

Open Elective – PG

18OEL631 `ADVANCED STATISTICAL ANALYSIS FOR RESEARCH

2 0 0 2

Objective: To familiarize students in application of statistical tool to enable them to easily perform complicated quantitative analysis.

Unit 1

Relevance of statistical analysis in research – scope of analysis in research - types of research – types of analysis in different areas.

Unit 2

Test of hypothesis - hypothesis testing procedure – significance level – steps for testing.

Unit 3

Chi-Square – t Test.

Unit 4

Tools for statistical analysis – familiarising the tool window – common buttons – available menu – entering and editing data.

Unit 5

Different types of analysis using tool.

REFERENCE BOOK:

C, R Kothari, Research methodology – Methods and techniques, New Age International Publishers

18OEL632 **BASICS OF PC SOFTWARE**

2 0 0 2

Objective: The main objective of this course is to familiarize the basic concepts of MicrosoftOffice 2007 applications which promote students to build their knowledge in business applications.

Unit 1

Word Processing Basic - An Introduction to Word Processing, Opening Word Processing package, menu bar, Using the help, Using the Icons below menu bar. Opening, saving and closing documents. Page setup, Page background, Printing of documents, Display/Hiding of Paragraph Marks and inter word Space. Moving around in a document - Scrolling the Document, Scrolling by line/paragraph, Fast scrolling and Moving Pages Text creation and manipulation - Paragraph and Tab setting, Text selection, cut, copy and paste, font and size selection, bold, italic and underline, Alignment of text: center, left, right and justify. Formatting the Text - Changing font, size and color, Paragraph indenting, bullets and numbering, Use of tab and Tab setting, changing case. Inserting – header and footer, page number, date & time, symbols, comments, auto texts, footnotes, citations, caption, index, pictures, files & objects, bookmark, hyperlink.

Unit 2

Handling multiple documents, Opening and closing of multiple documents, cut, copy and paste across the documents. Table Manipulation - Concept of table, rows columns and cells, draw table, changing cell width and height, alignment of text in cell, copying of cell, delete/insertion of row and columns, borders for table. Printing

– printing, print preview, print a selected page. Language Utilities – spelling & grammar- Mail merge options, password locking, View – Macros, document views

Unit 3

Elements of Electronics Spread Sheet, Application/usage of Electronic Spread Sheet, Opening of spreadsheet, and menu bar, Creation of cells and addressing of cells, cell inputting. Insert – tables, charts. Illustrations, links, texts. Page Layout – Themes, set up, scale, sheet, arrange. Practicing auto formatting and conditional formatting - Spelling and auto correct – Arranging windows – Freeze panes – Hiding windows. Providing Formulas - Using basic functions/ formalism a cell, Sum function, Average, Percentage, Other basic functions Data – connections, sort & filter, data tools, outline

Unit 4

Inserting slides – new slides, existing slides, duplicate slides, slides from Auto layout. Slide views – normal, slider sorter. Slide layouts, design templates. Deleting slides. Slide show – start with first slide, current slide, customize show. Inserting header & footer, Date and Time, Hyperlink, Format – Font, Bullet & Numbering. Custom animation, slide Transition.

Unit 5

Internet: Introduction to networks and internet, history, working of Internet, Modes of connecting to internet, ISPs, Internet address, standard address, domain name, Modems.

World Wide Web-Introduction, Miscellaneous Web Browsers details, searching the w w w - Directories search engines and meta search engines, search fundamentals, search engines, working of the search engines, Telnet and FTP.

TEXTBOOK:

Alexis Leon & Mathews Leon: Fundamentals of Information Technology, Vikas Publishing

REFERENCE BOOKS:

- 1. Microsoft Office 2000 Complete, BPB publications*
- 2. Dennis P.Curtin, Kim Foley, Kunal Sen, Cathleen Morin: Information Technology - The Breaking Wave, TATA McGraw-Hill Edition*

18OEL633 COMPUTER HARDWARE AND NETWORKING 1 0 1 2

Objectives: The course aims to give a general understanding of how a computer works. Students will be able to understand the basics of hardware and Networking technologies.

Unit 1

Hardware Basics - Basic Terms, Concepts, and Functions of System Modules, Front and rear panel view of system – Motherboards: Components and Architecture. Popular CPU Chips and their Characteristics,

Processor Architecture - Processor specifications - installing and uninstalling processor - CPU Overheating issues – common problems and solutions

Unit 2

Memory and Storage: Memory features – Types of memory – working - Installing and uninstalling memory modules –maintenance and troubleshooting – common problems and solutions. Storage devices – Hard disk details – Working and parts of hard disks – Installing hard disks – maintenance and troubleshooting.

Unit 3

Power supply – SMPS – features – types – installing SMPS – Specification for SMPS. Maintenance and Troubleshooting: Preventive Maintenance and Safety Procedures - Managing Replaceable Components.

Unit 4

Introducing Computer Networks: Overview - Types - Topology - Networks Defined by Resource Location - Client-Server Networks - Peer-to-Peer Networks - Dissecting the OSI Model - The TCP/IP Stack Layers of the TCP/IP Stack - Common Application Protocols in the TCP/IP Stack.

Unit 5

Networking Devices – Repeater, Hub, Switch, Router – Basics of Types of cabling – Crimping - Setting up a LAN.

TEXT BOOKS / REFERENCE BOOKS

1. James K L, "Computer Hardware: Installation, Interfacing Troubleshooting and maintenance", PHI Learning Press (Eastern Economy Edition, 2013)
2. Mark Dye, Rick McDonald, Antoon Ruffi, "Network Fundamentals: CCNA Exploration Companion Guide", Cisco Networking Academy, 2008
3. Kaveh Pahlavan, Prashant Krishnamurthy, "Networking Fundamentals: Wide, Local and Personal Area Communications ", Paperback, 2014

18OEL634

CONSUMER PROTECTION ACT

2002

Objective: To know about consumer rights and to understand the grievances redressal forums established under the Consumer Protection Act, 1986.

Unit 1

Consumerism in India (Historical Background), Consumers: the concept, definition and scope. Object of Consumer Protection Act, 1986.

Unit 2

Unfair Trade Practice, Restriction Trade Practice, Defect in goods, Deficiency in service: Medical, Lawyering, Electricity, Housing, Postal services etc.

Unit 3 Consumer rights and its protection; consumer protection councils, powers and functions.

