compression, Run length coding, Statistical Coding, Transform Coding, JPEG, MPEG, Text compression using static Huffmann technique, Dynamic Huffmann Technique, Arithmetic Technique.

[T1][T2][No. of Hrs.: 10]

UNIT-IV

Introduction to animation, Basic Terminology &techniques, tweaning & morphing, Motion Graphics 2D & 3D animation, Key frame, reactive animation, path animation, Skelton animation.

Dynamics: Soft bodies, Rigid bodies and its usages in the scene.

Rendering: Soft &hard rendering.IPR rendering, Line and box rendering.

Special Effects: Shading & Texturing Surfaces, Lighting, Special effects.

[T1][T2][No. of Hrs.: 10]

Text Book(s):

[T1] Tay Vaugun, "Multimedia: Making it Work", Ninth Edition, McGraw Hills.
[T2] David Hillman, "Multimedia Technology & Applications", Galgotia Publications, 2008
[T3] Steinmetz, "Multimedia Computing Communication and Application", Pearson Edn., 2004

Reference Books:

[R1] Hern and Baker, "Computer Graphics", Second Edition, Pearson.
[R2] Andleigh and Thakarar, "Multimedia System Design" PHI, 2003
[R3] Foley et.al., "Computer Graphics Principles &Practice", Addison Wesley Ltd., 2003.

ENTERPRISE RESOURCE PLANNING
(Core Elective-II)

Paper Code: ETVSD-705	**L**	**T/P**	**C**
Paper: Enterprise Resource Planning	**3**	**0**	**3**

INSTRUCTION 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 and Learning Outcomes:

To know the basics of ER, business modules of ERP and strategic importance of ERP.
To understand the key implementation issues of ERP.
To be aware of some popular products in the area of ERP.

UNIT-I

Introduction to ERP: An Overview, Enterprise – An Overview, Benefits of ERP, Reasons for growth of ERP, Various Modules of ERP, advantage of ERP,ERP and Related Technologies such as Management Information System (MIS), Executive Information System (EIS), Decision Support System (DSS), Supply Chain Management (SCM), ERP for Small Business, Business Process Mapping for ERP Module Design, Business Process Reengineering (BPR).

[T1][T2][No. of Hrs.: 15]

UNIT-II

ERP Implementation: ERP Implementation Lifecycle, Implementation Methodology, Hidden Costs, Organizing the Implementation, Vendors, Consultants and Users, Contracts with Vendors, Consultants and Employees, Project Management and Monitoring.

[T1][T2][No. of Hrs.: 10]

UNIT-III

ERP Market: Introduction, SAP AG, Baan Company, Oracle Corporation, People Soft, JD Edwards World Solutions Company, System Software Associates, Inc. (SSA), QAD, A Comparative Assessment and Selection of ERP Packages and Modules. ERP implementation lifecycle, issues in implementing ERP packages, pre-evaluation screening, package evaluation, project planning phase, gap analysis, reengineering, configuration, implementation, team training, testing, going live, end-user training, post implementation (Maintenance mode).

[T1][T2][No. of Hrs.: 10]

UNIT-IV

Vendors, Consultants and Users: In-House Implementation - pros and cons, vendors, consultants, end user. Future Directions in ERP, New markets, new channels, faster implementation methodologies, business modules and BAPIs, convergence on windows NT, Application platform, new business segments, more features, web enabling, market snapshot.

[T1][T2][No. of Hrs.: 10]

Text Book(s):

[T1] Alexis Leon, "ERP Demystified", Tata McGraw Hill, New Delhi, 2000.
[T2] Mary Sumner, "Enterprise Resource Planning", Pearson Education, 2007.

References Books:

[R1] Joseph A Brady, Ellen F Monk, Bret Wagner, "Concepts in Enterprise Resource Planning", Thompson Course Technology, USA, 2001.
[R2] Vinod Kumar Garg and Venkitakrishnan N K, "Enterprise Resource Planning – Concepts and Practice", PHI, New Delhi, 2003

SOFTWARE PROJECT MANAGEMENT
(Core Elective-II)

Paper Code: ETVSD-707	**L**	**T/P**	**C**
Paper: Software Project Management	**3**	**0**	**3**

INSTRUCTION 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 and Pre-requisites: *Software Project Management provides to the students on how to evaluate and assess the projects and to find the cost of the project using cost benefit evaluation techniques. It also discusses the risks involved in the project and the appropriate strategies for minimizing potential risks.*
To produce an activity plan for a project and to estimate the overall duration of the project by analyzing the risks involved in it.

Pre-requisites*: Software Engineering Concepts.*

UNIT-I

Introduction: Introduction to software project management and control Whether software projects are different from other types of projects. The scope of project management. The management of project life cycle. Defining effective project objectives where there are multiple stakeholders. Software Tools for Project Management.

Project Planning: Creation of a project plan -step by step approach, the analysis of project characteristics in order to select the best general approach, Plan Execution, Scope Management, Use of Software (Microsoft Project) to Assist in Project Planning Activities.

[T1][T2][No. of Hrs.: 15]

UNIT-II

Project Scheduling: Time Management, Project Network Diagram, Critical path Analysis, PERT, Use of Software (Microsoft Project) to assist in Project Scheduling.

Project Cost Management: Resource planning, Cost Estimation (Types, Expert Judgment, Estimation by Analogy, COCOMO).

[T1][T2][No. of Hrs.: 10]

UNIT-III

Project Quality Management: Stages, Quality Planning, Quality Assurance, Quality Control, Quality Standards, Tools and Techniques for Quality Control.

Project Human Resource Management: Definition, Key to managing People, Organization Planning, Issues in Project Staff Acquisition and Team Development, Using Software to Assist in Human Resource Management, Communication Planning, Information Distribution, Performance Reporting.

[T1][T2][No. of Hrs.: 10]

UNIT- IV

Project Risk Management: Common Sources of Risk in IT projects, Risk Identification, Risk Quantification, Risk Response Development and Control.

Project Procurement Management: Procurement Planning, Solicitation, Source Selection, Contract Administration.

[T1][T2][No. of Hrs.: 10]

Text Books:

[T1] Bob Hughes, Mike Cotterell, "Software Project Management",3rd Edition, Tata McGraw-Hill
[T2] Pankaj Jalote, "Software Project Management in Practice", 3rd Edition, Pearson Education, 2010.
[T3] Kathy Schwalbe, "Information Technology Project Management, Thomson Course Technology", International Student Edition, 2003.
[T4] Elaine Marmel, "Microsoft Office Project 2003 Bible", 4th Edition, Wiley Publishing Inc.

REFERENCES:

[R1] S.A. Kelkar, "Software Project Management - A Concise Study", PHI, Revised Edition, 2003.
[R2] Demarco T. and Lister T., "Peopleware: Productive Projects and Teams", 2nd Edition, Dorset House, 1999.

[R3] Henry, J., "Software Project Management – A Real-World Guide to Success", Addison-Wesley, 2004.
[R4] Ince D., Sharp H. and Woodman M., "Introduction to Software Project Management and Quality Assurance", McGraw-Hill., 1993.
[R5] Maylor, H., "Project Management", 3rd Edition, PHI, 2002.
[R6] Robert T. Futrell, "Quality Software Project Management", Pearson, 2010.
[R7] Bentley C. , "PRINCE2: A Practical Handbook", NCC Blackwell, 2002.
[R8] Robert T. Futrell, "Quality Software Project Management", Pearson, 2010.

