



POST GRADUATE COURSES

NON-MAJOR ELECTIVE SUBJECTS

CURRICULUM AND SYLLABI

(For students admitted from the academic year 2015-16 onwards)

UNDER CHOICE BASED CREDIT SYSTEM

**FACULTY OF SCIENCE AND HUMANITIES
SRM UNIVERSITY
SRM NAGAR, KATTANKULATHUR – 603 203**

DEPARTMENT OF JOURNALISM AND MASS COMMUNICATION

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	TOTAL OF L+T+P	C
II	PJM15E81	SCRIPTING FOR MEDIA	2			2	2
II	PJM15E82	COPY WRITING					
III	PJM15E83	MEDIA TRENDS: CHALLENGES AND ISSUES	2			2	2
III	PJM15E84	MEDIA AND CULTURAL STUDIES					

DEPARTMENT OF COMMERCE (A&F and CS)

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	TOTAL OF L+T+P	C
II	PAF15E81	FINANCIAL ACCOUNTING	2			2	2
	PAF15E82	STRATEGIC MANAGEMENT					
III	PAF15E83	CONSUMER BEHAVIOUR	2			2	2
	PAF15E84	COST AND MANAGEMENT ACCOUNTING					

DEPARTMENT OF ECONOMICS

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	TOTAL OF L+T+P	C
II	PES15E81	MONEY AND BANKING	2			2	2
	PES15E82	MANAGERIAL ECONOMICS					
	PES15E83	DEMOGRAPHY					
III	PES15E84	INTERNATIONAL BUSINESS	2			2	2
	PES15E85	ECONOMIC ADMINISTRATION					
	PES15E86	WOMEN STUDIES					

DEPARTMENT OF COMPUTER SCIENCE

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	TOTAL OF L+T+P	C
II	PIT15E81	PROGRAMMING IN C	1		1	2	2
	PIT15E82	SPSS - STATISTICAL PACKAGE FOR SOCIAL SCIENCES	1		1	2	2
	PIT15E83	HTML	1		1	2	2
III	PIT15E84	TALLY	1		1	2	2
	PIT15E85	OFFICE AUTOMATION	1		1	2	2
	PIT15E86	DHTML and XML	1		1	2	2

DEPARTMENT OF COMPUTER APPLICATIONS (PG)

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	TOTAL OF L+T+P	C
II	PCA15E81	DATABASE MANAGEMENT SYSTEMS	1		1	2	2
	PCA15E82	PROGRAMMING IN JAVA WITH LAB	1		1	2	2
	PCA15E83	CONTENT MANAGEMENT SYSTEMS	1	1		2	2
III	PCA15E84	WEB TECHNOLOGY WITH LAB	1		1	2	2
	PCA15E85	CYBER LAW AND CRIMES	1		1	2	2

	PCA15E86	CLOUD COMPUTING	1		1	2	2
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DEPARTMENT OF VISUAL COMMUNICATION

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	TOTAL OF L+T+P	C
II	PVC15E81	EVENT MANAGEMENT				2	2
	PVC15E82	MEDIA PLANNING AND STRATEGIES			2		
III	PVC15E83	FILM APPRECIATION				2	2
	PVC15E84	AD FILM MAKING			2		

DEPARTMENT OF BIOTECHNOLOGY

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	TOTAL OF L+T+P	C
II	PBT15E81	VERMITECHNOLOGY				2	2
	PBT15E82	MUSHROOM CULTURE TECHNIQUES			2		
III	PBT15E83	BIO-PROCESSING TECHNOLOGY				2	2
	PBT15E84	HEMATOLOGY AND BLOOD BANKING			2		

DEPARTMENT OF MATHEMATICS

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	TOTAL OF L+T+P	C
II	PMA 15E81	Numerical Methods Using C++	2			2	2
	PMA 15E82	Applied Mathematics I					
III	PMA 15E83	Applied Mathematics II	2			2	2
	PMA 15E84	Bio Mathematics					

DEPARTMENT OF PHYSICS

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	Total of L+T+P	C
II	PCY15E81	PHARMACEUTICAL CHEMISTRY	2			2	2
	PCY15E82	POLYMER CHEMISTRY					
III	PCY15E83	ENVIRONMENTAL CHEMISTRY	2			2	2
	PCY15E84	MATERIALS TECHNOLOGY					
	PCY15E85	STRUCTURAL CHEMISTRY FOR BIOMOLECULES					

DEPARTMENT OF CHEMISTRY

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	Total of L+T+P	C
II	PCY15E81	PHARMACEUTICAL CHEMISTRY	2			2	2
	PCY15E82	POLYMER CHEMISTRY					
III	PCY15E83	ENVIRONMENTAL CHEMISTRY	2			2	2
	PCY15E84	MATERIALS TECHNOLOGY					
	PCY15E85	STRUCTURAL CHEMISTRY FOR BIOMOLECULES					

DEPARTMENT OF JOURNALISM AND MASS COMMUNICATION

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	Total Of LTP	C
II	PJM15E81	SCRIPTING FOR MEDIA	2	0	0	0	2

INSTRUCTIONAL OBJECTIVES:

SUBJECT REQUIREMENT: At the end of every unit, the students will be expected to submit an assignment or make a presentation as a part of internal assessment.

UNIT I:

Script-writing as a creative enterprise:

- Creative thinking
- The creative process
- Stages in the craft of script-writing
- Basic story idea
- Narrative synopsis outline – scene breakdown and full-fledged script

UNIT II:

Narrative structure:

- Beginning – middle – end
- Conflict, development, climax, and denouement
- Story, storyline, plot and treatment
- Principles of suspense and surprise

UNIT III:

Elements of a narrative:

Point of attack, exposition, planting, point of view, pace, tone subject matter, title, openings, contrast, coincidence, tension, release, laughter

UNIT IV:

Characterisation:

- Character biography,
- tags,
- stereotyping,
- two-dimensional versus three-dimensional characters,
- guiding principles for evolving effective and credible characters

UNIT V:

Formats for media scripts:

- Audio versus audio-visual scripts, shooting scripts and storyboards
- Writing versus directing and other related areas
- (a) Writing for current affairs for TV and radio – news, sports, cultural, documentaries
- (b) Writing for fiction – ads, short film, converting the narrative into a video script

TEXT BOOK:

1. Ahuja (2005), B.N : Audio Visual Journalism, Delhi, Surjeet Publications,.
2. Gothams (2006), 'Writers' Workshop Faculty': Writing Movies, New York, Bloomsberg,.

REFERENCE

1. Anthony Friedmann (2010), Writing for Visual Media, Taylor & Francis,.

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	TOTAL OF LTP	C
II	PJM15E82	COPY WRITING	2			2	2

INSTRUCTIONAL OBJECTIVES:

- To familiarize the students with various types of copywriting and develop their inherent writing skills.
- To train students to generate, develop and express ideas.
- To familiarize the students with contemporary advertising techniques.

SUBJECT REQUIREMENT: At the end of every unit, the students will be expected to submit an assignment or make a presentation as a part of internal assessment.

UNIT I

Copy writing, Introduction, Principles of copy writing, Writing for direct mail-letters, product brochures, leaflets, folders etc.

UNIT II

The skill of proof-checking - Copy for specialized areas - Corporate advertising, Recruitment ads, Political advertising, Image advertising, Fashion and Life style advertising, Non-commercial / public service advertising, Awareness advertising, Food and beverages, Durables, Personal products

UNIT III

Different types of copy: Advertorials, Infomercials, Slogan and jingle ads, Humour/sex/fear/anxiety ads, Feel-good ads, Light fantasy, Demonstrations/testimonials, Use of celebrity, Slice of life, Reason why, Fund raising copy, Comparative copy, Motivational copy.

UNIT IV

Copy for different audiences: Children, Women-Homemakers, modern women, Senior citizens, Executives, Youth

UNIT V

Website copywriting – content marketing and blogging – writing email and newsletter – direct mail copywriting – writing persuasive advertisement – press release writing

TEXT BOOKS

1. Mark Shaw (2012), Copywriting: Successful Writing for Design, Advertising and Marketing, Laurence King Publishing,.
2. Joseph Sugarman (2012), The Adweek Copywriting Handbook: The Ultimate Guide to Writing Powerful Advertising and Marketing Copy From one of the Top American Copywriter's, John Wiley & Sons, 2012.

REFERENCE

1. Robert W. Bly (2005), The Copywriter's Handbook: A Step-By-Step Guide To Writing Copy That Sells, Owl Books Henry Holt and Company.

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	Total Of LTP	C
III	PJM15E83	MEDIA TRENDS: CHALLENGES AND ISSUES	2			2	2

SUBJECT REQUIREMENT: At the end of every unit, the students will be expected to submit an assignment or make a presentation as a part of internal assessment.

UNIT I

Religion and Media

Mediatization of Religion

Transformation of Religious Authority

Contemporary media and Religious genres

(Reality TV, Spiritual TV mythological, e portals of religious institutions)

Religion, Spirituality and Consumer Culture

UNIT II

Gendered Spaces and Media

Analysing gender in media texts (advertising, news genre, TV)
Media and Modern Masculinities
Queer Identities
News, gender and Journalism
Public spaces, gender and media

UNIT III

Issues of Media Ownership

Concentration of Media Ownership: Debates and Issues
Mergers and acquisitions
Politicians and media control
Ownership and it's impact on editorial independence/ news content and pluralism
Advertising revenue vs editorial policies

UNIT IV

National Security, Democracy and the Media

National Security and Role of Media
Terrorism and Challenges before Media
Parliament, Democracy and Role of Media
Political reforms and Media Coverage

UNIT V

Mediated technology and society

Media Technologies as mediation
Media Technologies and Empowerment of Rural communities
Media Technologies and identity

TEXT BOOKS:

1. Freedman, Des, and Daya Kishan Thussu, eds. Media and Terrorism: Global Perspectives, SAGE Publications Limited, 2011.
2. Herrick, Dennis F. Media management in the age of giants: Business dynamics of journalism, UNM Press, 2012.

REFERENCE

1. Stephen J. A. Ward, Global Media Ethics: Problems and Perspectives, John Wiley & Sons, 2013.

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	Total Of LTP	C
III	PJM15E84	MEDIA AND CULTURAL STUDIES	2	0	0	2	2

SUBJECT REQUIREMENT: At the end of every unit, the students will be expected to submit an assignment or make a presentation as a part of internal assessment.

UNIT I

Understanding Culture

Definitions: Mass Culture, Popular Culture, Folk Culture
Media and Culture
Folk Media as a form of Mass Culture
Live performance
Media Technologies and Marshall McLuhan

UNIT II

Critical Theory And Media Studies

Reality as Construct

Consumer Culture & Gratification
Political Economy
Ideology and Hegemony

UNIT III

Semiotics And Media

Media as Texts
Sign as Exchange
Representation

UNIT IV

Audiences

Active Audiences,
Reception Studies Approach
Women as Audiences
Sub Cultures
Fandom

UNIT V

Cross cultural communication: concept, genesis and process

- Methods of cross cultural communication
- Barriers in cross cultural communication
- Imperialism and colonization

TEXT BOOKS

1. Fill C, Marketing Communications: Interactivity, Communities and content5th ed., FT Prentice Hall, 2009.
2. Pickton D & Broderick A, Integrated marketing communications 2ND ED., Pearsons, 2009.

REFERENCE

1. Jane Stokes, How to Do Media and Cultural Studies, SAGE Publication, 2012.

DEPARTMENT OF COMMERCE (AF& CS)

SEMESTER	Subject Code	Subject Title	L	T	P	LTP In Hours	Credit
II	PAF15E81	Financial Accounting	2	0	0	2	2

Objectives:

- i) To make the students to acquire basic accounting knowledge
- ii) To inculcate necessity of accounting uses

Unit I

Meaning and scope of Accounting, Basic accounting concepts and conventions – Objectives of accounting – accounting transactions.