Unit 4 Judicial Enforcement of Consumer Rights: Consumer Forum under C.P. Act - Jurisdiction, Powers and functions, Exceptions of order, Judicial Review, PIL, Class action, Remedies, Appeal, Administrative Remedies, C.P. Courts.

Unit 5 Appeals and orders: enforcement of orders of the consumer forum, Appeals against orders, Administrative control; Dismissal of frivolous and vexatious complaints, Penalties.

REFERENCE TEXTS:

1. Saraf D.N., *Law of Consumer Protection in India, 1995*
2. R.K. Bangia, *Consumer Protection Act*
3. P.K. Majumdar, *The Law of Consumer Protection in India, 1998 Orient Publishing Co. Delhi*

18OEL635 CORPORATE COMMUNICATION 2002

Unit 1

Structure and characteristics of an organization; Factors influencing communication
Flow of communication in an organization - Bottom step, top down vertical and horizontal barriers to communication; Organization of a PR department and counselling firms.

Unit 2

Role of PR in an organization; PR processes - image building - PR and various publics - internal & external; PR and crisis management- national community, labour unrest, and accidents.

Unit 3

PR tools - House journals - kinds and production of house journals; Open house; New media; Gossip, rumour mongering and criticism.

Unit 4

Media Relations - press conference, press releases, press visit, interviews, preparations and distributions of publicity materials to media.

Unit 5

PR for Govt. PR for Non Govt. organizations, PR for armed forces, PR for entertainment and sports, PR for tourism, PR for philanthropic organizations, PR for celebrities. Event management, Ethics in PR.

BOOKS RECOMMENDED:

1. Balan K.R.: *Lectures on applied Public Relations.*
2. Dennis L. Wilcox, Philip H. Ault & Warren K. Agee: *Public Relations strategies & tactics.*
3. Mehta D.S.: *Handbook of Public Relations in India*
4. Scott M. Cutlip, Allen H. Centre & Glen M. Broom: *Effective Public Relations.*
5. Philip Lesley: *Lesley's Public Relations Handbook*
6. Kaul J.M.: *Public Relations Handbook.*
7. Frank Jefkins: *Planned Public Relations*
8. Sam Black: *The role of Public Relations in Management.*

Objective: To introduce the students to the field of visual design.

Unit 1

Drawing and illustration.

Unit 2

Design basics.

Unit 3

Principles of composition.

Unit 4

Introduction to type design.

Unit 5

Usage of images, colour in terms of visual design.

REFERENCES:

1. *Thinking with Type* by Ellen Lupton
2. *How to be a Graphic Designer Without Losing Your Soul* by Adrian Shaughnessy

Objectives: To appreciate the fundamentals of disaster management and to introduce the fundamentals procedure and working during the contingency.

Unit 1 Introduction & Dimensions of Natural & Anthropogenic Disasters, Principles/Components of Disaster Management, Organizational Structure for Disaster Management,

Unit 2 Disaster Management Schemes/ standard operating procedures, Natural Disasters and Mitigation Efforts, Flood Control, Drought Management, Cyclones, Avalanches, Mangroves, Land Use Planning, Inter-Linking of Rivers, Role of Union/ States, Role of Armed Forces/ Other Agencies In Disasters, Important Statutes/ Legal Provisions, Improvised Explosive Device/ Bomb Threat Planning, Nuclear, biological and chemical threat And Safety Measures, Forest Fires, Oil Fires, Crisis In Power Sector, Accidents In Coal Mines, Terrorism And Emergency Management.

Operations Management (OM), Risk Assessment and Disaster Response, Quantification Techniques, NGO Management, SWOT Analysis based on Design & Formulation Strategies,

Unit 3 Insurance & Risk Management, Role of Financial Institutions in Mitigation Effort, Group Dynamics, Concept of Team Building, Motivation Theories and Applications, School Awareness and Safety Programmes, Psychological and Social Dimensions in Disasters, Trauma and Stress, Emotional Intelligence, Electronic Warning Systems, Recent Trends in Disaster Information Provider, Geo Informatics in Disaster Studies, Cyber Terrorism, Remote Sensing & GIS Technology, Laser Scanning Applications in Disaster Management, Statistical Seismology, Quick Reconstruction Technologies,

Unit 4 Role of Media in Disasters, Management of Epidemics, Bio-Terrorism, Forecasting/ Management of Casualties.

Unit 5 Case Studies - Natural Disaster and Man-made Disasters.

REFERENCES:

1. *Disaster Management - Harsh K Gupta*
2. *Disaster Management - Damon.P*

18OEL638

ESSENTIALS OF CULTURAL STUDIES

2 0 0 2

Uniqueness of Indian culture.
Real Indian History.
Heritage – spiritual and cultural heritage.
Glory of ancient India – inventions and discoveries in all fields.
Importance of festivals.

REFERENCE TEXTS:

1. *Swami Harshananda – Hindu Culture*
2. *Amma – Eternal Truth*

18OEL639

FOUNDATIONS OF MATHEMATICS

2 0 0 2

Objectives: *To develop an understanding of problem solving methods, to understand the basic concepts of mathematics and to apply the results to real life business problems*

Unit 1

Matrices: Type of matrices, addition, subtraction, multiplication of matrices, transpose, determinant of a matrix, adjoint and inverse of a matrix.

Unit 2

System of equations - Solution of equations in one (linear, quadratic), two and three variables, Solution of a system of linear equation having unique solution and involving not more than three variables by matrix method, Cramer's rule.

Unit 3

Financial mathematics: Simple interest and compound interest.

Unit 4

Simple differentiation: functions, simple differentiation of algebraic functions, first and second order derivatives, maxima and minima.

Unit 5

Elementary integral calculus: Integration of simple algebraic functions.

REFERENCES:

1. *P.R Vittal - Business mathematics and statistics, Margham Publications, Chennai.*

2. Dr. Amarnath Dikshit, Dr. Jinendra Kumar Jain - *Business mathematics, Himalaya publishing House.*

3. V.K Kapoor - *Introductory Business mathematics, Sultan chand & Sons, New Delhi.*

18OEL640 FOUNDATIONS OF QUANTUM MECHANICS

2 0 0 2

Unit 1

Historical Perspective of Quantum Physics: Failure of classical mechanics - Planck-Einstein, Bohr-de Broglie-Heisenberg's Uncertainty.

Unit 2

Empirical confirmations of Wave Particle Duality. Schrödinger Equation - Particle in a box-Tunnel effect.

Unit 3

Paradoxes in QM - de Broglie paradox - Schrödinger's cat, Mach-Zhender type interferometers - EPR paradox - Bell-type Inequalities.