MOBILE APPLICATION DEVELOPMENT
(Core Elective-III)

Paper Code: ETVSD-709	**L**	**T/P**	**C**
Paper: Mobile Application Development	**3**	**0**	**3**

INSTRUCTION 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 and Pre-requisites: *The emergence of a new generation of highly-capable mobile devices and platforms such as the Apple iPhone and Google Andriod has opened up new opportunities for application developers. However, mobile development differs from conventional desktop development in that mobile devices operate in a constrained world with smaller screens, slower network connections, as well as limited memory and processing power.*
Programming experience is required*: Java Programming concepts.*

Learning Outcomes:
The course will be hands on and project based. We will examine the development models for both the Apple iPhone and Google Android. We'll being by building sample apps for the Andriod. Then participants will select either the Apple iPhone or Google Andriod for their final deliverable, and work in groups to build applications. We will begin by using simulators before porting to actual devices.

UNIT-I
Introduction to Mobile Computing, Introduction to Android Development Environment Factors in Developing Mobile Applications, Frameworks and Tools, Characteristics of Mobile Applications.
[T1][T2][T3][No. of Hrs.: 10]

UNIT-II
Android Overview: Architecture, Application Component, Intents and Services, Activities, Broadcast Receiver, Content providers, Fragments, Intents/Filters. Generic UI Development, UI Layouts, UI Controls, Event Handling, Styles and Themes, Customs Components.
[T1][T2][T3][No. of Hrs.: 15]

UNIT-III
Drag & Drop, Notifications and Alarms, Location Based Services, Sending Email, Sending SMS, Animation, Audio Capture, Bluetooth, Camera, Navigation, Network Connection, Text to Speech , Widgets, Data Backup, Google map, Image Effects Image Switcher.
[T1][T2][T3][No. of Hrs.: 10]

UNIT- IV
Database Application: SQLite Database Package, Database Creation, Database Insertion, Data Fetching. Packaging and Deploying, Publishing Android Application.
[T1][T2][T3][No. of Hrs.: 10]

Text Book(s):

[T1] Wei-Meng Lee, "Beginning Android Application Development", Wrox Publication, 2012.
[T2] Ed Burnett, "Hello, Android Introducing Google Mobile Development Platform", 3rd Edition, The Pragmatic Programmers.
[T3] Antonio Pachon Ruiz, "Mastering Android Application Development", 2015.
[T4] Donn Felker, "Android Application Development for Dummies", 2010.
[T5] Bill Phillips and Chris Stewart, "Android Programming: The Big Nerd Ranch Guide", 2nd edition.

Reference Book(s)/Links:

[R1] Jason Morris, "Android User Interface Development: Beginner**'s** Guide", Packt Publishing, 2011.
[R2] Neil Smyth, "Android Studio 2 Development Essentials", 2014
[R3] Mike Wolfson, "Android Developer Tools Essentials", O'Reilly Media, 2013

CLOUD COMPUTING
(Core Elective-III)

	L	T/P	C
Paper Code: ETVSD-711			
Paper: Cloud Computing	**3**	**0**	**3**

INSTRUCTION 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 networking is a prerequisite to this course. Also knowledge of the programming language is required.*

Learning Outcomes: *The student after completing the course will be able to:*

- *Describe the major features of Cloud computing.*
- *Use virtualization to understand the concepts associated with Cloud computing.*
- *Understand the risks associated with such Technology.*

UNIT-I

Cloud Fundamentals: Cloud Computing Evolution, cloud vocabulary, Cloud building blocks, understanding Public & private cloud environments, cloud computing properties and characteristics.

Cloud Computing Principles and Virtualization : types of virtualization (Hardware Virtualization, Software Virtualization, Memory Virtualization, Storage Virtualization, Data Virtualization, Network Virtualization), Virtualization Security Recommendations, Introduction to various virtualization OS–VMware, KVM, HA/DR using virtualization, Moving VMs, SAN backend concepts.

[T1][T2][No. of Hrs.: 15]

UNIT-II

Cloud Computing Architectural Framework: Service models and deployment models, Cloud Benefits, Business scenarios, Cloud deployment models, Cloud Service Models, Multi- Tenancy, Approaches to create a barrier between the Tenants, cloud computing vendors, cloud Computing threats, Cloud Reference Model, The Cloud Cube Model, and Security for Cloud Computing: How Security Gets Integrated.

[T1][T2][No. of Hrs.: 10]

UNIT-III

Cloud Resources: Network and API, Virtual and bare-metal computational resources, Data storage, Cloud data transfer, DBs in cloud, Infrastructure as a service (IaaS), Platform as a service (PaaS) and Software as a service (SaaS).

[T1][T2][No. of Hrs.: 10]

UNIT-IV

Cloud Security, privacy, policy and compliance, Cloud reliability and fault-tolerance. cloud access: authentication, authorization and accounting, Encryption and Key Management: Encryption for Confidentiality and Integrity, Encrypting data at rest, Key Management Lifecycle, Cloud Encryption Standards, Recommendations, Cloud Computing Risk Assessment – Guidelines.

[T1][T2][No. of Hrs. 10]

Text Books:

[T1] Michael Miller, "Cloud Computing: Web Based Applications That Change The Way You Work And Collaborate Online", Pearson Education, 2009.

[T2] Greg Schulz, "Cloud and Virtual Data Storage Networking- Enabling Efficient, Effective and Productive Information Services and Data Infrastructures", CRC Press, 2011.

Reference Books:

[R1] George Reese, "Cloud Application Architectures", O' Reilly Media, 2009

[R2] Garry Turkington, Tanmay Deshpandey, "Hadoop: Data Processing and Modelling", Kindle Edition.

CYBER SECURITY AND CYBER LAW
(Core Elective-III)

Paper Code: ETVSD-713	**L**	**T/P**	**C**
Paper: Cyber Security and Cyber Law	**3**	**0**	**3**

INSTRUCTION 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 and Learning Outcomes:

- *After learning the course the students should be able to understand cyber-attack*
- *They should know types of cybercrimes and cyber laws.*
- *How to protect them self and ultimately society from such attacks*

UNIT-I

Network Defense Tools: Network Defense tools Firewalls and Packet Filters: Firewall Basics, Packet Filter Vs Firewall, How a Firewall Protects a Network, Packet Characteristic to Filter, Stateless Vs Stateful Firewalls, Network Address Translation (NAT) and Port Forwarding, the basic of Virtual Private Networks, Linux Firewall, Windows Firewall, Snort: Introduction Detection System**.**

[T1][T2][No. of Hrs.: 10]

UNIT-II

Web Application Tools: Web Application Tools scanning for web vulnerabilities tools: Nikto, W3af, HTTP utilities - Curl, OpenSSL and Stunnel, Application Inspection tools-Zed Attack Proxy, Sqlmap. DVWA, Webgoat, Password Cracking and Brute-Force Tools – John the Ripper, L0htcrack, Pwdump, HTC-Hydra **Cryptography** – Cryptographic techniques DES and AES, Public Key Cryptography, RSA Algorithm.