Unit II

Double entry book keeping Journal, Ledger, - -Subsidiary books and cash books

Unit III

Preparation of Trial balance- Errors affecting Trial Balance and not affecting trial balance- Rectification of errors only simples problems)

Unit IV

Preparation of Final accounts – Adjustments – Closing stock, outstanding and prepaid items, Depreciation, Provision for bad debts, provisions for discount for debtors, interest on capital and drawings.

Unit IV

International accounting standards- Accounting, Reporting

REFERENCES

- 1) . Reddy & Murthy, T.S Margham Publications, 2014 Edition
- 2) Pillai RSN, Bagavathi & Uma, S “*Fundamentals of Advanced Accounting Financial Accounting*”, S.Chand & Company, Vol – II, 2013.
- 3) Battacharyya SK, “*Accounting for Management*”, Vikas publishing house Pvt Ltd, 3rd Edition, 2007
- 4) Carl S. Warren, James M. Reeve & Philip E. Fess, “*Financial Accounting*”, Thomson-South – Western Publications, 9th Edition, 2004
- 6) Ashok Sehgal & Deepak Sehgal, “*Advanced Accounting / Financial Accounting*”, Taxman Publications, 6th Edition, 2008.

SEMESTER	Subject Code	Subject Title	L	T	P	LTP In Hours	Credit
II	PAF15E82	Strategic Management	2	0	0	2	2

Objectives

- i) To make the students to learn practical decision making
- ii) To acquire knowledge about strategic decision models

Unit I

The Business System – Objectives of a business up and balancing of objectives – mission – vision – goals.

Unit II

Corporate Strategy – Nature and scope – Process of strategic planning – Formulation of strategy – Project life cycle – Strategic Management – Strategic decision – Making – business level sub-strategies.

Unit III

Genetic Strategic alternatives – Stability strategy – Growth strategy – Retrenchment strategy – Combination strategy and Turnaround strategy

Unit IV

External Growth Strategy – Merger, acquisition, amalgamation, joint ventures and others – Problems.

Unit V

Implementation of Strategy – Elements of strategy – Leadership and organizational climate – Planning and control of implementation.

REFERENCES

- 1) Michael E. Porter, Corporate strategy; Competitive advantage
- 2) Peter F Drucker, Management Tasks, Responsibilities, Practices
- 3) Bhattacharya S.K., Achieving managerial excellence, Macmillan
- 4) Greek W.P. and Jauch L.R., Business policy and strategy management, Mc.Graw.Hill

SEMESTER	Subject Code	Subject Title	L	T	P	LTP In Hours	Credit
III	PAF15E83	Consumer Behaviour	2	0	0	2	2

Objectives:

- i) To provide an in-depth understanding of the consumer and buying processes.
- ii) To make the students to understand their determinants as relevant for marketing decision making.

Unit I

Importance and nature of consumer behaviour – Types of consumer and their role – Consumer behaviour and marketing concept

Unit II

Consumer Buying Process – Levels of Consumer Decision-making

Unit III

Individual differences in consumers – Needs and Motivation, Perception, Attitude and Change

Unit IV

Family and household influence on consumer buying behaviour – Group and their influences

Unit V

Models of Consumer Behaviour and Business buying behaviour – An overview of contemporary models.

REFERENCES

1. Schiffman, L.G. and L.L.Kanuk, Consumer Behaviour, Prentice Hall
2. Engel, J.F., Roser D. Blackwell and Paul W. Miniard, Consumer Bheaviour, Cengage Learning
3. Peter, J.Paul, and Jerry C. Olson, Consumer Bheaviour and Marketing Strategy, McGraw Hill
4. Assael, H., Consumer Behaviour and Marketing Action, Cengage Learning.

SEMESTER	Subject Code	Subject Title	L	T	P	LTP In Hours	Credit
III	PAF15E84	Cost and Management Accounting	2	0	0	2	2

Objectives:

- i To make the students non major allied students to have cost and management accounting knowledge
- ii To inculcate the cost and management accounting practices

Unit I

Introduction of Cost Accounting – Definition Cost, Costing and Cost accounting-Objectives

Unit II

Cost Sheet-Elements of Cost-types of Cost-Tender and Quotations.

Unit III

Management Accounting – Meaning, scope, importance and limitations – Management Accounting Vs. Cost Accounting – Analysis and Interpretation of Financial Statement- common size statements and comparative balance sheets.

Unit IV

Ratio Analysis – Meaning - Classification of Ratios- Short term and long term solvency ratios

Unit V

Budgets and Budgetary Control – Types of Budgets –Fixed and Flexible Budgets.

REFERENCES

1. Reddy and Hariprasad reddy T.S ‘Cost and Management Accounting’ Margham Publications
2. Choudhary Anu Prasad Roy and Amitava Bhattacharya, Cost and Management Accountancy Methods and Techniques, Calcutta New central book Agency 1991.
3. Horncren C.T 11th edition, cost accounting- A managerial emphasis, Newdelhi, Pearson education, 2002.
4. Kaplan, Advanced management accounting, 3rd edition Pearson education, NewDelhi ,2002

DEPARTMENT OF ECONOMICS

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	Total Of LTP	C
II	PES15E81	Money and Banking	2			2	2

UNIT I - INTRODUCTION

Evolution and functions of money – the barter system – evolution of money classification- functions – circular flow of money- monetary standard – the gold standard- bimetallism- greshams law- paper currency- principles and methods of note issue.

UNIT II – VALUE OF MONEY

Fishers quantity-theory of money- the cash transactions approach-the Cambridge equation- the cash balance approach- Milton Friedman’s restatement of quantity theory of money- Keynes reformulated quantity theory of money- its superiority.

UNIT III – SUPPLY OF MONEY

Supply of money- different views- determinants- changes in supply of money- supply function-volume of money supply in India- factors affecting inflation- definitions-types- effects- control.

UNIT IV – COMMERCIAL BANKING

Origin and growth- types – process of credit creation- credit instruments-bankers clearing house-progress of nationalized banks.

UNIT V – CENTRAL BANK

Nature and functions of central bank-reserve bank of India-history structure traditional and promotional central banking- functions of reserve bank of India.

REFERENCES

1. R.Cauvery, Sudhanaya U.K., *Monetary economics*, S.Chand and Co,2011
- 2.Chandler, L.V., *Economics of Money and Banking* (UBS) Revised Edition, Harper and Brothers Publishers , New York,1948.
3. Sachdeva.T.N., *Money, Banking and international trade* ,Sudha Publications,2007
5. Suraj B.Gupta, *Monetary Economics, Institutions, Theory and Policy*, S.Chnad and Co.
6. Gail E.Makinen, *Money, Interest and the Price Level*, Prentice Hall, 1978.

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	Total Of LTP	C
II	PES15E82	Managerial Economics	2			2	2

UNIT I - INTRODUCTION TO MANAGERIAL ECONOMICS

Meaning and Definition – Nature and scope – Economic Theory and Managerial Theory – Role and Responsibility of Managerial Economist – Managerial Economics and Decision Making – objectives of Business firms - Fundamental Economic concepts - Incremental Principle– Opportunity cost principle – Discounting Principle – Equi marginal principle.

UNIT II – THEORY OF DEMAND AND SUPPLY

Law of demand – Demand Function – Demand curves – Types of Demand - Elasticity of Demand – Types of Elasticity of Demand – Measurement of price Elasticity of Demand – Application of Elasticity in Managerial Decisions - Law of Supply and Elasticity of Supply.

UNIT III - THEORY OF CONSUMER CHOICE

Indifference curve Approach, Revealed preference theory of consumer. Choice under Risk – demand Forecasting – Methods of Demand forecasting.

UNIT IV - PRODUCTION THEORY

Production Function – Production with one and two variable inputs, law of Diminishing returns and Business Decisions – Cost Concepts – their Nature, Shape and Interrelationship.

UNIT V - MARKET STRUCTURE

Market Structure and Price Determination-Characteristics of Different Market structures-Price Determination and firms Equilibrium in short run and long run under Perfect Competition- monopoly – monopolistic competition & oligopoly - Pricing Practices - Classification and Measurement of Profit – Break Even Analysis

REFERENCES

1. D. N. Dwivedi, *Managerial Economics*, 7th edition, Vikas Publishing,2009.

2. Prof. ABN Kulkarni and Dr. A. B. Kalkundrikar, *Managerial Economics*, R.Chand & Co, 2009.
3. Dr. D. M. Mithani, *Managerial Economics*, 5th edition, Himalaya Publishing House, 2009.
4. Paul A. Samuelson, *Economics*, 19th edition, Tata McGraw Hill, 1948.
5. Petersen, Lewis and Jain, *Managerial Economics*, 4th edition, Pearson, 2006

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	Total Of LTP	C
II	PES15E83	Demography	2			2	2

UNIT I - INTRODUCTION TO DEMOGRAPHY

Meaning and scope of demography; Components of population growth and their inter-dependence;

Theories of population — Malthus; Optimum theory of population; Theory of demographic transition

UNIT II - POPULATION CHANGE: DETERMINANTS AND TECHNIQUES

Determinants – Fertility, Nuptiality, Migration and Mortality; Techniques - Crude birth and death

rates, age specific birth and death rates, standardized birth and death rates; Fertility - Factors affecting fertility — Socio-economic factors; Nuptiality - Concept and analysis of marital status, single mean age at marriage - Migration – Net migration rate - Mortality — Mortality at birth and infant mortality rate; Sex and age pattern of mortality; Factors for decline in mortality in recent past.

UNIT III - POPULATION: STRUCTURE AND PROJECTION

Population trends in the twentieth century; Population explosion - International aspects of population growth and distribution; Demographic effects of sex and age structure, economic and social implications, Demographic Dividend and Age pyramids; concept of stationary, stable and quasi - stationary population; Projections — Uses and techniques – Cohort Component Projection technique.

UNIT IV - SOURCE OF DEMOGRAPHIC DATA IN INDIA

Study of census in India— History of Census in India; Nature of information collected in 2001 and 2011 census in India; National Family Health Survey (NFHS) I, II and III and District Level Household Survey(DLHS); their relative merits and demerits.

UNIT V: POPULATION AND DEVELOPMENT WITH REFERENCE TO INDIA

Population policy in India — Population, economy and environment linkages – population and human development issues – Population and Millennium Development Goals (MDG); education and fertility, Migration and urbanization – trends, pattern and consequences; population aging – Causes, trends, issues and consequences; Skewed sex ratio in India.

REFERENCES

1. Jacob S. Siegel and David A. Swanson , *The Methods and the materials of Demography*, Second Edition, Elsevier Science. USA, 2004
2. John weeks , *Population: An introduction to concepts and issues*, Wordsworth Learning. Singapore 9th edition, 2005.
3. Pathak, K.B. and F.Ram, *Techniques of Demographic Analysis*, Mumbai: Himalaya Publishing House,1998.
4. Agarwal, S.N.,*India's Population Problem*, Tata McGraw Hill, Mumbai, 1985.

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	Total Of LTP	C
III	PES15E84	International Business	2			2	2

UNIT I- GLOBALISATION

The Globalisation of the world Economy -The Changing Nature of International Business.Differences in International Business.

UNIT II- WORLD BUSINESS ENVIRONMENT

Political Environment -Economic Environment – Legal Environment -The Determinants of Economic Development - States in Transition. Difference in Culture: Introduction - Social Structure - Religion - Language - Education -Culture and the Workplace - Cultural Change - Cross-Cultural Literacy - Culture and competitive Advantage - Risks in international business.