Unit 4

Various interpretations - Statistical, Copenhagen, Bohm's formulation, Transactional, Wheeler's Participatory Universe, Many World, Decoherence, consciousness interpretation.

Unit 5

Uncertainty-Nonlocality, Holistic universe, Violations of causality-Retro influence-Philosophy of Advaita (non-Duality).

TEXT AND REFERENCES:

1. *Quantum Enigma: Physics Encounters Consciousness* by Bruce Rosenblum and Fred Kuttner (Aug 1, 2011)
2. *The New Physics and Cosmology Zanjoc, Oxford 2004*

18OEL641 GLIMPSES OF LIFE THROUGH LITERATURE

2 0 0 2

Unit 1

- 1 Introduction – What literature is – Language and literature – Indian literature – Values through literature – Literature and culture – Enjoying literature
- 2 Father Giligan – WB Yeats

Unit 2

- 3 The West Wind – PB Shelley
- 4 Chicago Address – Swami Vivekananda

Unit 3

- 5 On Saying Please – AG Gardiner
- 6 My Lost Dollar – Stephen Leacock
- 7 The Importance of Being Earnest – Oscar Wilde (extracts)

Unit 4

8 The Refugee – AK Abbas
9 The Mirrored Hall – Swami Chinmayananda

Unit 5

10 The Windhover – GM Hopkins

18OEL642 INFORMATION TECHNOLOGY IN BANKING 2002

Objective: To provide an understanding on the technology enabled banking services and their applications.

Unit 1

Bank and Banking: Meaning and definition, development of banking in India, types banks, banking systems, types of banking systems, commercial banks, functions, nationalization of commercial banks in India.

Unit 2

Central Banking, functions, Reserve Bank of India, State Bank of India.

Unit 3

Banker and Customer, opening an account, Pass Book and Pay-in Slip, Cheques, types of cheques, crossing of cheques.

Unit 4

Role of information technology in banking services, Core Banking, Automated Teller Machine (ATM), Electronic Clearing Service (ECS), NEFT and RTGS, Mobile Banking.

Unit 5

Debit Card and Credit Card, banking and E-Commerce, Point of Sales (PoS), Online bill payment and ticket reservation – future of electronic banking.

REFERENCE BOOKS:

1. Sundaram and Varshney – *Banking Law, Theory and Practice*, Sultan Chand
2. B. Santhanam – *Banking and Financial Systems*, Margham Publications
3. S.N. Maheswari – *Banking Law, Theory and Practice*, Kalyani Publications
4. Parameswaran – *Indian Banking*, S.Chand and Co

18OEL643 INTRODUCTION TO WEB TECHNOLOGIES 2002

Objective: To give an overview about developing attractive web sites and basic concepts of e-commerce.

Unit 1

Internet Basics: Introduction to Internet, Communications on Internet, Resources of Internet – H/w and s/w requirements of Internet – ISP – Choosing an ISP – Internet Domains - Internet Applications – WWW - FTP, Telnet.

Unit 2

Introduction to HTML: HTML Tags, Paired Tags, Singular Tags, Commonly Used HTML commands, DOCTYPE Element, The HTML element, The HEAD Element, BODY, TITLE and Footers, Layout HTML Tags, Formatting Tags, Text Formating and style Formatting, Effects, Spacing, Bullets and Numbering, Ordered lists, Unordered Lists, Definition Lists, HyperLink, Working with Images.

Style Sheet: The CSS standards, Types, Introducing CSS, Applying styles to specific groups of elements, Font Attributes, Color and Background attributes, Text Attributes Border, Margin, Using the Class name Style Sheet Selector, Using the ID style sheet Selector, Inline Styles, linking External Style Sheets.

Tables for Organization and Layout The basic table Elements, Column grouping with COLGROUP & COL, Row grouping, Table Caption.

Unit 3

Forms and Form Elements: What are HTML forms, The FORM Object and its Attributes, The Form Elements, The Button Element, Creating a Selection List, Adding radio buttons and Check boxes to a Web page, Accessing Text with the Text controls: text, textarea, and password, Submitting and Resetting the Form with submit and reset.

Frames and Frameset: Creating and Working with Frames, The FRAMESET Element, Nested Framesets, The Frame Element, Accessing external references from Frame, Inline Frames with IFRAME.

Unit 4

Scripting Basics: What is Client, Side scripting, Scripts and Programs, Introduction to JavaScript syntax, Statements, Blocks, Comments, Data Types, String, Numbers, Boolean Variable, Expressions, Numerical and Logical Expressions, Flow Control, Creating Simple JavaScript.

Unit 5

Introduction to E-commerce: E-commerce consumer applications, E-commerce organization applications, Consumer Oriented applications, Mercantile process models, Consumer's perspective of Mercantile process models, Merchant's perspective of Mercantile process model.

TEXTBOOKS

1. Ivan Bayross, *Web Enabled Commercial Application Development Using HTML, JavaScript, DHTML and PHP*, 4th Revised Edition, BPB Publications
2. Henry Chan, Raymond Lee, Tharam Dillon, Elizabeth Chang , *E-Commerce and Applications*, Wiley Publications

18OEL644 KNOWLEDGE MANAGEMENT 2 0 0 2

Objective: *To enable students to understand the basics of Knowledge Management and its applications in organizations*

Unit 1

Knowledge management concepts – Introduction - Definitions of Knowledge – Data-information and knowledge - basic thoughts on knowledge - difference between wisdom and knowledge - information Management and knowledge Management - hierarchy model - knowledge types – explicitness – reach - abstraction level – propositionality – Earl’s schools of knowledge management.

Unit 2

Knowledge management and process - Becerra-Fernandez and Stevenson knowledge process - Nonaka’s Knowledge Spiral – dynamics of knowledge creation – knowledge management systems – knowledge management sub – processes – knowledge discovery – knowledge capture – knowledge sharing –knowledge application.

Unit 3

Organizational knowledge – Need – benefits - components and functions - Knowledge management in virtual organizations - knowledge management in professions - a study of IT and ITES business - knowledge management system requirements - Organizational knowledge measurement techniques - organizational implementation barriers.

Unit 4

Designing Enterprise Knowledge Management System architecture – Multi-layer architecture for Knowledge Management Systems - knowledge management in decentralized and heterogeneous corporations - Web based knowledge management support for document collections.