[T1][T2][No. of Hrs.: 10]

UNIT-III

Introduction to Cyber Crime and Law- Cyber Crimes, Types of Cybercrime, Hacking, Attack vectors, Cyberspace and Criminal Behavior, Clarification of Terms, Traditional Problems Associated with Computer Crime, Introduction to Incident Response, Digital Forensics**.**

[T1][T2][No. of Hrs.: 10]

UNIT-IV

Computer Language, Network Language, Realms of the Cyber world, A Brief History of the Internet, Recognizing and Defining Computer Crime, Contemporary Crimes, Computers as Targets, Contaminants and Destruction of Data, Indian IT**.**

[T1][T2][No. of Hrs.: 15]

Text Book(s):

[T1] Mike Shema, "Anti-Hacker Tool Kit", Indian Edition, Fourth Edition, Mc Graw Hill Publication

[T2] Nina Godbole and Sunit Belpure, "Cyber Security Understanding Cyber Crimes, Computer Forensics and Legal Perspectives", Wiley Publication, 2011.

References Book(s):

[R1] Justice Yatindra Singh, "Cyber Laws", Universal Law Publishing Co, New Delhi, 2012

[R2] James Graham, "Cyber Security Essentials" Averbach Publication T & F Group, 2010

[R3] Kenneth J. Knapp, "Cyber Security and Global Information Assurance: Threat Analysis and Response Solutions", IGI Global, 2009.

NCC/ NSS/ SPORTS/ COMMUNITY SERVICES/ ECO CLUB
(General Elective-II)

Paper Code: ETVSS-751/ 753/ 755/ 757/ 759	**L**	**T/P**	**C**
Paper: NCC/NSS/ Sports/ Community Services/ ECO Club	**0**	**2**	**1**

Students should actively participate in either of the above activities of the institute during academic session. Credits shall be awarded accordingly based on final assessment by internal institute committee constituted by the Principal/ Director of the respective institutes. Students are encouraged organize events and awards if any shall be distributed to students during annual day/ specific function day accordingly

YOGA
(General Elective-II)

Paper Code: ETVSS-761	**L**	**T/P**	**C**
Paper: Yoga	**0**	**2**	**1**

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

Introduction: Yoga education in Schools/Colleges/ Institutions/ Organizations/Universities etc. can immensely contribute to health of children by disseminating knowledge and awareness about the value of health, inculcating and nurturing health promoting habits and life style.

The Paper on YOGA has been initiated by USET for the students in a new skill development programme known as B.Voc programme. Currently, launched in 09 Govt. Institutions affiliated to GGSIP University.

Aim and Objectives:
The aim of the Paper is to introduce Yoga. The specific objectives are:
• To impart Yoga education in schools/colleges/Institutions for prevention of disease and promotion of health;
• To train faculty members in Yogic principles and practices.
• To prepare and distribute standardized Yoga teaching and training materials with reference to institute health.

UNIT-I
- Brief introduction to origin of Yoga, Psychological aspects leading to origin of Yoga, Hindu Mythological concepts about origin of Yoga
- History and Development of Yoga
- Etymology and Definitions of Yoga, Aim and Objectives of Yoga, Misconceptions about Yoga, True Nature of Yoga
- General Introduction to Schools of Yoga
- Principles of Yoga, Yoga Practices for Health and Harmony

UNIT-II
Yoga Traditions and Classical Schools of Yoga.
- Yoga's Traditional Source
- Different's traditions of Yoga.
- Contemporary Yoga Practice.
- Concepts and Practices of Yoga in others religions.

UNIT-III
Experimental Study Yoga:
- Aasan, Surya Namaskar, Pranayam, Sukshm-Kriya, Dhyan-Mudra.Shatkarma

UNIT-IV
Yoga and You
- **Concept of Health-** Aahaar, Nidra, Bharmacharaya, Viyayaam.
- **Aarogya -** Prevention, Cure and Remedies.
- Life Management and Development.

Reference Book(s)
[R1] Singh S. P & Yogi Mukesh, "Foundation of Yoga", Standard Publication, New Delhi, 2010
[R2] Radhakrishnan S,"Indian Philosophy", (Vol. I & II) II Edition, Oxford University, UK, 2008.
[R3] Swami Devvarata, "Ashtang Yog", 119, Guttam Nagar.
[R4] Prof. Ram Harsh Singh, "Swasth Viritam"
[R5] Swami Prabhavanand, "Spiritual Heritage of India (English)", Sri Ramkrishna Math, Madras, 2004

YOGA PRACTICAL
I.A

I. RECITATION OF HYMNS & HASTA MUDRA

1.1 Recitation of Pratah-smaran and Shanti Mantras

1.2 Recitation of Pranava Japa and Soham Japa

1.3 Recitation of Hymns from Upanishad & Yoga Texts

1.4 Hasta Mudra: Chin, Jnana, Hridaya, Bhairav, Yoni

II. SHATKARMA

2.1 Dhauti (Kunjal, Vamana Dhauti, Vastra Dhauti)

2.2 Neti (Jalneti, Sutraneti)

2.3 Kapalbhati and its variants

2.4 Agnisara

III. BREATHING PRACTICES

3.1 Breath Awareness: Shwas-prashwas Sanyaman

3.2 Abdomen, Thoracic & Clavicular Breathing, Abdomen + Thoracic Breathing, Abdomen + Thoracic + Clavicular Breathing

3.3 Yogic Breathing: Pause Breathing (Viloma Pranayama), Spinal Passage Breathing (Sushumna Breathing)

3.4 Practice of Puraka, Rechaka & Kumbhaka (Antar & Bahya Kumbhaka)

YOGA PRACTICAL
I.B

YOGIC SUKSMA AND STHULA VYAYAMA, NABHI PAREEKSHA

1.1 YOGIC SUKSMA VYAYAMA

1. Uccharana-sthalatatha Vishudha-chakra-shuddhi (for throat and voice)
2. Prarthana (Prayer)
3. Buddhi-tatha-dhritishakti-vikasaka (for developing will power)
4. Smaranashakti-vikasaka (for improving the memory)
5. Medhashakti-vikasaka (for improving the intellect and memory)
6. Netrashakti-vikasaka (for the eyes)
7. Kapolashakti-vardhaka (for the cheeks)
8. Karnashakti-vardhaka (for the ears)
9. Grivashakti-vikasaka (for the Neck) (i) (A & B)
10. Grivashakti-vikasaka (for the Neck) (ii) (A & B)
11. Grivashakti-vikasaka (for the Neck) (iii)
12. Skandha-tatha-bahu-mulashakti-vikasaka (for the shoulders)
13. Bhuja-bandhashakti-vikasaka
14. Kohinishakti-vikasaka
15. Bhuja-vallishakti-vikasaka
16. Purna-bhujashakti-vikasaka (for the arms)
17. Mani-bandhashakti-vikasaka
18. Kara-prsthashakti-vikasaka
19. Kara-talashakti-vikasaka
20. Anguli-mulashakti-vikasaka (for the fingers) (A & B)
21. Anguli- shakti-vikasaka (for the fingers) (A & B)
22. Vaksa-sthalashakti-vikasaka (for the chest) (1)
23. Vaksa-sthalashakti-vikasaka (for the chest) (2)
24. Udarashakti-vikasaka (for the abdomen) (i)
25. Udarashakti-vikasaka (for the abdomen) (ii)
26. Udarasakti-vikasaka (for the abdomen) (iii)
27. Udarashakti-vikasaka (for the abdomen) (iv)
28. Udarashakti-vikasaka (for the abdomen) (v)
29. Udarashakti-vikasaka (for the abdomen) (vi)
30. Udarashakti-vikasaka (for the abdomen) (vii)
31. Udarashakti-vikasaka (for the abdomen) (viii)
32. Udarashakti-vikasaka (for the abdomen) (ix)
33. Udarashakti-vikasaka (for the abdomen) (x) (A, B & C)
34. Kati shakti-vikasaka (for the waist) (i)
35. Kati shakti-vikasaka (for the waist) (ii)
36. Kati shakti-vikasaka (for the waist) (iii)