UNIT III- THE GLOBAL TRADE AND INVESTMENT ENVIRONMENT

Introduction – An Overview of Trade Theory - Absolute Advantage - Comparative Advantage - Heckscher - Ohlin Theory - The New Trade Theory - National Competitive Advantages - Porter’s Diamond The Revised Case for Free Trade - Development of the Multilateral Trading System- WTO & development of World trade - Regional grouping of countries and its impact.

UNIT IV- FOREIGN DIRECT INVESTMENT

Introduction - Foreign Direct Investment in the World Economy - Horizontal Foreign Direct Investment - Vertical Foreign Direct Investment. Benefits and advantages to host and home countries. The Global Monetary System -The Foreign Exchange Market: Introduction - The Function of the Foreign Exchange Market.

UNIT V- STRATEGIES OF INTERNATIONAL BUSINESS

Strategy and the Firm - Profiting from Global Expansion - Pressure for Cost Reductions and Local Responsiveness - Strategic Choice. Mode of Entry and Strategic Alliances: Introduction - Entry Modes - Selecting and Entry Mode - Strategic Alliances - Making Alliances Work – International Marketing Operations. Exporting, importing and counter trade- introduction - Export and Import Finance- Export assistance.

REFERENCES

1. Hill.C.W; *International Business: Competing In The Global Market Place*, Irwin – McGraw Hill 1999.
2. Philip R.Cateora, *International Marketing*, Irwin McGraw Hill, 9th Edn,2007.
3. Shivaramu, *International Business*, Macmillan India.
4. Francis Cherunilam, *International Business*, Wheeler Publications,2007.
5. Charles W.L, *International Business*, Hill, Irwin - McGraw Hill, 1998.

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	Total Of LTP	C
III	PES15E85	Economic Administration	2	0	0	2	2

UNIT I- NATIONAL INCOME

Concept of National Income -Circular flow of income; Methods of calculating National Income: Value Added or Product method, Expenditure method, Income method. Concepts and Aggregates Related to National Income: Gross National Product (GNP), Net National Product (NNP), Gross and Net Domestic Product (GDP and NDP) – at Market Price, at Factor Cost; National Disposable Income (Gross and Net), Private Income, Personal Income and Personal Disposable Income; Real and Nominal GDP-GDP and Welfare.

UNIT II- GOVERNMENT BUDGET AND THE ECONOMY

Concept and Types of Tax – Direct Tax and Indirect Tax, Canons of Taxation, Subsidy, Transfer Policy ; Budgetary Procedure-Types of Budget-Classification of Receipts : Revenue Receipt and Capital Receipt; Classification of Expenditure : Revenue Expenditure and capital expenditure; Various Measures of Government Deficit : Revenue Deficit, Fiscal Deficit, Primary Deficit-their Meaning and Implications.

UNIT III- REVENUE RESOURCES AND PUBLIC DEBT

Deficit Financing and Methods - An Evaluation of Fiscal Policy of Government of India – Highlights of Recent Budget; Sources of Public Debt-Internal and External Debt; Burden of Public Debt; Redemption of Public Debt; Debt Trap; Role of Public Debt with Special Reference to Developing Countries.

UNIT IV- MONEY MARKET AND CAPITAL MARKET

Nature and Functions of Indian Money Market- Nature and Functions of Indian Capital Market-Stock Markets - Meaning and functions of Stock Market - Functions of Securities Exchange Board of India (SEBI). Credit Control: Quantitative Measures: Bank Rate -Open Market Operations - Variable Reserve Ratio - Statutory Liquidity Ratio - Qualitative Credit Control: Limitations.

UNIT V- INDEX NUMBERS AND INFLATION

Inflation – Meaning and types – Effects of Inflation – Measures to Control Inflation – Inflationary Gap – Deflation – Meaning, Causes, Types, Effects – Deflationary Gap. Index Numbers: Type – Construction of Simple ,Weighted, Chain-Base Index Numbers-Difficulties-Limitation- Index Numbers and Inflation.

REFERENCES

1. Dutt and Sundaram- *Indian Economy*, S Chand and Company, Delhi, 2013
2. Agarwal- *Indian Economy*, Vikas Publishing Company, Delhi, 2012
3. Misra and Puri - *Indian Economy*, Himalaya Pub. House, 2005

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	Total Of LTP	C
III	PES15E86	Women Studies	2	0	0	2	2

UNIT I - WOMEN AND EMPLOYMENT

Sex Vs Gender-Visible and invisible work - Feminisation of Employment-Rural and Urban - Organised and unorganised sector-Time allocation and gender - Women in corporate sector-Globalisation and its impact on women's work - Women as entrepreneurs - Farm and non farm - Self employment and wage employment - Theories of labour market discrimination- Women and migration - Economic evaluation of women's work-Women's role in GDP.

UNIT II - WOMEN AND EDUCATION

Human capital Theory- Women's education - Determinants-school dropouts-Obstacles in women's higher education- Poverty and rural women's education-gender divide in higher education-professional and non professional education-Educational opportunities of rural women and urban women-Role of marriage in women's higher education-Women and technical education-Women's educational benefits in the family and in the economy.

UNIT III - WOMEN AND DEVELOPMENT

Theories of development-The paradigm shift in women's development- Women in development - Women and Development - HDI-GDI-GEM-Millennium Development Goals-Women and decision making-Intra household allocation of resources-Gender equality and equity-Dimensions and measurement of gender gap-Causes of gender inequalities- Wellbeing and quality of life-Empowerment and gender equality.

UNIT IV - WOMEN, ENVIRONMENT AND HEALTH

Environment and gender issues-Women in nature - Women and CPR management - Waste management in the households-Environmental degradation - women in green economy-Green budgeting problems in healthy environment - women and environment in rural and urban. Reproductive healthcare-health care programmes - ageing problems- behaviour-nutritional status - Role of institution in women's health - Occupational health hazards.

UNIT V - ROLE OF STATE AND WOMEN

Rights of women legal, social and political - Policies and programmes - Poverty employment and welfare programmes - National commission on women -Ministry of women and child development - Women's participation in local governance - women in administration - women as leaders-capacity building programmes - Role of NGO's-Panchayet Raj and co-operative institutions-Educational and health policies of women.

REFERENCES

1. Becker G.S. , "*Human Capital: A Theoretical and Empirical Analysis*", Columbia University Press, New York. 1995
2. Kind M and Hill M.A (eds) , "*Women's Education in Developing Countries: Barriers Benefits and Politics*", John Hopkins, Baltimore. 1993
3. Seth M, "*Women and Development*", Sage Publications, New Delhi. 2001
4. Shanthi K. , "*Women in India*", Anmol Publications, New Delhi, 2005

5. ILO , *“Women’s Participation in the Economic Activity of Asian Countries”*, ILO, Geneva, 1978.

DEPARTMENT OF COMPUTER APPLICATIONS (PG)

SEMESTER	SUBJECT CODE	SUBJECT TITLE	L	T	P	TOTAL OF LTP	C
II	PCA15E81	DATABASE MANAGEMENT SYSTEMS	1	-	1	2	2

INSTRUCTIONAL OBJECTIVES:

- To understand the concepts of database security and reliability.
- To enable the learner to become a Database application programmer.

UNIT 1: Introduction and Conceptual Modeling

Purpose of database system - Advantages of DBMS over file processing System-View of data-Data abstraction-Data Independence - Data models - Database users - Database Administrator - DBMS system structure.

UNIT 2: SQL

Data Definition Language Statements – Data manipulation language statements – Transaction Control Language Statements - Data Control Language statements

Unit 3: Functions

Scalar functions – Group functions – Set operators – Joins. PL/SQL: Basics – Trigger – Exception Handling.

UNIT 4: Relational Model and Normalization

Entity Relationship model basic concepts – Relational model - Decomposition – Functional Dependency – Normalization: 1NF - 2NF-3NF - BCNF- Multi value dependency and 4NF - 5NF.

UNIT 5: Data Storage

Data Storage: Physical Storage media – Magnetic Disks – File and Record organization. Indexing: Primary index – Secondary indices. Hashing: Static hashing – Dynamic hashing.

TEXT BOOK:

- Abraham Silberschatz, Henry F. Korth, Sudarshan, S (2005), Database System concepts, Fourth Edition, McGraw Hill, New Delhi (For 1 to 5 units).

BOOKS FOR REFERENCE:

- Kevin Loney, Gerorge Koch (2002), Oraclei The Complete Reference, McGraw Hill, New Delhi.
- Ragu Ramakrishnan (1998), Database management Systems, WCB / Mc Graw Hill, New Delhi.
- Alexis Leon, Mathews Leon (1999), Database Management Systems, Vikas Publishing House Pvt. Ltd., New Delhi.
- Date C.J (2003), An Introduction to database, version 2, Addison Wesley, New York.

SEMESTER	Subject Code	Title of the Subject	L	T	P	Total of LTP	C
II	PCA15E82	PROGRAMMING IN JAVA WITH LAB	1	0	1	2	2

INSTRUCTIONAL OBJECTIVES:

- To understand the principles and concepts of object programming.
- To learn multithreading concepts.
- To enable the learner to pursue careers in Java solution Architect/Java Programmer

UNIT 1: Introduction to Java

The Creation of Java- The Java Buzzwords- An Overview of Java- Data Types,-Variables-Arrays- Operators- Control Statements.

UNIT 2: Object Oriented Concepts

Introducing Classes- Overloading Methods- Introducing Access Control- Introducing final- Inheritance Basics- Method Overriding- Using Abstract Classes- The String Constructors- Special String Operations- String Comparison- String Buffer.

UNIT 3: Packages Interference Exception Handling and Multithreading

Packages – Interfaces - Exception Handling - The Java Thread Model - The Main Thread - Creating a Thread - Thread Priorities – Synchronization - Interthread Communication.

UNIT 4: Applet, AWT and Event Handling

Applet Basics - Applet Architecture - An Applet Skeleton - Simple Applet Display Methods - Requesting Repainting - The HTML APPLET Tag - AWT Classes - Window Fundamentals - Working with Graphics - Event Handling - The Delegation Event Model - Event Classes - Event Listener Interfaces.

UNIT 5: Java Console Input and Output and File

Enumerations - I/O Basics - Reading Console Input - Writing Console Output - The PrintWriter Class - Reading and Writing Files - Collections Overview - The Java I/O Classes and Interfaces – File - The Stream Classes - The Byte Streams - The Character Streams.

TEXT BOOK

1. Herbert Schildt (2007), Java: The Complete Reference, The McGraw-Hill, Seventh Edition, New Delhi (For 1 to 5 units).

REFERENCES

1. S.Horstmann, Gray Cornell (2001), Core Java 2 Volume In, Fundamentals, Addition Wesley, New York.
2. Arnold and Gosling, J. (2000), The Java Programming Language, Addition Wesley, 2nd Edition, New Delhi.
3. Art Gittleman (2002), Ultimate Java Programming, Wiley Publications, New York.
4. Herbert Schildt (2007), Java: The Complete Reference, the McGraw-Hill, Eight Edition, New Delhi.

SEMESTER	Subject Code	Title of the Subject	L	T	P	Total LTP	C
II	PCA15E83	Content Management System	1	1	0	2	2

INSTRUCTIONAL OBJECTIVES:

At the end of this SUBJECT the learner is expected :

- To acquire basic knowledge about CMS
- To gather extensive knowledge in designing skills in CMS
- To learn about various types of CMS

UNIT 1 : CONTENT

Defining Data, Information, and Content - Content Format - Content Structure - Content Functionality - What Is Content Really?

UNIT 2 : CONTENT MANAGEMENT

Understanding Content Management - Major Parts of a CMS - The Branches of Content Management - The Roots of Content Management.