Unit 5

Recent Tools for KM - Intelligent support systems - intelligent systems and artificial intelligence - comparing artificial and neural intelligence - conventional vs. Artificial intelligence - Emerging technology - virtual reality - Intellectual capital.

TEXTBOOKS AND REFERENCES:

- 1. Knowledge Management – Sudhir Warier, Vikas Publications.*
- 2. Knowledge Management Systems – Stuart Barnes, Thomson Learning.*
- 3. Key issues in the New Knowledge Management – J.M. Firestone, M.W. Mcelroy.*
- 4. Developing Expert System for Business – Chandler/Liang.*
- 5. Knowledge Management – Pankaj Sharma, APH Pub*

18OEL645

MARKETING RESEARCH

2 0 0 2

Objective: *To provide a basic knowledge on research methodology and market research.*

Unit 1

Definition of Marketing Research, Objective of Marketing Research, Application of Marketing Research, Limitation of Marketing Research, Marketing Research Process.

Unit 2

Research Design: Various Method of Research Design, Important Experimental Research Designs.

Primary and Secondary Data: Methods of Collecting Primary Data, Advantages & Disadvantages of Primary Data & Secondary Data, Essentials Characteristics for Selecting Secondary Data. Basic Methods of Collecting Data: Questionnaire Method/ Observation Method - Advantages & Disadvantages, Methods of Observation, Precautions in Preparation of Questionnaire & Collection of Data.

Unit 3

Measurement and Scaling: Types of Scales, Difficulty of Measurement, Sources of Error, Criteria for a Good Scale, Development of Marketing Measures.

Sampling: What is Sampling, Objective of Sampling, Steps in Sample Design, Various Techniques of Sampling, Advantages & Disadvantages of Different Techniques of Sampling, Difference between Probability and Non-probability Sampling, Problem Associated with Sampling, Determining Sample Size.

Unit 4

Data Processing, Analysis and Estimation

Unit 5

Report Preparation: Types and Layout of Research Report; Precautions in Preparing the Research Report, Bibliography and Annexure in Report, Drawing Conclusions, Giving Suggestions and Recommendation to the Concerned Persons.

REFERENCE TEXTS:

1. *Nargundkar - Marketing Research, Tata McGraw Hill, 2nd Ed.*
2. *Luck and Rubin - Marketing Research, Prentice Hall of India, 7th Ed.*
3. *Tull & Hawkins - Marketing Research: Measurement & Method, Prentice Hall of India, 6th Ed.*
4. *Beri - Marketing Research, Tata McGraw Hill, 4th Ed.*

18OEL646 MEDIA FOR SOCIAL CHANGE 2 0 0 2

Unit 1 Health Communication

Introduction to theories in Health Communication. Awareness on Health Issues – Epidemic Diseases, knowledge about vaccination for various diseases - Health campaign will be organized with the help of Medical Practitioner.

Unit 2 Radio for Social Change

Awareness on Edaphic Issues - Soil Pollution, Water Pollution and other forms of pollution. Anti-Pollution campaign will be organized with the help of Environmental Scientist or Journalist.

Unit 3 Social Media Activism

Awareness on Blood Donation – How a tiny red drop makes someone's life Green. Awareness campaign will be organized based on Eye Donation.

Unit 4 Development Communication and Social Learning

Locating the remote village where basic amenities like Water, Toilet facilities are not available - A campaign with the involvement of government officials and social scientists.

Unit 5 Participatory Communication for Social Change

Organic Farming - Awareness of Organic Farming. Benefits of organic farming in the materialistic world. A campaign cum workshop will be conducted by inviting experts from Agricultural Husbandry.

REFERENCES

1. *Tillman, C. (2006). Principles of occupational health and hygiene: an introduction. Allen & Unwin.*
2. *Thayer, Lee, (2014) Mental Hygiene: Communication and the Health of the Mind.*
3. *Harrison, R. M. (2001). Pollution: causes, effects and control. Royal Society of Chemistry. Wilhelm, J. (2016). Environment and Pollution in Colonial India: Sewerage Technologies Along the Sacred Ganges. Routledge.*
4. *Charbonneau, J., & Smith, A. (Eds.). (2015). Giving Blood: The Institutional Making of Altruism. Routledge.*
5. *Agarwal, Arun K (2007) Standard Operating Procedures(sop) For Hospitals In India. New Delhi: Atlantic Publishers*
6. *Atlantic Publishers*
7. *Hall-Matthews, D. N. J. (2005). Peasants, Famine and the State in Colonial Western India.*
8. *Basingstoke: Palgrave Macmillan.*
9. *Thottathil, S. E. (2014). India's Organic Farming Revolution: What it Means for Our Global Food System. University of Iowa Press.*

18OEL647

MEDIA MANAGEMENT

2 0 0 2

Unit 1

Management concept – Principles of Management - Factors influencing Management decision in media – Structure and characteristics of media organizations – Newspapers and Magazines, Radio, Television, Cinema - Ownership in Media Industries – Merits and de-merits.

Unit 2

Economics of newspaper – Advertising vs circulation – Management problems of small, medium, large newspapers: gathering, processing, printing, circulation, distribution, advertising, professionalism, trade unionism, News room diversity.

Unit 3

Economics and Administrative concerns of government owned electronic media-market driven media: private channels – Social commitment vs Profit making.

Unit 4

Economics of film Industry – creativity, production, marketing distribution, exhibition, ownership vs piracy.

Unit 5

News agencies and syndicates: Ownership and organization structures – committees to study the problems of various media in India.

BOOKS RECOMMENDED:

1. *Aggarwal S.K : Press at the crossroads in India.*
2. *William and Rucker: Newspaper Organization and Management*

3. Sarkar R.C: *The press in India*
4. Noorani A.G: *Freedom of Press in India*
5. Frank Thayer: *Newspaper Management*
6. Gulab Kothari: *Newspaper Management in India*
7. *Reports of the enquiry committees appointed by the Ministry of Information and Broadcasting.*

18OEL648 OBJECT-ORIENTED PROGRAMMING 2 0 0 2

Unit 1

Introduction to OOPS: Object Oriented Programming features, Applications, History, Difference from structured Programming, Object Oriented Programming Languages, Program execution.

Unit 2

Object Oriented Concepts: Abstraction, Encapsulation, Polymorphism, Inheritance, Classes and Objects, Programming Basics - Data types, Conditional Statements, Loops, arrays, Functions, Structures.