37. Kati shakti-vikasaka (for the waist) (iv)
38. Kati shakti-vikasaka (for the waist) (v)
39. Muladhara-chakra-suddhi (for the rectum)
40. Upasthatatha-svadhisthana-chakra-suddhi (for the genital organs)
41. Kundalinishakti-vikasaka (for the kundalini)
42. Janghashakti-vikasaka (for the thighs) (i) (A & B)
43. Janghashakti-vikasaka (for the thighs) (ii) (A & B)
44. Janushakti-vikasaka (for the knees)
45. Pindalishakti-vikasaka (for the calves)
46. Pada-mulashakti-vikasaka (A & B)
47. Gulpha-pada-pristha-pada-tala-shakti-vikasaka (for the ankles and the feet)
48. Padangulishakti-vikasaka (for the toes)

1.2 YOGIC STHULA VYAYAMA

1. Rekha-gati (Walking in a Straight line)
2. Hrid-gati (Injanadaur – the Locomotive Exercise)
3. Utkurdana (Jumping Exercise)
4. Urdhva-gati (Upward Movement)
5. Sarvanga-pusti (Developing the Entire body) &

1.3 NABHI PAREEKSHA

II. SURYA NAMASKARA

III. YOGASANA (Standing Postures and body alignment)

3.1 Tadasana, Vrikshasana, Urdhva-Hastottanasana, Kati Chakrasana

3.2 ArdhaChakrasana, Paada Hastasana

3.3 Trikonasana, Parshva Konasana

3.4 Veerabhadrasan and its variations

YOGA PRACTICAL
II.A

I. SHATKARMA

1.1 Dhauti

1.2 Neti

1.3 Nauli Madhyama, Vama, Dakshina and Nauli Chalana

1.4 Trataka (Jatru and Jyoti)

II. PRANAYAMA

2.1 Nadi Shodhana (Technique 1: Same Nostril Breathing)

2.2 Nadi Shodhana (Technique 2: Alternate Nostril Breathing)

2.3 Nadi Shodhana (Technique 3: Alternate Nostril Breathing + Antar Kumbhak)

2.4 Nadi Shodhana (Puraka + Antar Kumbhak + Rechaka + Bahya Kumbhak) (1:4:2:2)

2.5 BHRAMARI PRANAYAMA

III. PRACTICES LEADING TO MEDITATION

3.1 Pranav and Soham Japa

3.2 Yoga Nidra (1, 2, 3)

3.3 Antarmauna

3.4 Ajapa Dharana (Stage 1, 2, 3)

YOGA PRACTICAL
II.B

I. YOGASANA (Sitting Postures)

1.1 Dandasana, Swastikasana, Padmasana,Vajrasana, Supta Vajrasana

1.2 Kagasana, Utkatasana, Gomukhasana,Ushtrasana, Shashankasana,

1.3 Janusirasana, Paschimottanasana, Bhramacharyasana, Mandukasana, Utthana Mandukasana

1.4 Vakrasana, Ardha Matsyendrasana, Marichayasana, Simhasana

II. YOGASANA (Supine lying Postures)

2.1 Pavanamuktasana

2.2 Utthana-padasana, Ardha Halasana,

2.3 Halasana

2.4 Setubandha Sarvangasana

2.5 Sarvangasana

2.6 Matsyasana

2.7 Chakrasana

2.8 Shavasana

III. YOGASANA (Prone lying Postures)

3.1 Makarasana

3.2 Bhujangasana

3.3 Shalabhasana

3.4 Dhanurasana

3.5 Kapotasana

3.6 Raja Kapotasana

YOGA PRACTICAL
III.A

I. BANDHA

- Jivha Bandha
- Jalandhara Bandha
- Uddiyana Bandha
- Mula Bandha
- Maha Bandha
- Tri Bandha

II PRANAYAMA (with Antar & Bahya Kumbhaka)

2.1 Surya-bhedi and Chandra-bhedi Pranayama

2.2 Ujjayi Pranayama

2.3 Sheetali Pranayama

2.4 Shitkari Pranayama

2.5 Bhastrika Pranayama

III. PRACTICES LEADING TO MEDITATION

3.1 Ajapa Dharana (Stage 4, 5, 6)

3.2 Yoga Nidra (4, 5)

3.3 Practices leading to Breath Meditation

3.4 Practices leading to Om Meditation

3.5 Practices leading to Vipassana Meditation

Practices leading to Preksha Meditation

YOGA PRACTICAL
III.B

I. YOGASANA

1.1 Siddhasana, Bhadrasana,

1.2 Baddha Padmasana, Uttitha Padmasana,

1.3 Bhunamanasana, Hanumanasana

1.4 Bakasana, Kukkutasana, Garbhasana

1.5 Matsyendrasana, Marjariasana,

1.6 Padangusthasana, Hastapadangusthasana

1.7 Garudasana, Vatayanasana, Natarajasana

1.8 Mayurasana, Padma Mayurasana

1.9 Sirshasana and its variations

1.10 Ekapada and Dwipada Kandarasana

II. MUDRAS

2.1 Yoga Mudra

2.2 Maha Mudra

2.3 Shanmukhi Mudra

2.4 Shambhavi Mudra

2.5 Kaki Mudra

2.6 Tadagi Mudra

2.7 Vipareet Karni Mudra

2.8 Simha Mudra

MULTIMEDIA AND ANIMATION LAB
(Core Elective-II)

Paper Code: ETVSD-753	**L**	**T/P**	**C**
Paper: Multimedia and Animation Lab	**0**	**3**	**3**

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. Use HTML multimedia support to play different audio and video formats in a browser.
2. Use a audio processing Software and perform the audio editing tasks– Import audio, select and edit the sound, Create fade-in fade-out effects, Label audio segments, Use noise remove filter, Mix audio, Change stereo to mono tracks, Export audio to different format and save.
3. Use a video processing Software to perform – Trim video clips, crop video, rotate video, and join video, add subtitles, and edit video dimension, bit rate, frame rate, sample rate, channel, and video/audio quality tasks on a video.
4. Create a Movie from video clips to demonstrate: - Audio-Video Mixing, Music, Video Effects, and Video Transitions, Titles
5. Create a logo using 3D modelling software.
6. Create a 3D animation (such as an animated eye) using a 3D modelling software.
7. Create a 2D Animation / cartoon using any 2D software.
8. Use a scanner to create two or more partial scanned images of large poster / photo. Create a panoramic view of multiple photos by stitching together them using any panorama software.
9. Create an advertisement banner for using it in a web page.