UNIT 3 : Doing Content Management Projects

Doing CM Projects Simply - Staffing a CMS - Getting Ready for a CMS - Doing Requirements Gathering - Doing Logical Design - Selecting Hardware and Software - Implementing the System.

UNIT 4 : Designing a CMS

Designing a CMS Simply - The Wheel of Content Management - Working with Metadata - Cataloguing - Designing Publications - Designing Content Types - Designing Content Access - Designing Workflow and Staffing Models.

UNIT 5 : Building a CMS & Case Study

Building a CMS Simply - Building Collection Systems - Building Publishing Systems. Case Tools – Joomla.

TEXT BOOK

1. Bob Boiko – Content Management Bible, 2nd Edition - Wiley Publishing, Inc.- 2005 (Unit I – V)

REFERENCES

1. Eric Tiggeler - Joomla! 3 Beginner's Guide - PACKT Publishing – 2013.
2. Sofia Hauschildt - CMS Made Simple 1.6 Beginners Guide – PACKT Publishing – 2010.
3. Ishai Sagi – SharePoint 2010 How To – Pearson Education – SAMS 2011.

SEMESTER	Subject Code	Title of the Subject	L	T	P	Total LTP	C
III	PCA15E84	WEB TECHNOLOGY WITH LAB	1		1	2	2

INSTRUCTIONAL OBJECTIVES:

- To provide knowledge on Internet and its related concepts.
- To enrich the knowledge of scripting languages.
- To introduce advance HTML tags.
- To enable the learner to become a Web Designer.

UNIT 1: Introduction to Internet and World Wide Web

History of the Internet, Email concepts, Sending and Receiving files by E-mail, Intranet, Domain Name System, Web Browsers, Web Pages.

UNIT 2: Hypertext Markup Language

Basics of HTML, HTML Document display, Formatting Text, Link, Lists, Images, Tables, Forms, and Frames.

UNIT 3: Usage of Cascading Style Sheet

Syntax of CSS, Style sheets types, Properties and Text attributes Padding, List properties, List Properties, Positioning, Margins, Colors, Properties and Table attributes

UNIT 4: Fundamentals of Java Script

Introduction to JavaScript, JavaScript Elements, Variables, Operators, Control Statements, Arrays, Functions.

UNIT 5: Server-Side Programming

Client-Side Scripting and Server-Side Scripting, Servlets – Definition, Active Server Pages –Comparison of ASP over JSP.

TEXT BOOK

1. Deven N. Shah (2012), A Complete Guide to Internet and Web Programming, DreamTech Press, New Delhi (For 1 to 5 units).

REFERENCES

1. Raj Kamal (2002), Internet and Web Technologies, TataMcGraw Hill, New Delhi.
2. Margaret Levine Young (2002), Internet the Complete Reference, TataMcGraw Hill, Second Edition, New Delhi.

SEMESTER	SUBJECT CODE	TITLE OF THE SUBJECT	L	T	P	TOTAL OF LTP	C
III	PCA15E85	CYBER LAW AND CRIMES	1	1	0	2	2

INSTRUCTIONAL OBJECTIVES:

- To learn the principles of computer investigations and digital evidence.
- To learn about jurisdiction, chain of evidence, legal authority, social, legal, and ethical implications.
- To prepare students for careers in homeland defense, law enforcement, or commercial IT security.

UNIT 1: Information Age and Cyber Crime

Cyber Space - Relationship between Computers Crime and Law - Brief Historical Perspective of Criminal Law - Classification of Crimes - Cyber Crime : Definition of “Computer Crime” - Computer Crime categories - Types of Computer Crimes -Classification of Computer Crime - Crime on Web - Indian Scenario -Definition of Cyber Jurisdiction

UNIT 2: Cyber Crime and Criminal Codification in India

Indian Penal Code : I to III - Indian Penal Code : IV to VI - Indian Penal Code : VII to IX - Indian Penal Code : X to XII - Indian Penal Code : XIII to XV

UNIT 3: Protection of Intellectual Property – II

Copyrights - Digital Signature - Working of Digital Technology - Privacy Issues in the Information Age - Privacy and Surveillance - Privacy: Meaning - Legal Perspective and Framework - Kind and Pattern Intrusions Motive - Methods of Attack - Topology of Intruders - Global Differences.

UNIT 4: Communication Network as Surveillance Tool

The Web – Intelligence- Tool – Espionage - The Interlude - Data and Information Processing - The operations - The Tradecraft - The armament - Economic Intelligence and Attacks - Web or Net Crimes - Hackers Psychology and Laws Related To Hacking - Genesis of the term Hacker

UNIT 5: Identity and Information Theft

Identity Theft case Files - Avoid being an Easy Target - Cyber Fraud and Electronic Misuse - Definition of Computer Fraud or cyber Fraud - Characteristics Cyber Fraud Offence - The legal Issues - Fraud-Related Offenses - Protection of Cyber Crimes - Encryption in Crime and Terrorism - Law Enforcement Options

TEXT BOOK

1. Prof.Parag Diwan, Dr.R.K.Suri and Dr.Sanjay Kaushik (2003), Cyber Crime (Volume : 11,IT Encyclopaedia.com , Pentagon Press, New Delhi, 4th Edition (For 1 to 5 units).

REFERENCES

1. Johnson, Thomas A. (2006), Forensic Computer Crime Investigation Boca Raton-Fla: CRC –Press, New York

SEMESTER	Subject Code	Subject Title	L	T	P	Total of LTP	C
III	PCA15E86	CLOUD COMPUTING	1	1	0	2	2

INSTRUCTIONAL OBJECTIVES:

- To understand the need of cloud computing in the IT sector
- To know the cloud service providers and the kind of services offered by them
- To analyze the benefits of cloud in business continuity by applying cloud services, security and virtualization features
- To enable the learner for aspiring careers in Cloud / Software Product development areas.

UNIT 1: Cloud Fundamentals

Cloud computing Definition – Cloud Models such as NIST, Cube, Private, Public, Hybrid and Community clouds – Cloud Characteristics – Benefits, Disadvantages, Challenges and obstacles of Cloud Computing– Types of Cloud Services (IaaS, PaaS, SaaS, IDaaS).

UNIT 2: Cloud Platforms

Abstraction – Load balancing and virtualization: case study Google cloud – Hypervisors : Case study VMware - Machine Imaging – Capacity Planning with baseline metrics, measurement, load testing, network capacity and scaling.

UNIT 3: Cloud Service Providers

Google Web Services: Explore and survey Google Application, APIs and Google App Engine - Amazon Web services: Components, Elastic Compute Cloud (EC2), Amazon Storage Systems, Amazon Elastic Block Store, and Amazon Database Services.

UNIT 4: Cloud Infrastructure and Security

Cloud Management: Responsibilities, Lifecycle, Management Products and Standards -Cloud security: CSA Cloud Reference Model – Implement Cloud security for Infrastructure, Data, Network, Storage and Host.

UNIT 5: SOA, Storage and Backup

Network service model infrastructure, Communication and Management of SOA – Moving applications to cloud, Service attributes and Cloud bursting – Cloud storage, provisioning, unmanaged and managed storage.

Text books:

1. Barrie Sosinsky (2011), “Cloud Computing Bible”, Wiley Publishing Inc., New York (For 1 to 5 units).
2. Kris Jamsa (2012), “Cloud Computing: SaaS, PaaS, IaaS, Virtualization, Business Models, Security and More”, Jones and Bartlett Learning LLC, Boston, USA (For 1 to 5 units).

REFERENCES

1. George Reese (2009), “Cloud Application Architectures: Building Applications and Infrastructures in the cloud”, O’Reilly Media Inc. Cambridge, USA
 2. Anthony T. Velte, Toby J. Velte, Robert Elsenpeter (2010), “Cloud Computing: A practical approach”, McGrawHill, New Delhi.
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DEPARTMENT OF COMPUTER SCIENCE

SEMESTER	SUBJECT Code	SUBJECT Title	L	T	P	Total of L+T+P	C
II	PIT15E81	PROGRAMMING IN C	1		1	2	2

INSTRUCTIONAL OBJECTIVES:

At the end of this SUBJECT the learner is expected:

1. To acquire basic knowledge about Programming in C
2. To gather knowledge in C programming and developing programming skills
3. To strengthen the knowledge on structures, arrays etc., of C programming

UNIT I - OVERVIEW OF C

(6 Hours)

Introduction- Importance of C- Basic Structure of C program- Tokens-Variables- Data types- Operators and Expression- Managing Input and Output Operators.

UNIT II - CONDITIONAL STATEMENTS

(6 Hours)

If statement- switch statement- goto statement- while statement- do statement-for statement- continue statement-break statement.

UNIT III - ARRAYS

(6 Hours)

One dimensional array- Two dimensional array- Multidimensional array

UNIT IV - FUNCTIONS

(6 Hours)

Built in functions (Library functions): String Handling functions-User defined functions.

UNIT V – STRUCTURES AND UNIONS

(6 Hours)

Structure definition- Arrays of structures- Structures and functions- Unions

TEXT BOOK

1. Balagurusamy.E, (2008), "Programming in ANSI C", Second Edition, Tata McGraw Hill.

REFERENCES

1. Kamthane Ashok.N, (2013), "Programming in C", 2nd Edition, Pearson Education.

2. Yashvant P. Kanetkar, (2008), "Let us C", 8th Edition, Infinity science press.

SEMESTER	SUBJECT Code	SUBJECT Title	L	T	P	L+T+P	C
II	PIT15E82	SPSS - STATISTICAL PACKAGE FOR SOCIAL SCIENCES	1	0	1	2	2

1. Construction of Frequency tables: Univariate Frequency tables -- Cross- Tabulation
2. Graphical representation of Data: Bar diagram – Simple Bar diagram, Multiple Bar Diagram, Sub divided Bar Diagram, Histogram Pie Diagram
3. Calculation of Measures of Central Tendencies: Mean, Median and Mode, Geometric mean
4. Calculation of Methods of Dispersion - Standard Deviation, Quartiles, Skewness, Kurtosis
5. Calculation of Correlation Coefficient: (a) Karl Pearson's Correlation Coefficient, (b) Spearman's Rank Correlation Coefficient
6. Calculation of Regression Trend: (a) Trend Line
7. Test of Significance for Single and two Samples – Large Sample Test (Z-Test) (a) Test for Mean, (b) Test for Proportion, (c) Test for Standard Deviation
8. Test of Significance for Single and two Samples – Small Sample Test (t-Test, F-test) (a) Test of Mean, (b) Test of Variances
9. Non-Parametric Test (a) One –Way Chi-square test (test for Homogeneity) (b) Two–Way Chi-square test (test for Attributes)
10. Test of Homogeneity of Means for more than 2 samples (a) One –Way ANOVA (b) Two–Way ANOVA

REFERENCES

1. Tally Bible by V. Sundaramoorthy
2. Tally – V. Palanivel , Margham Publications, Chennai
3. SPSS for Beginners, 1999 Vijay Gupta, Published by VJBooks Inc.
Levine's Guide to SPSS for Analysis of Variance.2nd Edition, Melanie C. Page, Sanford L. Braver and David P. MacKinnon, LAWRENCE ERLBAUM ASSOCIATES, PUBLISHERS2003 Mahwah, New Jersey, London.