Unit 3

Implementing Class, Object Data Types, User Defined Data Types, Defining a Class, e Access specifiers, The Scope Resolution Operator, Using Class Objects Like Built-in Types, Scope, Constructors, Member Initialization, Constructor Overloading, Destructors.

Unit 4

Inheritance: Introduction, The protected Access Level, Assignments Between Base and Derived Objects, Types of Inheritance, Compile-Time vs. Run-Time Binding, virtual Functions, Polymorphism, Abstract Base Classes.

Unit 5

The iostream Library, Predefined Streams, Stream States, Formatted I/O, Disk Files, Reading and Writing Objects.

TEXTBOOKS

1. E Balaguruswamy “*Object Oriented Programming Using C++*” 6th Edition, TMH Publications
2. Lalit Kishore Arora , Dr. Vikesh Kumar, “ *Object Oriented Programming Using C++* “,S.K. Kataria & Sons; 2011 edition (2011)

18OEL649 PAINTING AND SCULPTURE 1 0 1 2

Objective: To make students develop critical thinking skill as well as make them creative in theirfield of painting and sculpture.

Unit 1

Pencil drawing, life study.

Unit 2

Basics of water colour painting, Clay modelling.

Unit 3

Anatomy and figure study, Basics of oil and acrylic painting.

Unit 4

Basics of Figure modeling.

Unit 5

Moulding and casting.

REFERENCE BOOKS

1. *Indian Sculpture and Painting – by E.B. Havell (Author)*
2. *Modern Painting And Sculpture: 1880 To Present From The Museum Of Modern Art – by John Elderfield (Editor)*

18OEL650

PERSONAL FINANCE

2 0 0 2

***Objective:** To analyse the process of making personal financial decisions, develop personal financial goals and identify the strategies for their achievement.*

Unit 1

Basics of Personal Financial Planning, Time Value of Money, Planning tax strategies.

Unit 2

Introduction to Consumer Credit, sources of credit, Consumer Purchasing, strategies for housing decisions.

Unit 3

Insurance: types, selecting the right insurance policy, property and motor vehicle insurance, health insurance policies, Retirement Planning, NPS.

Unit 4

Investing fundamentals, investing in shares, bonds and mutual funds, investment in gold and real estate.

Unit 5

Investing in Schemes of Government: National Savings Certificates, KVP, Post Office Recurring Deposits and term deposits, PPF.

REFERENCE TEXTS:

1. *Jeff Madura – Personal Finance, Pearson Education*
2. *Manish Chauhan – 16 Personal Finance Principles every Investor should know, Network18 Publishers*
3. *Jack R Kapoor, Les R Dlabey – Personal Finance, McGraw Hill*

18OEL651

PRINCIPLES OF ADVERTISING

2 0 0 2

***Objective:** The objective of this paper is to help student to make basic understanding on advertising, providing understanding on the processes behind successful advertising. The students are introduced to the processes, tools and techniques used in developing advertising concepts with the study areas including creative thinking and visualizing.*

Unit 1 Introduction

History of advertising, Advertising-meaning and definition, Advertising as a tool of communication, Features of advertising.

Unit 2 Types of Media – Advantages & Disadvantages

Types of advertising, Types of media in advertising – Features – advantages – disadvantages – Print, Television, Radio, Internet, OOH.

Unit 3 Structure of an Advertising Agency

Structure of advertising agency – Small, Medium, National, In-house.

Unit 4 Other Promotion

Sales Promotion, Direct Marketing, Public Relations, Publicity and Corporate Advertising, Unconventional Promotional Media.

Unit 5 Case Studies

REFERENCE BOOKS:

1. *Advertising, Frank Jefkins Revised by Daniel Yadin*
2. *Kleppner's Advertising Procedure*

18OEL652 PRINCIPLES OF PACKAGING 2 0 0 2

Objective: To analyse the process of making personal financial decisions, develop personal financial goals and identify the strategies for their achievement.

Unit 1

Packaging: Meaning and importance, functions, marketing considerations of packaging.

Unit 2

Design of package, materials used for packaging, selection criteria of packaging materials, packing techniques.

Unit 3

Packaging systems, future of packaging.

Unit 4

Provisions of the Legal Metrology (Packaged Commodities) Rules 2011.

Unit 5

Provisions of Food Safety Standards (Packaging and Labelling) Regulations, 2011.

REFERENCE TEXTS:

1. *Gordon Robertson – Food Packaging: Principles and Practice, CRC Press*
2. *Frank Paine – A Handbook of Food Packaging, Springer*

18OEL653 SCRIPTING FOR RURAL BROADCASTING

1 0 1 2

Unit 1

Introduction to rural broadcasting. Rural life and issues. Cultural ecology - Anthropological approaches - traditional social activities-translocal ruralistic features. Practical: Visit any rural area for making detail analysis on the topics during weekends.

Unit 2

Rural communities. Analysis of social and political life in a rural community. Caste / class dynamics and regional influences.

Unit 3

Scope and Impact of broadcast journalism in rural development. Two day workshop by an external expert from the broadcast industry on the rudiments of script writing focusing on rural aspects/ communities.

Unit 4

Practice on Scripting. Focus on covering special issues concerning rural women, youth, farmers, self-help groups cottage industries etc.

Unit 5

Developing the final script for rural broadcasting that will have practical application in the field. Final evaluation by the external expert.

REFERENCES

1. Eschenbach, J. (1977). *The role of broadcasting in rural communication*.
2. Friedrich-Ebert-Stiftung. George, A. M. (2004). *India untouched: The forgotten face of rural poverty*. East West Books.
3. Kumar, K. (2003). *Mixed signals: Radio broadcasting policy in India*. *Economic and political weekly*, 2173-2182.
4. Maddison, J. (1971). *Radio and television in literacy*. Unesco.
5. Manyozo, L. (2011). *People's radio: communicating change across Africa*. Southbound Penang
6. Neurath, P. M. (1962). *Radio farm forum as a tool of change in Indian villages*. *Economic Development and Cultural Change*, 10(3), 275-283.
7. Onabajo, F. (2003). *37 Message Design & the Appropriateness of Language in Rural Broadcasting*. *Four Decades in the Study of Languages & Linguistics in Nigeria: O'Hare, K. (1992). Scripts: Writing for Radio and Television*. *Canadian Journal of Communication*, 17(4).
8. Sharma, A., & Kashyap, S. K. (2013). *Information need assessment for empowering rural women through community radio programmes: A study in Tarai region of Uttarakhand*. *Journal of Community Mobilization and Sustainable Development*, 8(2), 169-173.
9. *Community Mobilization and Sustainable Development*, 8(2), 169-173.