ENTERPRISE RESOURCE PLANNING LAB
(Core Elective-II)

Paper Code: ETVSD-755	**L**	**T/P**	**C**
Paper: Enterprise Resource Planning Lab	**0**	**3**	**3**

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. Study of ERP and its applications.
2. Implementation of ERP for Small Business.
3. Implementation of Supply Chain Management.
4. TS and QS integration with ERP.
5. Study experiment on ERP failure: how-and-why.
6. Case study on any of two:-
    a. Budgeting (TCO) for the ERP Importance's of Conference Room Pilot (CRP)
    b. Tata Steel Organization.
    c. Sony Company using ERP techniques.
    d. Quantum ERP Implementation.
    e. Construction Industry ex. California Shutter.
    f. The Western Union Company.
    g. Gathering and analyzing the requirements and business intelligence required to operate an online website optimally ex. Amazon.com
    h. Case study on CISCO System.

SOFTWARE PROJECT MANAGEMENTLAB
(Core Elective-II)

Paper Code: ETVSD-757	**L**	**T/P**	**C**
Paper: Software Project Management Lab	**0**	**3**	**3**

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. Study of Project Planning Software like MS Project.
2. Case Study on Project Management.

MOBILE APPLICATION DEVELOPMENT LAB
(Core Elective-III)

Paper Code: ETVSD-759	**L**	**T/P**	**C**
Paper: Mobile Application Development Lab	**0**	**3**	**3**

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 Write a simple Application which will print "Hello World!"
2 Write a simple Application that uses UI Layout and Control.
3 Write a simple Application that makes use of Style & Themes.
4 Write a simple Application that uses Event Handling.
5 Write a simple Application that uses Alarm, Notification.
6 Make a location based app.
7 Write a program that shows the use animation.
8 Write a program that shows the use of Image Effects.
9 Write a program that shows the use Image Switcher.
10 Write a program that shows the use of database.

CLOUD COMPUTING LAB
(Core Elective-III)

Paper Code: ETVSD-761	**L**	**T/P**	**C**
Paper: Cloud Computing Lab	**0**	**3**	**3**

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. Study about cloud computing models.
2. Creating a Warehouse Application in SalesForce.com.
3. Creating an Application in SalesForce.com using Apex programming Language.
4. Implementation of SOAP Web services in C#/JAVA Applications.
5. Implementation of SOAP Web services in C#/JAVA Applications. (contt.)
6. Implementation of Para-Virtualization using VM Ware‘s Workstation/ Oracle‘s Virtual Box and Guest O.S.
7. Implementation of Para-Virtualization using VM Ware‘s Workstation/ Oracle‘s Virtual Box and Guest O.S (contt.)
8. Installation and Configuration of Hadoop.
9. Create an application (Ex: Word Count) using Hadoop Map/Reduce.
10. Case Study: PAAS(Face book)
11. Case study : Infrastructure as a service (IaaS)

CYBER SECURITY AND CYBER LAW LAB
(Core Elective-III)

Paper Code: ETVSD-763	**L**	**T/P**	**C**
Paper: Cyber Security and Cyber Law Lab	**0**	**3**	**3**

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. To study TCP scanning using NMAP
2. To study Port scanning using NMAP
3. To study TCP / UDP connectivity using Netcat
4. To study Network vulnerability using OpenVAS
5. To perform Web application testing using DVWA
6. To perform Manual SQL injection using DVWA
7. To implement XSS using DVWA
8. To perform automated SQL injection with SqlMap Design based Problems (DP)/Open Ended Problem:
9. To create a web application to secure open network with help of advanced encryption system.
10. To implement RSA algorithm.
11. To implement the Public Key Cryptography using IDEA algorithm

LANGUAGE LAB
(Common to all Disciplines)

Paper Code: ETVHS-751	**L**	**T/P**	**C**
Paper: Language Lab	**0**	**3**	**3**

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 Exercises:

1. **Fundamentals of Inter-personal Communication and Building Vocabulary**
   - Self introduction and introducing others
   - Situational Dialogues: Starting a dialogue and responding relevantly & appropriately
   - Role-Play-Expressions in various situations
   - Social and Professional Etiquette: greetings, apologies, requests etc
   - Telephone Etiquette.
2. **Non-verbal Communication**
   - Gesture, posture and body language
   - Facial Expressions.
   - Paralinguistic Skills
   - Proxemics
   - Eye Gaze.
   - Haptics
   - Appearance.
3. **Reading Comprehension and Listening Exercise**
   - General vs Local Comprehension
   - Skimming, Scanning
   - Inference drawing
   - Critical reading
   - Listening , Hearing
4. **Presentation Skills**
   - Oral presentation
   - Seminar/ conference Paper Presentation
   - PPTs and Written presentation through poster/projects/reports/e-mails/assignments etc
   - Camera ready presentation
5. **Group Discussion**
   - Dynamics of Group Discussion
   - Intervention
   - Summarizing
   - Body Language and Voice, Intonation
6. **Interview Skills**
   - Interview etiquette
   - Body posture and body language
   - Voice, intonation and modulation
   - Fluency and organization of ideas
   - Rubrics for evaluation: Concept and process, pre-interview planning, opening strategies, answering techniques,
   - Interview through tele-conferencing and video-conferencing
   - Mock interview
   - Campus placement interview
7. **Public and Professional Speaking**
   - Extempore
   - Public Speech
   - Professional speech/lecture
8. **Articulation and Management**
   - Time management
   - Articulation and expression
   - Assertiveness
   - Psychometrics
   - Stress management

ADVANCED COMPUTER NETWORK LAB

Paper Code: ETVSD-751	**L**	**T/P**	**C**
Paper: Advanced Computer Network Lab	**0**	**3**	**3**

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. Write a program to demonstrate the communication between one client and one server.
2. Write a program to demonstrate communication between one server and two clients.
3. Write a program to demonstrate communication between two servers and one client.
4. Introduction to OPNET Simulator.
5. Simulate Shared LAN and Switch LAN using OPENT.
6. Simulate RIP with and without failure using OPNET simulator.
7. Introduction to network simulator (ns-2).
8. Installation and working of ns-2.
9. Simulate three nodes point-to-point networks with a duplex link between them. Set the queue size and vary the bandwidth and find the number of packets dropped.
10. Simulate the different type of internet traffic such as FTP and TELNET over a network and analyse the throughput.
11. Simulate a transmission of ping message over a network topology consisting of 6 nodes and find the number of packets dropped due to congestion.