SEMESTER	SUBJECT Code	SUBJECT Title	L	T	P	L+T+P	C
II	PIT15E83	HTML	1	0	1	2	2

1. Develop a HTML document, which displays your name as <h1> heading and displays any four of your friends. Each of your friend's names must appear as hot text. When you click your friend's name, it must open another HTML document, which tells about your friend.
2. Write names of several countries in a paragraph and store it as an HTML document, world.html. Each country name must be a hot text. When you click India (for example), it must open india.html and it should provide a brief introduction about India.
3. Design a HTML document describing you. Assign a suitable background design and background color and a text color.
4. Develop a Complete Web Page using Frames and Framesets which gives the Information about a Hospital using HTML.
2. Develop complete set of web pages to describe you skills in various areas using HTML.
3. Develop a web site to publish your family and the details of each member-using HTML.
4. Develop a HTML document to display a Registration Form for an intercollegiate function.
9. Develop a HTML document to design Alumni Registration form of your college.
10. Create a HTML table with rows and columns and split them using Rowspan and Colspan.
11. Create a web page in the format of front page of a news paper using Text links. Align the text with colors

SEMESTER	SUBJECT Code	SUBJECT Title	L	T	P	L+T+P	C
III	UCS15E84	TALLY	1	0	1	2	2

Creating a new company
 Creation of essential ledgers
 Capital account
 Purchase account
 Sales account
 Direct expenses

Cash account
 Profit & Loss account
 Debtors account
 Creditors account
 Creation of inventory
 Stock group Unit of measure Stock item
 Creation of ledge
 Single ledgers
 Multiple ledgers
 Voucher posting
 sales order
 Making actual sales
 Purchase order
 Making actual purchase
 Returns accounting for receipts and payments
 Reports

SEMESTER	SUBJECT Code	SUBJECT Title	L	T	P	Total of L+T+P	C
III	PIT15E85	OFFICE AUTOMATION	1		1	2	2

INSTRUCTIONAL OBJECTIVES:

At the end of this SUBJECT the learner is expected:

1. To have clear understanding in open source softwares
2. To have hands on experience in open office

UNIT I - WRITER — THE WORD PROCESSOR (6 Hours)

Creating a Document -Opening a Document -Laying Out the Page-Setting paper size, margins, and orientation -Creating headers and footers -Numbering pages -Entering and Editing Text-Modifying text-Moving and copying text -Finding and replacing text -Correcting mistakes automatically-Printing

UNIT II - WRITER — THE WORD PROCESSOR (6 Hours)

Adding character to your characters -Planning Your Paragraphs-Aligning paragraphs -Spacing your lines -Making Lists -Bulleting lists-Numbering lists-Using a style -Creating a style - tables and columns

UNIT III - CALC — THE SPREADSHEET (6 Hours)

Creating a Spreadsheet -Inputting Your Data -Entering your data -Editing your data -Filling cells automatically -Managing Columns and Rows-Copying, pasting, cutting, dragging, and dropping your cells -Adding the Art -Formula Basics-Adding, Subtracting, and More -Adding and other arithmetic -Adding with the Sum function –

UNIT IV - CALC — THE SPREADSHEET (6 Hours)

Rocketing into Orbit with Functions Using the AutoPilot: Functions dialog box -Editing functions -Entering functions manually -Copying and pasting formulas -Creating formula arrays -Recalculating formulas -Creating Magic Formula-Nesting functions -Creating conditional formulas

UNIT V - IMPRESS — THE PRESENTATION (6 Hours)

Creating a Presentation -Opening an existing presentation -Adding Slides -Adding text to a slide -Saving Your Presentation for Posterity - Making Presentations Picture Perfect -Adding Images -Clipping art -Drawing objects -Coloring Backgrounds -Creating a plain-colored background -Creating a gradient background -Hatching a background -Using a bitmap image as a background -Creating 3-D text-Inserting 3-D objects -Animating Impressively -Using Text Effects Effectively -Creating Animation Effects -Creating Animated GIF files -Adding Slide Transition Effects - Showing a Presentation -Setting slide timing -Hiding slides -Specifying slide show settings -Delivering a Slide Show .

TEXT BOOKS

1. Keir Thomas and Andy Channelle with Jaime Sicam (2009), “Beginning Ubuntu Linux” , Apress.(Unit I & II)
2. Gurdy Leete, Ellen Finkelstein, and Mary Leete (2004), “Openoffice.org for dummies”, Wiley Publishing, Inc.(Unit III,IV & V)

REFERENCES

1. Andy channelle (2009), “Beginning OpenOffice 3”, Aprèss.

SEMESTER	SUBJECT Code	SUBJECT Title	L	T	P	L+T+P	C
III	PIT15E86	DHTML and XML	1	0	1	2	2

UNIT - I

Intro, DHTML coding, examples, Pong Program, Database Design - Normalization Readings, Pong

UNIT - II

Normalization, Database Design, ASP and SQL examples, XML, DOM and XSL, Database examples- Normalization practice - XML resume with DOM, XSL

UNIT - III

Normalization and XML review, Intro to Java, Basic applet IO, control structures, methods, tracing the runtime stack - Applet In, Applet Out, Km to miles - Read and write code examples

UNIT - IV

2 dim arrays, OOP, multiple classes, inheritance and polymorphism, arrays of classes - Magic Square Rolldex

UNIT - V

Final, Programming help, Data Structures, Dynamic Memory, Recursion

TEXT BOOK:

1. DHTML: Learning by Example, Robert B. Mellor Franklin, Beedle & Associates, Incorporated, 2003.
2. Xml: The Complete Reference By Williamson Tata McGraw-Hill Education,2001.

DEPARTMENT OF VISUAL COMMUNICATION

SEMESTER	Subject Code	Course Title	L	T	P	L+T+P	C
II	PVC15E81	EVENT MANAGEMENT	0	0	2	2	2

OBJECTIVES

1. To understand the basics of Event Management
2. To apply the techniques in Event management
3. To solve practical problems in the real life situations.

Class Exercise

(Students has to practices all the exercises)

(Each exercise carries 8 marks)

(Five exercises x 8 marks = 40 marks & 10 marks for Regularity & Discipline- Total- 50 Marks)

1. Understanding different Events & Exhibitions
2. Planning & Finalizing the Event
3. Preparing the Budget & Cost Controlling
4. Designing Posters, Banners & Certificates
5. Planning for Maintains, Parking, Food & Ticketing

(The students have to conduct one event as a group (Maximum 5 members) inside the campus and the event should be professionally recorded and submitted in Digital form, which will be evaluated by the External Examiner)

MANUALS FOR PRACTICALS

1. Allison Saget (2012). The Event Marketing Handbook, First Edition, Dearborn Trade Publishing, USA
2. Julia Rutherford Silvers (2012). Professional Event Coordination, First Edition, John Wiley & Sons, USA
3. Entrepreneur Press (2011). Start Your Own Event Planning Business, First Edition, Entrepreneur Press, USA

SEMESTER	Subject Code	Course Title	L	T	P	L+T+P	C
II	PVC15E82	MEDIA PLANNING AND STRATEGIES	0	0	2	2	2

OBJECTIVES

1. To understand the basics of Media planning and strategies
2. To apply the techniques in Advertising industry

- To solve practical problems in the real life situations.

Class Exercise

(Students has to practices all five exercises)

(Each exercise carries 8 marks)

(Five exercises x 8 marks = 40 marks & 10 marks for Regularity & Discipline- Total- 50 Marks)

- Develop Situation Analysis
- Define Media Objectives
- Determine Media Strategy.
- Detail Decisions in Media Flowchart
- The challenges facing strategic
- The data sources used in media analysis
- Calculation of audience ratings, media share, reach and frequency
- The strengths and weaknesses of various media

Record Work

- Create a Media Plan for a specific product or service.
- Engage in primary and secondary research to understand the marketing problem.

(The students have to conduct one Media Campaign for any one product as a group (Maximum 5 members) inside the campus and the media campaign should be professionally recorded and submitted in Digital form, which will be evaluated by the External Examiner)

MANUALS FOR PRACTICALS

- William Goodrich (2011). Media Planning Workbook, First Edition, Marketing Communications LLC, USA
- Ronald D. Geskey Sr., (2010). Media Planning and Buying In the 21st Century, First Edition, Palgrave MacMillan, New York
- Roger Baron (2010). Advertising Media Planning, First Edition, McGraw- Hill Companies, USA

SEMESTER	Subject Code	Course Title	L	T	P	L+T+P	C
III	PVC15E83	FILM APPRECIATION	0	0	2	2	2

OBJECTIVES

- To understand the basics of Film appreciation
- To apply the techniques in film industry
- To solve practical problems in the real life situations.

Class Exercise

(Students has to view all eight screenings)

(Each exercise carries 5 marks)

(Eight exercises x 5 marks = 40 marks & 10 marks for Regularity & Discipline- Total- 50 Marks)

- International award winning movies will be screened (once in a week/ 4 Movies)
- National award winning movies will be screened (once in a week/ 4 Movies)
- Student will be trained in reviewing and analyzing the movies
- Students will be encouraged to participate and visit the film festivals.

Record Work

- Should write review for all screened movies

(The Students have to submit the exercise in the Record form for Practical exam, which will be evaluated by the External Examiner)

MANUALS FOR PRACTICALS

- James Monaco (2009). How to Read a Film: Movies, Media and Beyond, First Edition, Oxford University Press, UK
- Terry Bolas (2009). Screen Education: From Film Appreciation to Media Studies, First Edition, Intellect Books, UK
- V. F. Perkins (1993). Film As Film: Understanding And Judging Movies, Third Edition, Da Capo Press, USA

SEMESTER	Subject Code	Course Title	L	T	P	L+T+P	C
III	PVC15E84	AD FILM MAKING	0	0	2	2	2

OBJECTIVES

1. To understand the basics of Ad Film
2. To apply the techniques in Advertising industry
3. To solve practical problems in the real life situations.

Class Exercise

(Students has to practices all five exercises)

(Each exercise carries 8 marks)

(Five exercises x 8 marks = 40 marks & 10 marks for Regularity & Discipline- Total- 50 Marks)

1. Students should write original script for Ad film with story board (two excises)
2. Students should prepare Production Team & Budget
3. Student should get trained in handling camera and shoot scene or shot.
4. Students should handle non-linear editing with AVID/ FCP Software
5. Students should handle dubbing, Sound Effects & Jingles using the Audio Software

Record Work

1. Commercial Ad Film for any concept (maximum 10 secs)
2. PSA film for any social issues (maximum 10 sces)

(The Students have to submit any one exercise in the digital form for Practical exam, which will be evaluated by the External Examiner)

REFERENCES

1. George E Belch (2010). Advertising and Promotion, First Edition, Tata McGraw Hill company Ltd., New Delhi
2. J.V. Vilanilam (2004). Advertising Basics A Resource Guide for Beginners, Second Edition, Jain Books, New Delhi
3. David Ogilvy (1985). Ogilvy on Advertising, Fifth Edition, Random House, USA

DEPARTMENT OF BIOTECHNOLOGY

SEMESTER	COURSE CODE	COURSE TITLE	L	T	P	LTP	C
II	PBT15E81	VERMITECHNOLOGY			2	2	2

Objective:

To understand the Vermi culture needs in environment

To develop an attitude for vermin culture business.

1. General properties of the soil - structure of the soil -sand, clay, salt, types of soils
2. Soil organisms
3. Introduction to earthworm biology -physical and chemical effects of earth worms on soils
4. Types of vermicomposting
5. Container preparation
6. Bed method

7. Pit method
8. Vermicopost -setting up vermicompost quality N, P, K, C, N
9. Problems in vermiculture units - remedial suggestions
10. Vermicomposting as a tool for solid waste management - a small scale industry and it's economics

SEMESTER	COURSE CODE	COURSE TITLE	L	T	P	LTP	C
II	PBT15E82	MUSHROOM CULTURE TECHNIQUES			2	2	2

Objective:

To provide students with a basic understanding and knowledge of mushroom cultivation.