18OEL654 SOCIAL MEDIA WEBSITE AWARENESS 1 0 1 2

Objectives; To understand the history, theory, technology and uses of social media; to create, collaborate, and share messages with audiences of all sizes; to know and explore the possibilities and limitations of social media. Hands on experience with several forms of social media technology; to understand and use social media productively and to evaluating new tools and platforms.

Unit 1

Introduction to Social media; Definition - Social Media and Digital transformation; Social Networking and online communities; Social support and service; Wikipedia, Facebook, Instagram, Tagging, LinkedIn; Social mobile applications; Security settings in Facebook, Whatsapp.

Unit 2

Blogging – History; Creating blog, effect of blogging, micro blogging; Protocol, Platform, Content strategies.

Unit 3

Tweeting - Introduction, History, Protocol; Twitter; Twitter apps; Managing Twitter; #hashtag# creation and following; Security settings in Twitter.

Unit 4

Social media sharing – History, Protocol; YouTube, Flickr, Slide share, Social news; News apps – Newshunt and others; Bookmarking - History, Digg, Reddit, Delicious.

Unit 5

Social theory in the information age; Social Network for professional, business, Digital Marketing; Using social networking sites for research, Security aspects of social networking.

REFERENCES:

1. *Social Networking - Digital and Information Literacy Series* by Peter K. Ryan, The Rosen Publishing Group, 2011 ISBN 1448823463, 9781448823468
2. *The Social Media Marketing Book* Dan Zarrella "O'Reilly Media, Inc.", 13-Nov-2009

18OEL655

THEATRE STUDIES

1 0 1 2

Objective: To provide students with a firm grounding in the discipline of Theatre and Performance Studies.

Unit 1

Breathing exercises, warming up exercises.

Unit 2

Voice modulation, Monologue practice.

Unit 3

Facial expressions, emoting a character.

Unit 4

Stage direction, Makeup and costumes.

Unit 5

Choreography, Producing a play.

REFERENCES:

1. *Theatre as Sign System: A Semiotics of Text and Performance* by Elaine Aston, George Savona
2. *Theatre Semiotics: Text and Staging in Modern Theatre* by Fernando de Toro

3. *Acting For Real: Drama Therapy Process, Technique, and Performance* by Renee Emunah

18OEL656 WRITING FOR TECHNICAL PURPOSES 2 0 0 2

Overview: *The course aims at developing skills that will enable students to produce clear and effective scientific and technical documents as required in their work-life. Though the focus of the course is on writing, oral communication of scientific and technical information forms an important part of the course.*

Objectives: *To familiarize the students with the requirements of effective technical writing; to enable students to independently work on their publication and presentation of papers; developing skills required for presentation of reports, papers and proposals*

Unit 1

What is Technical Writing? - Purpose and characteristics of technical writing and need for developing technical writing skill. Use of Technical terms, Defining terms, Style and tone.

Unit 2

Use of resources, documentation style and citation; Standard operation procedures, Instruction Manuals and Handbooks.

Unit 3

Oral presentations, Analysis of published papers – format, content and style.

Unit 4

Drafting a research paper for publication; Grammar check and editing; proof reading.

Unit 5

Submission of term paper.

REFERENCE BOOKS:

1. McMurrey David, *Technical Writing*,
2. Manser Martin H. *Guide to Style: an essential guide to the basics of writing style*, Viva books

18OEL657 YOGA AND PERSONAL DEVELOPMENT 1 0 1 2

Objective: *To give an understanding on the concept and advantages of yoga and simple yogapracitices.*

Unit 1

Yoga and Modern Life – Introduction - understanding Yoga – definition - four streams of yoga - Why yoga?

Unit 2

Breath – The Bridge – Introduction - Breathing Practices – Standing - Sitting – Supine.

Unit 3

Loosen Yourself – Introduction – Jogging – Bends - Twisting – Pavanamuktasana Kriya.

Unit 4

Asanas – Suryanamaskar - Standing Posture - Sitting postures - Prone Postures - Supine – Topsy Turvy - Relaxation techniques.

Unit 5

Pranayama, Meditation.

REFERENCE TEXTS:

1. *N.S. Ravishankar – Yoga for Health, Pustak Mahal*
2. *BKS Iyengar – Yoga: The Path to Holistic Health, DK Publishers*

18OEL658 FUNDAMENALS OF LEGAL AWARENESS

2 0 0 2

Objective: This course is intended to give the student the power to make a difference in personal and professional life through sound legal knowledge and to be aware of rights and responsibilities towards society and nation.

Unit 1

Law and classification: definition, meaning, functions, classification- public and private law, civil law and criminal law, substantive and procedural law, municipal and international law, written and unwritten laws

Unit 2

Law of contracts: overview of Indian Contract Act, definition, meaning, essentials-offer and acceptance, invitation to offer, cross offers, intention to create legal obligation, lawful consideration, lawful object, competency of parties, free consent, agreement not to be void, illegal, immoral or opposed to public policy, agreement v. contract, breach and remedies for breach.

Unit 3

Law of torts: Definition, meaning, essentials, damages- injuria sine damnum and damnum sine injuria, general defences in torts, exceptions to tortious liability: vicarious liability- master servant relationship, Principal- agent relationship, Partner- partnership firm, Major torts: Nuisance, Negligence

Tress pass: Tresspass to a person- Battery, Assault, False Imprisonment, defamation- libel and slander, essentials, defences to defamation, liability in torts- strict liability, absolute liability, damages in torts-meaning, types of damages- nominal, compensatory, exemplary, aggravated, prospective, contemptuous

Unit 4

Criminal law: introduction of criminal law- subject matter, General introduction to the Indian Penal Code, Criminal Procedure code, Indian Evidence Act, mental element- stages of crime, guilty intention, General exceptions- Intoxication, Insanity, Mistake of Fact, Accident, Acts done under compulsion, public duty etc., Right of Private Defence, Major offences: Theft, Extortion, Robbery, Dacoity, Sedition, Abduction, Kidnapping, Unlawful Assembly, Dowry Death, Abetment, Murder, Culpable Homicide

Unit 5

Family law: subject matter and Introduction, Laws Involved, Marriage – validity and degree of prohibited relationship, Divorce Family Court, Grounds for divorce, orders- judicial separation, restitution of conjugal rights, maintenance, Section 125 Criminal Procedure code, Adoption- difference between

guardianship and adoption, General outline of Hindu Adoption and Maintenance Act, Guardianship and Wards Act, Succession- Testamentary and Intestate- Testator, Executor, Administrator and Probate

18OEL659
2 0 0 2

SOLID WASTE MANAGEMENT AND UTILIZATION

Unit 1 Biowaste Utilization

Biowaste - Biopesticide from solid waste, biomass to bioethanol, biowaste as carbon source, Bio-digester - generation of renewable energy, biogas from animal waste-daily consumption, Equipment sizing and design.