SOFTWARE TESTING

Paper Code: ETVSD-702	**L**	**T/P**	**C**
Paper: Software Testing	**3**	**1**	**4**

INSTRUCTION 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 and Pre-requisites:*.Basic knowledge of computer and basics of software is expected from the student. Concepts of Software Engineering required.*

Learning Outcomes: *The student will be able to:*

- *Design and develop test cases for finding correct and robust software products.*
- *To apply different testing techniques.*
- *To do risk analysis of software*

UNIT-I

Introduction: What is software testing and why it is so hard?, Error, Fault, Failure, Incident, Test Cases, Testing Process, Limitations of Testing, No absolute proof of correctness, Overview of Graph Theory.

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

UNIT-II

Functional Testing: Boundary Value Analysis, Equivalence Class Testing, Decision Table Based Testing, Cause Effect Graphing Technique.

Structural Testing: Path testing, DD-Paths, Cyclomatic Complexity, Graph Metrics, Data Flow Testing, Mutation testing.

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

UNIT- III

Reducing the number of test cases: Prioritization guidelines, Priority category, Scheme, Risk Analysis, Regression Testing, Slice based testing.

Testing Activities: Unit Testing, Levels of Testing, Integration Testing, System Testing, Debugging, Domain Testing.

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

UNIT-IV

Object Oriented Testing: Issues in Object Oriented Testing, Class Testing, GUI Testing, Object Oriented Integration and System Testing.

Latest Software Testing Techniques: Security testing, Cloud Based Testing, Agile Testing, Azure Technologies.

Introduction to Latest Testing Tools: Introduction to Static Testing Tools, Dynamic Testing Tools. Introduction to Selenium (Automation Testing), Jmeter (Performance Testing), New Relic (Monitoring Tool). Jira (Ticketing Tool).

[T1][T2] [T4][No. of Hrs.: 11]

Text Book(s):

[T1] William Perry, "Effective Methods for Software Testing", John Wiley & Sons, New York, 1995.

[T2] Louise Tamres, "Software Testing", Pearson Education Asia, 2002

[T3] Robert V. Binder, "Testing Object-Oriented Systems-Models, Patterns and Tools", Addison Wesley, 1999.

[T4] Rex Black, "Foundations of Software Testing ISTQB Certification", Cengage Publications, 2015.

Reference Book(s):

[R1] Cem Kaner, Jack Falk, Nguyen Quoc, "Testing Computer Software", 2nd Edition, Van Nostrand Reinhold, New York, 1993.

[R2] K.K. Aggarwal & Yogesh Singh, "Software Engineering", 2nd Edition, New Age International Publishers, New Delhi, 2005

[R3] Boris Beizer, "Software Testing Techniques", Second Volume, 2ndEdition, Van Nostrand Reinhold, New York, 1990.

[R4] Boris Beizer, "Black-Box Testing – Techniques for Functional Testing of Software and Systems", John Wiley & Sons Inc., New York, 1995.

The Scheme and Syllabus for B.Voc (Software Development) (3rd Year) has been approved in 45th BOS Meeting of USICT held on 16th March, 2017 and 43rd Academic Council Meeting held on 25th May, 2017. The Scheme and Syllabus is applicable for the batch admitted in the Academic Session 2016-17 onwards, w.e.f., 1st August, 2018.

HUMAN VALUES & PROFESSIONAL ETHICS-II

Paper Code: ETVHS-702	**L**	**T/P**	**C**
Paper : Human Values & Professional Ethics-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.
3. Two internal sessional test of 10 marks each and one project report* carrying 5 marks.

Objectives:

1. *The main object of this paper is to inculcate the skills of ethical decision making and then to apply these skills to the real and current challenges of the engineering profession.*
2. *To enable student to understand the need and importance of value-education and education for Human Rights.*
3. *To acquaint students to the National and International values for Global development*

UNIT I - Appraisal of Human Values and Professional Ethics:

Review of Universal Human Values: Truth, Love, Peace, Right conduct, Non violence, Justice and Responsibility. Living in harmony with 'SELF', Family, Society and Nature. Indian pluralism - the way of life of Islam, Buddhism, Christianity, Jainism, Sikhism and Hinduism, Greek - Roman and Chinese cultural values.
Sensitization of Impact of Modern Education and Media on Values:
a) Impact of Science and Technology
b) Effects of Printed Media and Television on Values
c) Effects of computer aided media on Values (Internet, e-mail, Chat etc.)
d) Role of teacher in the preservation of tradition and culture.
e) Role of family, tradition & community prayers in value development.
Review of Professional Ethics: Accountability, Collegiality, Royalty, Responsibilityand Ethics Living. Engineer as a role model for civil society, Living in harmony with 'NATURE', Four orders of living, their inter-correctness, Holistic technology (eco-friendly and sustainable technology).

[T1][T2][R1][R5][R4][No. of Hrs. 03]

UNIT II – Engineers responsibility for safety:

Safety and Risks, Risk and Cost, Risk benefit analysis, testing methods for safety. Engineer's Responsibility for Safety Social and Value dimensions of Technology - Technology Pessimism – The Perils of Technological Optimism – The
Promise of Technology – Computer Technology Privacy
Some Case Studies: Case Studies, BHOPAL Gas Tragedy, Nuclear Power Plant Disasters, Space Shuttle Challenger , Three Mile Island Accident, etc.

[T1][T2][R4] [R2][No. of Hrs. 03]

UNIT III – Global Issues:

Globalization and MNCs: International Trade, Issues,
Case Studies: Kelleg's, Satyam, Infosys Foundation, TATA Group of Companies
Business Ethics: Corporate Governance, Finance and Accounting, IPR.
Corporate Social Responsibility (CSR): Definition, Concept, ISO, CSR.
Environmental Ethics: Sustainable Development, Eco-System, Ozone depletion, Pollution.
Computer Ethics: Cyber Crimes, Data Stealing, Hacking, Embezzlement.

[T1][T2][R4][No. of Hrs. 05]

UNIT IV - Engineers Responsibilities and Rights and Ethical Codes:

Collegiality and loyalty, Conflict of interests, confidentiality, occupational crimes, professional rights, responsibilities. To boost industrial production with excellent quality and efficiency, To enhance national economy, To boost team spirit, Work Culture and feeling of job satisfaction, National integration, Examples of some illustrious professionals.
Need for Ethical Codes, Study of some sample codes such as institution of Electrical and Electronics Engineers, Computer Society of India etc., Ethical Audit.
Development and implementation of Codes: Oath to be taken by Engineering graduates and its importance**,

[T1][T2][R4][R2][No. of Hrs. 05]

Text Books:

[T1] Professional Ethics, R. Subramanian, Oxford University Press.
[T2] Professional Ethics & Human Values: Prof. D.R. Kiran, TATA McGraw Hill Education.