To develop awareness among students about storage and utility of mushroom.

1. Introduction about Fungi
2. Edible and non-edible mushroom
3. Morphology and raising a pure culture
4. spawn cultivation methods
5. Spawn preparation
6. Preparation of compost
7. Cultivation of button mushroom
8. Cultivation of oyster mushroom
9. Harvesting of mushroom
10. Pests and diseases of Edible mushrooms

SEMESTER	COURSE CODE	COURSE TITLE	L	T	P	LTP	C
III	PBT15E83	BIO-PROCESSING TECHNOLOGY			2	2	2

Objective:

To ensure the students understand about the industrial processes and production of commercial products.

To study the design of the bioreactors and the kinetics and dynamics behind the bioprocess technology.

1. Introduction to fermentation
2. Fermentation – types and classification
3. Basic requirements for fermentation
4. Design of a Fermentor
5. Sterilization methods
6. Media Preparation
7. Isolation of microorganisms
8. preservation of industrially important microorganisms
9. Fermentation processing
10. Biosensors - types and application in various industries.

SEMESTER	COURSE CODE	COURSE TITLE	L	T	P	LTP	C
III	PBT15E84	HEMATOLOGY AND BLOOD BANKING			2	2	2

Objective :

To understand the basics and mechanisms of blood system.

To introduce students the different properties of blood and to explain how they act and mediate biochemical reactions.

1. Blood: Definition, Characters and Composition
2. Coagulation Mechanism: Factors: Bleeding time, Clotting time
3. Anticoagulants
4. Collection Of Blood
5. Serum separation
6. Counting of Blood Cells
7. Total RBC count

8. WBC Count
9. Preparations of stains and staining techniques
10. ABO Grouping

DEPARTMENT OF MATHEMATICS

SEMESTER	COURSE CODE	COURSE TITLE	L	T	P	C
II	PMA 15E81	NUMERICAL METHODS USING C++	2	-	-	2
INSTRUCTIONAL OBJECTIVES						
1.	<i>To expose the students to various tools in solving numerical problems.</i>					
2.	<i>To enable the students to apply these methods in a computer environment.</i>					

Unit 1: Introduction to C++

Variables – Input and Output – If statement – Logical operators – Nested If and Switch statements – For statement – While statement – Arrays – Pointers – Library functions – Userdefined functions.

Unit 2: System of Linear Equations

Gauss-Elimination method – Pivoting – Gauss-Jordan Elimination method – Gauss-Seidal Iteration method.

Unit 3: Non-linear Equations and Interpolation

Bisection method – Newton’s method – Interpolation - Newton’s divided difference formula – Lagrange’s interpolation – Newton’s forward and backward difference formula.

Unit 4: Differentiation and Integration

Numerical differentiation – Numerical Integration – Newton Cotes method – Trapezoidal rule – Simpson’s rule.

Unit 5: Ordinary Differential Equations

Initial value problem – Euler’s method – Runge-Kutta method – Boundary value problem.

TEXT BOOK:

1. James M. Ortega and Andrew S. Grimshaw., An Introduction to C++ and Numerical Methods, Oxford University Press, New York, 1999.
2. Jain MK, Iyengar S R K, Jain R K., Numerical Methods for Scientific and Engineering Computation, Second Edition, Wiley Eastern Ltd, New Delhi.

REFERENCES:

1. Balagurusamy E., Object Oriented Programming with C++, Tata McGraw Hill Publishing Company Ltd, New Delhi, 1996.
2. Froberg C E., Introduction to Numerical Analysis, Second Edition, Addison-Wesley Publishing Company, 1972.

SEMESTER	COURSE CODE	COURSE TITLE	L	T	P	C
II	PMA 15E82	APPLIED MATHEMATICS – I	2	-	-	2
INSTRUCTIONAL OBJECTIVES						
1.	<i>To expose the students to various tools in solving numerical problems.</i>					
2.	<i>To enable the students to apply these methods in a computer environment.</i>					

Unit I: ORDINARY DIFFERENTIAL EQUATIONS Second and higher order linear ODE – Homogeneous linear equations with constant and variable coefficients – Non-homogeneous equations – Solutions by variation of parameters.

Unit II: FUNCTIONS OF SEVERAL VARIABLES Partial derivatives – Total differential – Taylor’s expansions – Maxima and minima of functions – Differentiation under integral sign.

Unit III: PARTIAL DIFFERENTIAL EQUATIONS Formation of PDE by elimination of arbitrary constants and functions – Solutions –General and singular solution- Lagrange’s linear equation – Linear PDE of second and higher order with constant coefficients.

Unit IV: FOURIER SERIES Dirichlet conditions – General fourier series – Half range sine and cosine series – Parseval’s identity – Harmonic analysis.

Unit V: BOUNDARY VALUE PROBLEMS Classification of PDEs – Solutions by separation of variables - One dimensional heat and wave equation.

Reference books:

1. “Advanced Engineering Mathematics” by **E. Kreyszig**, Eighth Edition, John Wiley and Sons (Asia) Pvt. Ltd., Singapore, 2000.
2. “Higher Engineering Mathematics” by **B.S. Grewal**, Thirty Eighth Edition, Khanna Publishers, New Delhi, 2004.

SEMESTER	COURSE CODE	COURSE TITLE	L	T	P	C
III	PMA 15E83	APPLIED MATHEMATICS – II	2	-	-	2
INSTRUCTIONAL OBJECTIVES						
1.	<i>To expose the students to various tools in solving differential equations.</i>					
2.	<i>To enable the students to apply these methods in a computer environment.</i>					

Unit – I : Systems of differential equations, Phase Plane, Stability: Introduction: Vectors, Matrices - Introductory examples - Basic concepts and theory – Homogeneous linear systems with constant coefficients.

Unit – II : Phase Plane, Critical Points, Stability - Phase Plane methods for nonlinear systems – Nonhomogeneous linear systems.

Unit - III: Fourier integral theorem - Fourier transform pairs - Fourier sine and cosine transforms - Properties - Transforms of simple functions - Convolution theorem, Parseval’s identity, ZTransforms.

Unit - IV: COMPLEX INTEGRATION Line integral in the complex plane - Two integration methods - Cauchy’s integral theorem - Existence of indefinite integral - Cauchy’s integral formula - Derivatives of analytic functions.

Unit - V: RESIDUE INTEGRATION METHOD Residues - Residue theorem - Evaluation of real integrals - Further types of real integrals.

Reference Books:

1. “Advanced Engineering Mathematics” by **E. Kreyszig**, Eighth Edition, John Wiley and Sons, (Asia) Pvt Ltd., Singapore, 2000.
2. “Higher Engineering Mathematics” by **B.S. Grewal**, Thirty Eighth Edition, Khanna Publishers, New Delhi, 2004.

SEMESTER	COURSE CODE	COURSE TITLE	L	T	P	C
III	PMA 15E84	BIO-MATHEMATICS	2	-	-	2
INSTRUCTIONAL OBJECTIVES						
1.	<i>To introduce Mathematics as a tool in the study of Biology.</i>					
2.	Be familiar with graphs and subgraphs					

Unit 1: Determinants Properties of determinants, Minors, Cofactors, Multiplications of determinants. **Matrices** -Operations on matrices, Inverse of matrices, Solution of simultaneous equations.

Unit 2: Permutation and Combination

Identities and simple problems, Binomial theorem, Exponential and Logarithmic series (statement only), Simple problems.

Basic ideas of Graph Theory -Connectivity, Trees, Various matrices connected with graphs, Construction of evolutionary trees, Phylogeny Construction.

Unit 3: Limits, Differentiation, Successive differentiation, Maxima and Minima, Simple problems. Integration of $f(x) = x^n, e^x, \log x$, Definite integrals, Simple problems.

Unit 4: Fundamentals of computers, algorithms, flowcharts. Introduction to systems and Application programs. Concept of data processing and handling of file for large volume of data. Elements of Database management in connection with Biological data bases.

Unit 5: C – programming and internet programming fundamentals. Specific features of Image Analysis in Java. Software characteristics and applications – ClustalWV1.7, Rasmol, Oligo, Molscrip, Tree view, ALSCRIPT, Genetic analysis software, Phylip.

REFERENCES:

1. Narayanan, S and Manikavasagam Pillai, T.K., *Calculus*, Vol.I, S.Viswanathan Printers, 1996.
2. Manickavachagam Pillai, T.K, Natarajan, T. and Ganapathy, K.S. *Algebra*, Vol I, S.Viswanathan Printers & Publishers, 1994.
3. David W. Mount, *Bioinformatics: Sequence and Genome Analysis*, Cold Spring Harbor Laboratory Press, New York.
4. Daniel C. Liebler, *Introduction to Proteomics: Tools for New Biology*, Humana Press, Totowa, NJ., 2002.
5. Pennington S., M.J.Dunn, *Proteomics: From Proteins Sequence to Function*, Springer Publications, 2001.

DEPARTMENT OF PHYSICS

COURSE CODE	COURSE TITLE	L	T	P	Total of L+T+P	C
PPY15E81	INTRODUCTION TO NANOTECHNOLOGY	2	-	-	2	2
INSTRUCTIONAL OBJECTIVES						
1.	To Impart the basic knowledge on Nanoscience and Nanotechnology.					
2.	To develop understanding on the exotic properties of nanostructured materials					
3.	To introduce various techniques available for the processing of nanostructured materials.					
4.	To emphasize the importance and development of Nanotechnology in various fields.					

UNIT I: INTRODUCTION TO NANOSCIENCE

History and importance of Nanotechnology - Opportunity at the nano scale-Length and time scale in structures – Difference between bulk and nanoscale materials and their significance - Properties at nanoscale - optical, electronic, magnetic and chemical.

UNIT II: NANOSTRUCTURES AND DIMENSIONS

Classification of nanostructures-zero, one, two and three dimensional nanostructures - Size Dependency in Nanostructures - quantum size effects in nanostructures - Chemistry of tailored nano shapes - quantum dots, nano wells, nano ribbons and nano wires

UNIT III: SYNTHESIS OF NANOMATERIALS

Synthesis of nanomaterials-top down and bottom up approach - Method of nanomaterials preparation – wet chemical routes of synthesis: reduction, sol gel, hydrothermal, sonochemical synthesis – physical routes - Physical Vapor deposition(PVD) - Chemical Vapor Deposition(CVD) - Laser Ablation – Sputtering.

UNIT IV: CHARACTERIZATION OF NANOMATERIALS

Scanning Electron Microscope (SEM) - Transmission Electron Microscope (TEM), Scanning Probe Microscope (SPM) - Comparing SEM, TEM and SPM for different classes of nanomaterials.

UNIT V: APPLICATIONS OF NANO MATERIALS

Nanotechnology in Energy systems – Textiles – Food and health care - Agriculture - Automotive Industry - Solar Technology - Pharmaceutical and drugs – Nanoelectronics - Nanosensors and Devices.

TEXTBOOKS

1. Pradeep T., *Nano: The Essentials*, 1st Edition, Mc Graw Hill, 2007.
2. Chattopadhyay K. K, Banerjee A. N., *Introduction to Nanoscience and Nanotechnology*, PHI ,2009.

REFERENCES

1. Chris Binns, *Introduction to Nanoscience & Nanotechnology*, 1st Edition, Willey- Publication, 2010.
2. Charles P. Poole, Frank J. Owens, *Introduction to Nanotechnology*, Wiley Interscience, 2003.
3. Robert W. Kelsall, Ian W. Hamley and Mark Geoghegan, *Nanoscale Science and Technology*, John Wiley & Sons, Ltd., 2005.