Unit 2 Polymer wastes

Recycling plastic fibre and packaging waste – methods of recycling – Recycling of rubber – Devulcanisation - thermal, mechanical and microbial process - characterization of devulcanized rubber - products from rubber waste. Pyrolysis of plastics and rubber - Catalytic treatment - plastic waste to fuel, oil and wax.

Unit 3 Recycling utilized Products

Paper recycling - types of paper, Mechanical and chemical re-pulping, Glass waste-bottle recycling, cullet recycling, process in glass recycling Metals-Iron & steel, iron & steel remanufacturing, Aluminium remanufacturing

Unit 4 e-waste

Electronic wastes – printed circuit board, monitors, appliances and batteries, Processing of e-waste, Recovery of heavy metals from electronic waste.

Unit 5 Biomedical Waste

Biomedical waste and its category, Treatment-autoclaving, shredding, deep burial & chemical treatment of biomedical waste.

REFERENCES:

1. *Thomas H. Christensen, Solid Waste Technology & Management, Vol.1, Blackwell Publishing Ltd, 2011.*
2. *Elena Cristina Rada, Biological Treatment Of Solid Waste, CRC press, 2016.*
3. *Martin Forrest, Recycling and Re-use of Waste Rubber, Smithers Rapra Technology Ltd, 2014.*
4. *John scheirs and Walter kaminsky, Feedstock Recycling and Pyrolysis of Waste Plastics, John Wiley & Sons Ltd, 2006.*
5. *Ramesha Chandrappa, Diganta Bhusan Das, Solid Waste Management: Principles and Practice, springer, 2012.*
6. *Hugo Marcelo Veit, Andréa Moura, Electronic Waste: Recycling Techniques, springer, 2015.*
7. *Lifeng Zhang, Gregory K. Krumdick, Recycling of Electronic Waste II: Proceedings of the Second Symposium, John Wiley & Sons, Inc, 2011.*

18OEL660
2 0 0 2

RELATIVISTIC QUANTUM MECHANICS

Unit 1 Classical Fields

Particle and Fields, Discrete and Mechanical system, Classical scalar fields, Classical Maxwell fields, Vector potential in quantum mechanics.

Unit 2 The quantum theory of radiation

Classical radiation field, Creation, annihilation and number operators, Quantized radiation field, Emission and absorption of photons by atoms

Unit 3 Application of quantum theory of radiation

Rayleigh scattering, Thompson scattering and Raman effect, Radiation damping, Dispersion relations, Lamb shift

Unit 4 Relativistic Quantum Mechanics for spin 1/2 particles

Probability conservation, Dirac equation, Relativistic covariance, Bilinear covariants, Dirac operators in Heisenberg representation, Negative energy solutions

Unit 5 Many Particle system

The hydrogen atom, Hole theory and charge conjugation, Quantization of Dirac field, Weak interaction and non-conservation of parity

TEXTBOOK:

Advanced Quantum Mechanics by J. J. Sakurai

18OEL661**ROBOTICS AND BIOLOGY****2 0 0 2****Unit 1**

Basics of Robotics - Perception, Learning, Terminology, Asimov's Laws of robotics, Robotic Control Loop, Sense-Think-Act components, Types of Robotics

Unit 2

Evolution, Robot components, Basic electronics, Introduction to mathematical Modeling, Simple models, Logistic growth model and Learning functions.

Unit 3

Data integration, Biological data, Data fitting, From sources to data-driven modelling, BEAM bots, Kinematics and Movement.

Unit 4

Applied Psychology, Models of Mind, Control Kinematics, Bio-inspired control, Virtual Bio-inspired robotics lab case studies

Unit 5

Simple modelling of neuronal robots, Basics of swimming and flying bots, Biomimetic robots, Animal cells and circuits as robotic data devices.

References:

Owen Bishop (2007), Robot builder's cookbook, Newnes.

Karl Williams (2003), Insectronics, McGraw Hill.

Ed. Kato N, Kanimura S (2008), Bio-mechanics of swimming and flying - fluid mechanics, biomimetic robots and sports science, Springer

18OEL662**SCIENCE OF WELL-BEING****2 0 0****2**

Unit 1

Positive Psychology - Happiness, Measuring Happiness, Approaches to Happiness, Benefits of Happiness, Authentic Happiness, Subjective Well-being, Character Strengths, Positive Emotions

Unit 2

Power of Connections - Social Connections and Happiness, Wired for Connection, Affiliation, Affection and Attachment, Family, Parenting, Friends, Active Listening and Empathy

Unit 3

Kindness and Compassion - Altruism, Random Act of Kindness, Evolved for Kindness, Scaling up kindness: contagious kindness, elevation, and heroism

Unit 4

Co-operation and Reconciliation - Peace-making, Forgiveness, Gratitude, Trust

Unit 5

Mindfulness- Attention, Focus, Mindfulness Exercise, Benefits of Mindfulness, Importance of Flow State

References:

C.R. Snyder & Shane J. Lopez (2009). Oxford Book of Positive Psychology. Oxford University Press.
Michael F. Steger (2009). Meaning in Life. The Oxford Handbook of Positive Psychology (2 ed.) Edited by Shane J. Lopez and C.R. Snyder
Ronaig D. Seigel (2014). The Science of Mindfulness - A Research - Based path to Well-being. The Great Courses, Virginia
Kelly McGonigal (2016). The Science of Compassion: A Modern Approach for Cultivating Empathy, Love, and Connection. Sounds True Publication

18OEL663

OPERATING SYSTEMS AND NETWORKS

2 0 0 2

Unit 1: Introduction to Digital Computer

Functions and Block Diagram of Computer - Types of Software – System software / Application software / Utility Software - Compilers - Interpreters - Assemblers - Linker - Loader - Programming Language Paradigm.

Unit 2: Data Representation and Memory System

Binary, Octal, HEX and their inter-conversion - Memory Hierarchy Primary Memory – DRAM, SDRAM, DDR, RDRAM. ROM, PROM, EPROM, EEPROM Concepts of Auxiliary, Associative, Cache and Virtual Memory.