References Books:

[R1] Human Values and Professional Ethics: R. R. Gaur, R. Sangal and G. P. Bagaria, Eecel Books (2010, New Delhi). Also, the Teachers‟ Manual by the same author
[R2] Fundamentals of Ethics, Edmond G. Seebauer & Robert L. Barry, Oxford University Press
[R3] Values Education: The paradigm shift, by Sri Satya Sai International Center for Human Values, New Delhi.
[R4] Professional Ethics and Human Values – M. Govindrajan, S. Natarajan and V.S. Senthil Kumar, PHI Learning Pvt. Ltd. Delhi
[R5] A Textbook on Professional Ethics and Human Values – R.S. Naagarazan – New Age International (P) Limited, Publishers New Delhi.
[R6] Human Values & Professional Ethics- S B Gogate- Vikas Publishing house PVT LTD New Delhi.
[R7] Mike Martin and Roland Schinzinger, “Ethics in Engineering” McGraw Hill
[R8] Charles E Harris, Micheal J Rabins, “Engineering Ethics, Cengage Learning
[R9] PSR Murthy, “Indian Culture Values and Professional Ethics”, BS Publications
[R10] Caroline Whitback, “Ethics in Engineering Practice and Research”, Cambridge University Press
[R11] Charles D Fleddermann, “Engineering Ethics”, Prentice Hall.
[R12] George Reynolds, “Ethics in Information Technology”, Cengage Learning
[R13] C, Sheshadri; The Source book of Value Education, NCERT
[R14] M. Shery; BhartiyaSanskriti, Agra (Dayalbagh)

*Any topic related to the experience of the B.Voc student in the assimilation and implementation of human values and professional ethics during the past three years of his/her studies in the institute OR A rigorous ethical analysis of a recent case of violation of professional ethics particularly related to engineering profession.

**All students are required to take OATH in writing prior to submission of major project and the record of the same is to be maintained at the college level and/or, this oath may be administered by the head of the institutions during the graduation ceremonies. The draft for the same is available alongwith the scheme and syllabus.

OATH TO BE TAKEN BY ENGINEERING GRADUATES

In a manner similar to the Hippocratic Oath taken by the medical graduates, Oath to be taken by the engineering graduates is as given below.

1. I solemnly pledge myself to consecrate my life to the service of humanity.
2. I will give my teacher the respect and gratitude, which is their due.
3. I will be loyal to the profession of engineering and be just and generous to its members.
4. Whatever project I undertake, it will be for the good of mankind.
5. I will exercise my profession solely for the benefit of humanity and perform no act for criminal purpose and not contrary to the laws of humanity.
6. I will keep away from wrong, corruption and avoid tempting others to vicious practices.
7. I will endeavor to avoid waste and consumption of non-renewable resources.
8. I will speak out against evil and unjust practices whenever and wherever I encounter them.
9. I will not permit considerations of religion, nationality, race, party politics or social standing to intervene between my duty and my work, even under threat.
10. I will practice my profession with conscience, dignity and uprightness.
11. I will respect the secrets, which are confided to me.

I make these promises solemnly, freely and upon my honor.

(Name of the Student)

Correspondence Address: _____

_____

_____

Email: _____

SEARCH ENGINE OPTIMISATION & DIGITAL MARKETING
(Core Elective-IV)

Paper Code: ETVSD-704	**L**	**T/P**	**C**
Paper: Search Engine Optimisation & Digital Marketing	**3**	**0**	**3**

INSTRUCTION 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 internet technology and internet protocols is a prerequisite to this course.*

Learning Outcomes: *The student after completing the course will be able to:*

- *Understand the working of a search engine.*
- *Optimization techniques for promoting a website and defining rules for publishing a website.*

UNIT-I

SEO Introduction: Understanding of UX Design for website, Spidering, Indexing and Ranking, Ranking Factors, Keywords Selection, Website Structuring for local national & international searches, optimising webpage, link building and social media, link baiting, technology optimisation, usability optimisation, avoiding Black-Hat SEO, reporting competitor spam, on page optimisation, off page optimisation, local SEO, Setting-up the Google Search Console, setting-up a Robots.Txt File, setting-up an XML Sitemap.

[T1][R1][No. of Hrs.: 15]

UNIT-II

Content Marketing , Email Marketing, Social Media Marketing, Inbound Marketing, Search Engine Marketing, Affiliate Marketing, Mobile Marketing, Learn how to create unfair advantage and exponentially Grow Online Business, Integrated Digital Marketing Strategy, How To Sell Digital Marketing Services, Super Blogging, Display Advertisement, E-tail (Online Listing)/Website V/s Market Place, Prepare Yourself For Career Opportunities in Digital Marketing, Video Advertising, Shopping Advertising, Get Started as Freelancer, Google AdSense, Pay Per Click Campaign , Microsoft AdCenter, Google AdWords.

[T1][R1][No. of Hrs.: 10]

UNIT-III

Web Analytics and its tools, Google Keyword tool, Word Tracker, Meta Description Creation, Visitor Traffic Analysis, Google Dance and its Impact on Rankings, Google Analytics and, Analysing Competitor Websites with decompile & reverse engineering, Google Webmaster Central, Top pointers for High Rankings on Local Search Engines, Use of Lens and Hub pages to promote sites, Auto-pinging a Blog and its RSS, Increasing traffic by using Social Bookmarking, Google Panda, Google Penguin.

[T1][R1][No. of Hrs.: 10]

UNIT-IV

Audience/Visitor Reports, Traffic Reports, Geographic Reports, Behaviour Reports, Experiment A/B Testing, Conversion Tracking, Funnel Visualization, Multi-channel Funnels, Online PR News & Reputation Management, Tools for Managing Reputation, Strategy and planning a campaign, SEO Project Management, Implementation of SEO Project.

[T2][R1][No. of Hrs.: 10]

Text Book(s):

[T1] Peter Kent, "Search Engine Optimization for Dummies", 5th Edition, Wiley& Sons Publications.
[T2] Shivani Karwal, "Digital Marketing Handbook: A Guide to Search Engine Optimization", Kindle Edition.

Reference Book(s):

[R1] Avinash Kaushik, "Web Analytic 2.0", Wiley Publications.
[R2] Adam Clarke, "SEO 2017: Learn Search Engine Optimization with Smart Internet Marketing Strategies", Kindle Edition

DATA WAREHOUSE AND DATA MINING
(Core Elective-IV)

Paper Code: ETVSD-706	**L**	**T/P**	**C**
Paper: Data Warehouse and Data Mining	**3**	**0**	**3**

INSTRUCTION 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. Knowledge of Database management system concepts is necessary.*

Learning Outcomes: *The student after completing the course will be able to:*

- *Store the data in classified form.*
- *Operate on the data to extract meaningful data.*
- *Learn techniques of the data mining and their applications.*

UNIT-I

An Introduction to data ware housing, types of databases for data mining. functionalities of data mining, characteristics of data mining, classification of data mining systems, task primitives, integration of data mining with database, issues of data mining.

[T1][T2][No. of Hrs.: 15]

UNIT-II

Data Ware House Architecture: Design & construction, three tier architecture, back end tools & utilities, metadata repository, types of OLAP servers.

Data Warehouse Implementation: Efficient computation of data cubes, indexing OLAP data, efficient processing of OLAP queries.

From data warehousing to data mining: warehouse usage, from OLAP to OLAM.

[T1][T2][No. of Hrs.: 10]

UNIT-III

Data Pre-processing: reason for pre-processing, Data Cleaning, Data Integration and Transformation, Data Reduction, Data Discretization and Concept Hierarchy Generation.