COURSE CODE	COURSE TITLE	L	T	P	Total of L+T+P	C
PPY15E82	HEALTH PHYSICS	2	-	-	2	2
INSTRUCTIONAL OBJECTIVES						
1.	To give students a knowledge about role of physics in health care					
2.	To introduce physical principles of instrumentation involved in medical diagnosis					
3.	To describe the scientific basis for regulating exposures to radiations					
4.	To lay the foundations for further studies in medical physics and radiology					

UNIT I: HEALTH PHYSICS FUNDAMENTALS

Electromagnetic spectrum and its medical application- Light - Physics of light, Intensity of light, limits of Vision and color vision Sound - Physics of sound- Normal sound levels Ultrasound fundamentals- Generation of ultrasound-

Ultrasound Transducer – Interaction of Ultrasound with Materials-Reflection and Refraction – Absorption and Scattering.

UNIT II: RADIATION

Radioactivity- Transformation mechanisms- Transformation kinetics- Naturally Occurring Radiation- Interaction of radiation with matter- Alpha rays- Beta rays- Gamma rays- Radiation - external exposure- dosimetry- dose response characteristics- Radiation safety guidelines.

UNIT III: PHYSICS OF CARDIOPULMONARY SYSTEM

The Airways, - blood and lung interaction –pressure air flow volume relationships of lungs – physics of alveoli – the breathing mechanism – Major components of cardiovascular system – O₂ and CO₂ exchange in the capillary system – Physical activity of heart – transmural pressure – Bernolli's principles applied to cardiovascular system - Blood flow – laminar and turbulentzz.

UNIT IV: HEALTH PHYSICS INSTRUMENTATION

Radiation detectors- Particle counting instruments- types of counters- resolving time- Nuclear Spectroscopy- Dose measuring instruments- types of dosimeters- neutron measurements-detection reactions- neutron dosimetry- calibration- counting statistics.

UNIT V: ENVIRONMENTAL HEALTH PHYSICS

Naturally occurring radioactive material- Radon- Environmental monitoring programs- Environmental releases-Regulatory guidelines for effluent pathways- Doses from liquid effluent pathways- Doses from gaseous effluent pathways- Pathway selection- Model parameters.

TEXTBOOKS

1. Herman Cember, Thomas E. Johnson, *Introduction to Health Physics*, 4th Edition, 2008.
2. Joseph John Bevelacqua, *Contemporary Health Physics: Problems and Solutions*, 1st edition, 1995.

REFERENCES

1. Brown B.H , PV Law ford, R H Small wood , D R Hose , D C Barber , *Medical Physics and Biomedical Engineering*, CRC Press, 1999.
2. Gopal B.Saha *Physics and Radiobiology of Nuclear Medicine*, 3rd edition, Springer, 2006.

COURSE CODE	COURSE TITLE	L	T	P	Total of L+T+P	C
PPY15E83	BASICS OF FORENSIC PHYSICS	2	-	-	2	2
INSTRUCTIONAL OBJECTIVES						
1.	To define forensic science or criminalistics, and describe the major contributors to the development of forensic science.					
2.	To define the physical evidence of a crime scene and explain the difference between the identification and comparison of physical evidence of crimes.					
3.	To demonstrate the ability to identify, collect, and preserve a variety of fingerprint types and will demonstrate the ability to analyze components.					
4.	To explain the various methods for analyzing DNA from a crime scene.					

UNIT I: CONCEPTS OF FORENSIC SCIENCE

Forensic Science- History and Development of Forensic Science - What Is a Forensic Scientist? - Career Information – Indian and Other Forensic Science Systems - The Organization of Forensic Science Laboratories- The Functions of the Forensic Scientist -Crime Scene Investigation - The Crime Scene as Recent History - Preserving and Recording the Crime Scene - Crime Scene Investigation Process - Recognition of Bloodstain Patterns – other examples.

UNIT II: FORENSIC SCIENCE IN THE LABORATORY

The Forensic Laboratory - Identification and Characterization of Blood and Bloodstains Identification of Biological Fluids and Stains - Techniques of DNA Analysis - Microanalysis and Examination of Trace Evidence – Fingerprints - Forensic Footwear Evidence - Forensic Tire Impression and Tire Track Evidence - Firearm and Tool Mark Examinations - Questioned Documents - Analysis of Controlled Substances.

UNIT III: FORENSIC ENGINEERING AND INVESTIGATION

Forensic Pathology - How to Become a Forensic Pathologist - Investigation of Death: Coroners and Medical Examiners - Death Investigation Process - The Postmortem Interval (PMI)—Time of Death – Exhumations - The Teamwork Approach - The Human Skeleton - Identification of Skeletal Remains - The Significance of Age - The Biological Profile - Individualization of Human Bone - Collection of Bones - Forensic Odontology

UNIT IV: FORENSIC TRACE EVIDENCES

Forensic Analysis of Metals, soils, Plants, Paints – The Chemistry of fire and analysis of flammable residues - Explosions and Explosives - Collection and Analysis of Evidence of Explosives – Fingerprints – History of Fingerprints - Classification of Fingerprints - Automated Fingerprint Identification Systems- Methods of Detecting Fingerprints - Preservation of Developed Prints- Digital Imaging for Fingerprint Enhancement - Document Examination - The Document Examiner - Handwriting Comparisons-Typewritten Comparisons-Alterations, Erasures, and Obliterations

UNIT V: LEGAL ASPECTS OF FORENSIC SCIENCE

Forensic Science and the Law - Admissibility of Evidence - Laboratory Reports - Expert Testimony - Countering Chaos-Logic, Ethics, and the Criminal Justice System - Forensic Science and the Law - Legal Issues in Forensic DNA

TEXTBOOKS

1. Jay A. Siegel, Kathy Mirakovits, *Forensic Science: The Basics*, 2nd Edition, CRC Press, 2010.
2. Stuart H. James, Jon J. Nordby, Suzanne Bell, Stuart H. James, Jon J. Nordby, *Forensic Science: An Introduction to Scientific and Investigative Techniques*, CRC Press, 2002.
3. Richard Saferstein, *Forensic Science, An Introduction*, Pearson Education, Inc. (Pearson Prentice Hall), 2011.

REFERENCE BOOKS

1. Robert Milne, *Forensic Intelligence*, Taylor and Francis Group, 2013.
2. Robert Bruce Thompson and Barbara Fritchman Thompson, *An Illustrated Guide to Home Forensic Science Experiments-DIY Science-O'Reilly Media Inc.*, 2012.
3. Louis B. Schlesinger, *Sexual Murder Catathymic and Compulsive Homicides*, CRC Press, 2004.
4. Terrence F. Kiely, *Forensic Evidence: Science and The Criminal Law*, CRC Press LLC, 2001.

NON MAJOR ELECTIVES II

COURSE CODE	COURSE TITLE	L	T	P	Total of L+T+P	C
PPY15E84	GREEN ENERGY PHYSICS	2	-	-	2	2
INSTRUCTIONAL OBJECTIVES						
1.	To emphasize the significance of Green technology through Physics principles.					
2.	To know the scientific understanding and analysis of green energy.					
3.	To give fundamental physical processes govern renewable energy resources and their application					
4.	To know about the various techniques of energy management.					

UNIT I: INTRODUCTION TO ENERGY SOURCES

Renewable and non-renewable energy sources, energy consumption as a measure of Nation's development - strategy for meeting the future energy requirements Global and National scenarios-Prospects of renewable energy sources.

UNIT II: SOLAR ENERGY

Solar radiation - beam and diffuse radiation, solar constant, earth sun angles- attenuation and measurement of solar radiation-solar cooker, solar heating and cooling of buildings- photo voltaics - solar cells and its applications.

UNIT III: ENERGY FROM THE OCEAN

Ocean Thermal Electric Conversion (OTEC) systems like open cycle-closed cycle- Hybrid cycle- prospects of OTEC in India. Energy from tides- basic principle of tidal power- single basin and double basin tidal power plants- advantages-limitation and scope of tidal energy.

UNIT IV: WIND ENERGY AND HYDROGEN ENERGY

Principle of wind energy conversion-Basic components of wind energy conversion systems-wind mill components-various types and their constructional features Hydrogen Energy-Introduction-Hydrogen Production methods-Hydrogen storage-hydrogen transportation-utilization of hydrogen gas-hydrogen as alternative fuel for vehicles.

UNIT V: ENERGY MANAGEMENT

Energy economics-energy conservation-energy audit-general concept of total energy system-scope of alternative energy system in India.

TEXTBOOKS

1. Rai. G.D., *Non-conventional energy sources*, 4th Edition, Khanna Publishers, 2009.
2. Garg H.P. & Jai, *Solar Energy: Fundamentals and Applications* by Prakash, Tata McGraw Hill, 1977.
3. Singhal B.L., *Alternative Energy Sources*, 2nd Edition Tech Max Publication, 2007.

REFERENCES

1. Duffic.J.A and Beckman W.A ,*Solar Engineering of Thermal Processes* , 3rd Edition ,John Wiley & sons, New York, 1975.
2. Giri.N.K, *Alternate energy sources and application*, 2nd Edition, Khanna Publication, 2004.
3. Sukhatme S,P, *Solar Energy: Principles of Thermal Collection and Storage*, 3rd Edition ,Tata McGraw Hill, 2008.

COURSE CODE	COURSE TITLE	L	T	P	Total of L+T+P	C
PPY15E85	LASER PHYSICS	2	-	-	2	2
INSTRUCTIONAL OBJECTIVES						
1.	To develop knowledge in the basics of lasers.					
2.	To enhance comprehension in the principles of lasers.					
3.	To explore the control of laser properties.					
4.	To familiarize with the diverse applications of lasers.					

UNIT I: INTERACTION OF RADIATION WITH MATTER

Introduction to Electromagnetic Radiation-Wavelength-Wave Number-Frequency- Interaction of Light with Atoms and Molecules – Absorption- Emission- Kinetics of Optical Absorption- Stimulated and Spontaneous Emission- Intensity of Spectral Lines-Line Broadening Mechanism.

UNIT II: BASIC PRINCIPLES OF LASER

Principle of Lasers-Population Inversion- Conditions of Lasing Action- Characteristics of a Laser-Coherence-Monochromaticity- Divergence-Intensity-Einstein's Co-efficients- Laser Pumping- Two and Three Level Laser Systems.

UNIT III: TYPES OF LASERS

Solid State Lasers- The Ruby Laser- Nd:YAG Laser- Semiconductor Lasers – Features of Semiconductor Lasers-Diode Lasers-Gas Laser - He-Ne Laser- Molecular Gas Lasers - CO₂ Laser- Liquid Lasers- Dye Lasers and Chemical Lasers.

UNIT IV: CONTROL OF LASER PROPERTIES AND PRODUCTION

Laser Pumping- Resonators - Vibrational Modes of Resonators- Number of Modes/Unit Volume - Open Resonators-Control Resonators- Q Factor- Losses in the Cavity- Threshold Condition-Quantum Yield-Mode Locking (Active and Passive).

UNIT V: APPLICATIONS OF LASERS

Ether Drift and Absolute Rotation of the Earth-Laser Isotope Separation- Laser Range Finder- Laser in Pollution Detection- Holography- Optical Communication- Optical Fiber.

TEXT BOOKS

1. Laud, B.B. *Lasers and Nonlinear Optics*, 3rd Edition, New Age Int.Pub.2011.
2. Thyagarajan, K and Ghatak, A.K.*Lasers Theory and Applications*, 2nd Edition, Plenum Press, 1986.