Unit 3: Operating Systems

Introduction to Operating System – Storage Management: Real Storage Management Strategies – The LINUX Operating - System - Managing Files and Directories – Directory Commands in LINUX – File Commands in LINUX - Securing files in LINUX - File access permissions – viewing File access permissions – Changing File access permissions.

Unit 4: Introduction to communications and Networking

Introduction – Fundamental concepts - Data communications – Protocols- standards - Analog and Digital signals- Bandwidth of a signal and a medium - The data transmission rate and the bandwidth - Network topologies, switching and routing algorithms: Introduction - Mesh topology - Star topology - Tree

topology - Ring topology - Bus topology - Hybrid topology - Switching basics- Circuit switching – Packet switching - Message switching.

Unit 5: Internet and Web Technologies

Basics of Internet communication - Hardware elements associated with internet - Internet Services - Internet Protocols - TCP/IP, UDP, HTTP - Mail and its types - FTP - Remote access and Transaction - Web Indexes – Search Engines.

Introduction to HTML - Tags and Documents - Link documents using Anchor Tags - Images and Pictures - Tables -HTML Forms - Frames - Framesets - Introduction to Dynamic web applications - Introduction to PHP.

TEXTBOOKS:

1. *Operating Systems 2nd Edition., H.M. Deitel, Perason, 2003.*
2. *Operating System LINUX, NIIT, PHI, 2006.*
3. *Computer Networks – Protocols, Standards and Interfaces, Uyles Black, PHI, 2nd Edition*
4. *HTML and XML an Introduction, NIIT, Prentice Hall of India Pvt. Ltd*
5. *IBM PC and clones., Govindrajulu, B. Tata McGraw-Hill, 2012.*

18OEL664

Bhagavad Gita and Personality Development

2 0 0 2

Unit 1

NATURE AND SCOPE OF PERSONALITY : Connotation of the term Personality , Some Scientific Definitions of Personality , Determinants of Personality in Indian View , A Path from Physical to Spiritual Sphere

Unit 2

NATURE OF PURUSARTHAS: Essentials of Dharma Purusartha, Connotation of Dharma, Concept of Dharma, Sources of Dharma, the Universality of Dharma, Tree of Dharma

Unit 3

INTRODUCTION TO BHAGAVAT GITA : Bhagavat Gita - The Nectar ,Importance of the Bhagavad Gita, The Bhagavad Gita - Its Symbolic Spirit , The Bhagavad Gita - Its Context

Unit 4

DISCIPLINES OF PERSONALITY DEVELOPMENT IN THEBHAGAVADGITA: Lord Krsna - The Real Teacher, Arjuna - A Model Student, Knowledge of Oneself - Essential for One's Betterment, Svadharma and a State of Equanimity, Discipline of Non-attachment, Svadharma - A Kind of Yajna , Svadharma and & Meditative Discipline

Unit 5

PERSONALITY DEVELOPMENT IN PAST & PRESENTA RETROSPECT AND PROSPECT-Retrospective Theme, Constituents of Personality Development, Western Views on Personality

Text book / Reference books

1. Personality development in the Bhagavad Gita - a critical study , Archak K B, 2012
2. Bhagavad Gita – translation by Swami VidyamritanandaPuri, Mata Amritanandamayi Mat

18OEL665

CHEMICAL ASPECTS OF FORENSIC SCIENCE

2 0 0 2

Unit 1 Chemical Analysis

Origin and need for forensic science - trace and contact evidence, marks and impression, examination of documents, blood stain analysis, explosives, chemical analysis of explosives.

Unit 2 Analysis of Drugs

Narcotics, classification of drugs, specific drugs- Psychotropic drugs, chemical screening of drugs, chemical extraction and sample preparation, chemical identification of drugs using analytical methods.

Unit 3 Fingerprinting

History of fingerprinting, principles of fingerprinting, constituents of latent finger marks, fingerprint detection, chemical methods of detection

Unit 4 Toxicology Analysis

Introduction to Toxicology, alcohol and human body, testing of blood alcohol concentration, Toxins & Biological Poisons, Measuring Toxicity as LD50, sample and analysis, inorganic poisons, nerve agents, radioactive toxins, tests for toxins.

Unit 5 Postmortem

Introduction, tissue and fluid specimens, specimen collection and storage, extraction procedure, analytical techniques, interpretation, case studies

REFERENCE BOOKS:

1. Lawrence Kobilinsky, *Forensic Chemistry Handbook*, John Wiley & Sons, New Jersey, 2012
2. David E. Newton, *Forensic Chemistry, Facts On File, Inc, New York, 2007*
3. Jay A. Siegel, *Forensic Chemistry fundamentals and applications*, Wiley Balckwell.
4. Suzanne Bell, *Drugs, Poisons, and Chemistry, Facts On File, Inc. New York, 2009.*
5. Ashraf Mozayani, Lionel P. Raymon, *Handbook Of Drug Interactions -A Clinical And Forensic Guide, Humana Press Inc., 2004.*

16EN600

Technical Writing

2002

Objectives:

- To introduce the students to the elements of technical style
- To introduce the basic elements of formal correspondence
- To introduce technical paper writing skills and methods of documentation
- To improve oral presentation skills in formal contexts

Unit 1

Introduction to the Course – What is technical writing and how is it different from writing in general?
Error detection – Technical Vocabulary. Mechanics of writing: Grammar rules – punctuation - spelling rules - tone and style- graphical Representation.

Unit 2

Different kinds of written documents: Definitions- descriptions- instructions-recommendationsmanuals - reports – proposals, Instructions manual, job applications with ResumeIntroduction to Writing dissertations, papers, and technical proposals

Unit 3

Technical paper writing: Library research skills- documentation style - document editing – proof reading - formatting
Practice in oral communication: Group Discussion, Interviews, and Technical presentations

References

1. Hirsh, Herbert. L “Essential Communication Strategies for Scientists, Engineers and Technology Professionals”. II Edition. New York: IEEE press, 2002
2. Anderson, Paul. V. “Technical Communication: A Reader-Centred Approach”. V Edition. Harcourt Brace College Publication, 2003
3. Strunk, William Jr. and White. EB. “The Elements of Style” New York. Alliyen& Bacon, 1999.
4. Riordan, G. Daniel and Pauley E. Steven. “Technical Report Writing Today” VIII Edition (Indian Adaptation). New Delhi: Biztantra, 2004.