[T1][T2][No. of Hrs.: 10]

UNIT- IV:

Data cube computation and data generalization: efficient methods of data cube computation attribute oriented induction. Associations and correlations- basic concepts, efficient and scalable frequent item sets mining methods, mining various kinds of association rules, constrain- based association mining. Overview of Big Data Analytics.

[T1][T2][No. of Hrs.: 10]

Text Books:

[T1] Paulraj Ponniah, "Data Warehousing Fundamentals", 2nd Edition, John Wiley
[T2] Han, Kamber, "Data Mining Concepts and Techniques", 2nd Edition, Morgan Kaufmann,
[T3] M. Vijayalakshmi Radha Shankarmani, "Big Data Analytics (WIND)", Wiley, 2015

Reference Books:

[R1] M. H. Dunham, "Data Mining Introductory and Advanced Topics", Pearson Education, 2006.
[R2] Pieter Adriaans, Dolf Zantinge, "Data Mining",Pearson Education Asia, 1996.
[R3] Ralph Kimball, "The Data Warehouse Lifecycle Tool Kit", John Wiley, 2007.
[R4] Alex Berson, "Data Mining & OLAP", Tata Mc Graw-Hill Edition, 2004.

INTERNET OF THINGS
(Core Elective-IV)

Paper Code: ETVSD-708	**L**	**T/P**	**C**
Paper: Internet of Things	**3**	**0**	**3**

INSTRUCTION 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 and Pre-requisites:*.Knowledge of Internet and Basic Knowledge of microp is expected from the student.*

Learning Outcomes: *The student will be able to:*

- *Design a portable IoT using Arduino/ equivalent boards and relevant protocols.*
- *Develop web services to access/control IoT devices.*
- *Deploy an IoT application and connect to the cloud.*
- *Analyze applications of IoT in real time scenario.*

UNIT-I

Fundamentals of IOT

Introduction-Characteristics-Physical design – Protocols - Logical design - Enabling technologies.

IoT Levels – Domain Specific IoTs – IoT vs M2M.

IoT Systems Management - IoT Design Methodology – Specifications Integration and Application Development.

[T1][T2][No. of Hrs.: 15]

UNIT-II

Building IOT with Raspberry PI

Physical device – Raspberry Pi Interfaces – Programming – APIs / Packages – Web services.

[T1][T2][No. of Hrs.: 10]

UNIT-III

Building IOT with Galileo / Arduino

Intel Galileo Gen2 with Arduino- Interfaces - Arduino IDE – Programming - APIs and Hacks.

[T1][T2][T3][No. of Hrs.: 10]

UNIT-IV

Case Studies and Advanced Topics

Various Real time applications of IoT- Connecting IoT to cloud – Cloud Storage for Iot – Data Analytics for IoT – Software & Management Tools for IoT.

[T1][T2][No. of Hrs.: 10]

Text Book(s):

[T1] Arshdeep Bahga, Vijay Madisetti, "Internet of Things – A Hands-on Approach", Universities Press, 2015.

[T2] Manoel Carlos Ramon, "Intel® Galileo and Intel® Galileo Gen 2: API Features and Arduino Projects for Linux Programmers", Apress, 2014.

[T3] Marco Schwartz, "Internet of Things with the Arduino Yun", Packt Publishing, 2014.

Reference Book(s):

[R1] Hakin Cassimally Adrian Mcewen, "Designing The Internet of Things", Wiley, 2015.

[R2] Ebook: Internet of Things (Innovation Trends Series) Kindle Edition, BBVA Innovation Center.

[R3] Samuel Greengard, "The Internet of Things (Essential Knowledge)", MIT Press, 2015.

SEARCH ENGINE OPTIMISATION & DIGITAL MARKETING LAB
(Core Elective-IV)

Paper Code: ETVSD-754	**L**	**T/P**	**C**
Paper: Search Engine Optimisation & Digital Marketing Lab	**0**	**3**	**3**

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. Optimise website for mobile.
2. Use Power Editor to manage Face book Ads.
3. Make LinkedIn Profile stand out.
4. Use LinkedIn for SEO.
5. Create auto-responders to thank email subscribers.
6. How Twitter Ads help build your following/awareness.
7. Using Google's Mobile-Friendly Test page.
8. Use face book page engagement custom audiences.
9. Create social media marketing video.
10. Blog posts with your YouTube videos.
11. Use Snap chat for customer support.
12. SEO with Google tools.

DATA WAREHOUSE AND DATA MINING LAB
(Core Elective-IV)

Paper Code: ETVSD-756	**L**	**T/P**	**C**
Paper: Data Warehouse and Data Mining Lab	**0**	**3**	**3**

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. Evolution of data management technologies, introduction to data warehousing concepts.
2. Develop any two applications of following:
    - Develop an application to implement defining subject area, design of fact dimension table, DataMart.
    - Develop an application to implement OLAP, roll up, drill down, slice and dice operation.
    - Develop an application to construct a multidimensional data.
    - Develop an application to implement data generalization and summarization technique.
    - Develop an application to extract association rule of data mining.
    - Develop an application for classification of data.
    - Develop an application for one clustering technique
    - Develop an application for Naïve Bayes classifier.
    - Develop an application for decision tree.
3. Create data set student.arff.
4. Demonstration of pre-processing on dataset student.arff.
5. Demonstration of classification rule process on dataset student.arff.
6. Demonstration of classification rule process on dataset student.arff using j48 algorithm.

INTERNET OF THINGS LAB
(Core Elective-IV)

Paper Code: ETVSD-758	**L**	**T/P**	**C**
Paper: Internet of Things Lab	**0**	**3**	**3**

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. To study the architecture of SOC Broadcom-2835 application board of Raspberry Pi.
2. To demonstration the OS (Debian) for RPi in a SD card preparation, configuration of Raspberry Pi during first booting and use of remote SSH like putty
3. To demonstrate the basic linux commands on Raspberry pi.
4. Basic python programs- Understanding Data types, operators and control structures on Raspberry Pi.
5. To create a database & Store the value in Raspberry Pi.
6. To interface ADC at GPIOs of Raspberry Pi for measuring analog voltage.
7. To familiarize with Intel Galileo Gen2 board and understand the procedure of creation and compilation of C source code.
8. To write C source code to Interface LCD with Intel Galileo Gen 2 and display Hello on LCD Display.
9. To write C source code to Interface Temperature Sensor (LM35) with Intel Galileo Gen 2 and display the temperature on LCD.
10. To write C source code to Interface Bluetooth Module with Intel Galileo Gen 2 and showing communication between Galileo Gen2 & Android Device .

SOFTWARE TESTING LAB

	L	T/P	C
Paper Code: ETVSD-752			
Paper: Software Testing 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. Take any system (e.g. ATM system) and study its system specifications and report the various bugs.
2. Write down the test cases for any known applications (e.g. Banking Application).
3. Write down the system specifications for elevator system.
4. Create a test plan document for any application (e.g. Library Management System).
5. Perform the practical Implementation of the sample HP web tours using Jmeter.
6. Perform UI automation for Face book / YouTube by using Selenium.
7. Study of any bug tracking/ Ticketing tool (e.g., Bugzilla,/ Jira).
8. Study of any test management tool (e.g. Test Director).
9. Study of Github (Repository).
10. Study of Jenkins for Build Creation.