REFERENCE BOOKS

1. Ghatak, A.K.and Thyagarajan, K *Optical Electronics*, Cambridge Univ. Press, 1999.

2. Seigman, A.E. *Lasers*, 3rd Edition, Oxford Univ. Press, 1986.
3. Maitland, A. and Dunn, M.H., *Laser Physics*, N.H. Amsterdam, 1969.
4. Hecht, J. *The Laser Guide Book*, 2nd Edition, McGraw Hill, 1992.
5. Seelto, Orazio, *Principles of Laser*, 5th Edition, Springer Publication, 2010.
6. Renk. Karl, *Basics of Laser Physics*, 1st Edition, Springer Publication, 2012.

COURSE CODE	COURSE TITLE	L	T	P	Total of L+T+P	C
PPY15E86	SCIENCE OF PHOTOGRAPHY	2	-	-	2	2
INSTRUCTIONAL OBJECTIVES						
1.	To make the student understand the principles of photography.					
2.	To make the student understand concepts of image formation.					
3.	To make the student understand the concept motion image and film.					
4.	To allow the student to have a deep knowledge of photography and photographic systems.					

UNIT I: BASICS OF PHOTOGRAPHY

Photography- Definition and concept-Nature and Functions of Photography- Historical development of Photography- Camera-Introduction to camera- Human Eye and Camera - Concept of Visual Perception-Basics of Camera: Different types of Camera- Box - TLR- SLR and Digital; Parts and Functions of Camera- Aperture- Shutter- Lens and Film- Camera Accessories.

UNIT II: LENS

Lens- Definition and Concept- Nature and Characteristics of Lens- Types of Lens- Wide angle- Normal and Tele-Special Lens- Zoom- Fish eye and Macro Lens- Focus- Definition and Concept- Types of Focus- Split Image and Macro Image Focusing- Focal Length- Types of Focal Length- Short- Long and Variable Focal Length- Exposure- Depth of Field Aperture Priority and Shutter Priority- Filter- Definition and concept- Characteristics of Filters- Types of Filters- UV- Polarizing Filter- Grey Grad Color Balancing Filter- Neutral Density Filter and Soft Focus Filter.

UNIT III: PHOTOGRAPHIC FILM

Film- Definition and Concept- Function and Characteristics of Film- Cross Section of Film- Types of Film- Film Speed Definition- Functions of Film Speed- Types of Film Speed- Fast Speed and Slow Speed- Film Speed Numbers- ASA- ISO and DIN- Digital Storage- Digital Storage process- Types of Digital Storage- Compact Flash (CF)- Secure Digital Card(SD)- Mini SD Card- Micro SD and etc.- Film Developing Process- Developing- Fixing- Washing and Drying- Film Printing Process- Digital Printing Process.

UNIT IV: LIGHTING

Lighting- Definition and concept- Nature of Light- Characteristics of Light- Understanding Light- Indoor and Outdoor- Types of Light- Natural and Artificial- Three Point Lighting- Key- Fill and Back Light- Types of Lighting Equipments Pro- lit- Soft Box and etc- Different accessories of Lighting- Umbrella- and etc- Flash- Functions of Flash- Light Meter Definition and concept- Functions of Light Meter.

UNIT V: AESTHETICS OF PHOTOGRAPHY

Aesthetics of Photography- Framing- Characteristics of Framing- Composition- Characteristics of Compositions- Types of Composition- Rule of Third- Frame within Frame and Etc.- Scope of Photography- Types of Photography- Photo Journalism- Ad Photography- Natural Photography- Wild life Photography- Fashion Photography and Industrial Photography.

TEXT BOOKS

1. James Curran, *The Photography Handbook*, 2nd Edition, Routledge, 2013.
2. Ben Long, *Complete Digital Photography*, 6th Edition, PTR, 2010.

REFERENCES

1. Linda Good, *Teaching and Learning with Digital Photography*, Sage Publications, 2009.
2. Ian Jeffrey, *The Photography Book*, Focal Press, 2nd Edition, 2000.
3. Michael Langford, *Basic Photography*, Focal Press, 6th Edition, 2000.

DEPARTMENT OF CHEMISTRY

SEMESTER II

Subject Code	Title of the Subject	L	T	P	Total of L+T+P	C
PCY15E81	Pharmaceutical Chemistry	2	-	-	2	2
INSTRUCTIONAL OBJECTIVES						
(i)	To gain knowledge on the structure and applications					
(ii)	To acquire knowledge about the structure, synthetic route and applications					

UNIT I Anti-bacterial Agents

Classification, mechanism of action and SAR of Sulphonamides. Structure, chemical name, synthesis and clinical uses of Sulfamethiazole, sulfamethoxazole, Nalidixic acid, Ciprofloxacin, Nitrofurazone and Furozolidone.

UNIT II Antibiotics

Introduction, chemical classification, structure of Natural and semi synthetic penicillin, chemistry and uses of Streptomycin, Tetracyclines, Chloramphenicol, Cephalosporin.

UNIT III Anti-fungal agents

Classification and mechanism of action of antifungal agents. SAR of azole antifungals, Structure, chemical name, synthesis and clinical uses of Clotrimazole, Ketoconazole, Flucytosin.

UNIT IV Antimalarials

Classification, mechanism of action, synthesis and clinical uses of Chloroquine, Amodiaquine, Primaquine, Pyrimethamine, Proguanil

UNIT V Anti inflammatory

Classification, mechanism of action and SAR of NSAIDs, synthesis and clinical uses of Indomethacin, Ibuprofen, Ketoprofen, Diclofenac sodium, Acetaminophen,

Text Books

1. Kadam, Mahadik, Bothara, (1997): Principles of Medicinal chemistry, Vol I&II, 5th edition, Nirali prakashan, Pune.
2. Ashutoshkar (2005): Medicinal chemistry, 3rd edition, Ashutoshkar, New age International publishers, New Delhi.

References

1. Burger's (2007) Medicinal chemistry & Drug Discovery. Vol I to IV edited by Donald J. Abraham, 6thedn, Wiley interscience publication, New Jersey.
2. David. A. Williams, Thomas. L. Lenke (2005) : Foye's principle of Medicinal chemistry, 5th edition, Lippincott Williams and Wilkins, Philadelphia.
3. Wilson and Gisvold's (2004): Text book of Organic Medicinal and Pharmaceutical Chemistry, 11th ed, , Lippincott Williams & Wilkins, Philadelphia.
4. Pandeya S.N (2006): Text book of Medicinal Chemistry 3rd edition, , SG publisher, Varanasi.

NON MAJOR ELECTIVE – II

SEMESTER II

Subject Code	Title of the Subject	L	T	P	Total of L+T+P	C
PCY15E82	Polymer Chemistry	2	-	-	2	2

INSTRUCTIONAL OBJECTIVES	
(i)	To know about the basic concepts of polymer science
(ii)	To envision the importance of polymers.
(iii)	To identify various mechanism of polymerization.
(iv)	To set research goals in the highly topical areas of research in polymer chemistry.

UNIT I

Basic concepts of Polymer Science: Molecular forces and chemical bonding in polymers – Classification of polymers – Chain polymerization – Step polymerization – polymerization techniques.

Molecular weight and size: Number average, Weight average, Sedimentation and Viscosity average molecular weight – Degree of polymerization – size of polymer molecule.

UNIT II

Kinetics of Polymerization: Free radical polymerization- Cationic polymerization - Anionic polymerization - Poly condensation.

Glass transition temperature: Definition - Factors influencing glass transition temperature - Relationship between glass transition temperature and molecular weight, Plasticisers and melting point – importance of glass transition temperature.

UNIT III

Crystalline Nature: Crystalline solids and their behaviour towards X-rays – Polymers and X-ray diffraction – Degree of crystallinity – crystallites –factors affecting crystallinity, Helix structures.

Copolymerization: Free radical copolymerization – Ionic copolymerization – Copolycondensation – Individual polymers: Polyethylene, polypropylene, polystyrene, poly acrylonitrile, polymethyl methacrylate, polyesters, polycarbonates, polyamides, polyurethanes, polyvinyl acetate, polyvinyl chloride, poly isoprenes, silicone polymers.

UNIT IV

Polymer degradation: Types of degradation, thermal and mechanical – photo degradation – oxidative and hydrolytic degradation. Polymer reactions – Hydrolysis, acidolysis, aminolysis, hydrogenation, addition and substitution reactions – cyclisation, cross-linking reactions – Graft and Block copolymers.

UNIT V

Experimental methods: Polymer synthesis, isolation and purification of polymers – Fractional - Molecular weight determination – Molecular weight distribution curve – determination of glass transition temperature. Elastomeric materials – Fibre forming materials – Plastic material Rheology of polymeric materials – compounding and processing techniques.

Text Books

1. Sreedhar Jayadev, Vishwanathan, N.V, Gowarikar, V.R (2006): Polymer Science, New Age International Pub, USA.
2. Fred W. Billmeyer, (2008): Text Book of Polymer Science, 3rd edition, Wiley India.

References

1. Saunders, K. J (1988): Organic Polymer Chemistry, 2nd edition, Chapman and Hall.
2. Charles E. Carraher, Jr. (2003): Polymer Chemistry, 6th edition, Marcel Dekker Inc., New York and Based.
3. Kumar Gupta (1997): Fundamentals of Polymer Science and Engineering, 1st edition, Tata McGraw Hill.
4. Paul C Painter, (1998): Fundamentals of polymer science, 2nd edition, CRC Press
INK.

NON MAJOR ELECTIVE- III

SEMESTER III

Subject Code	Title of the Subject	L	T	P	Total of L+T+P	C
PCY15E83	Environmental Chemistry	2	-	-	2	2
INSTRUCTIONAL OBJECTIVES						
(i)	To study in detail about ecosystem and biodiversity					
(ii)	To gain knowledge about the energy resources					
(iii)	To discuss in detail the various social issues					

UNIT I Energy and Environment

Energy resources and their exploitation, Sun as source of energy- nature of its radiation, Conventional energy sources: coal, oil, biomass and natural gas, non-conventional energy sources: hydroelectric power, tidal, wind, geothermal energy, solar collectors, photovoltaic, solar ponds, nuclear-fission and fusion, magneto-hydrodynamic power (MHD), Energy use pattern in different parts of the world and its impact on the environment. CO₂ emission in atmosphere.

Mechanism of radiation action on living systems- Stochastic and Non-stochastic effects; delayed effects, radioactivity from nuclear reactors, fuel processing and radioactive waste, hazards related to power plants, terrestrial and non terrestrial radiation, dose from environment and nuclear radiations, ultraviolet radiations, pathways analysis and dose assessment, radiologic age dating, radioactivity risk assessment, criterion for safe exposure.

UNIT II Ecosystem, Biodiversity and its Conservation

Biodiversity concepts and patterns, Microbial diversity, Plant diversity, Agrobiodiversity, Soil biodiversity, Economic value of biodiversity, biodiversity losses. Biodiversity hotspots and their characteristic flora and fauna, threatened plants and animals of India, ecosystem people and traditional conservation mechanisms, Biodiversity Convention and Biodiversity Act, IPRs, national and international programmes for biodiversity conservation.

Wildlife values and eco-tourism, wildlife distribution in India, problem in wildlife protection, role of WWF, WCU, CITES, TRAFFIC, Wildlife Protection Act 1972. In-situ conservation: sanctuaries, biospheres reserves, national parks, nature reserves, preservation plots. Ex-situ conservation: botanical gardens, zoos, aquaria, homestead garden; herbarium; In-vitro Conservation: germplasm and gene Bank; tissue culture: pollen and spore bank, DNA bank.

UNIT III Energy Resources and Maintenance

Renewable and non-renewable energy resources, growing energy need, sun as source of energy, solar radiation and its spectral characteristics, fossil fuels classification, composition. Physico-chemical characteristics and energy content of coal, petroleum and natural gas. Principle of generation and conservation of conventional and non-conventional energy. Energy from biomass and biogas, anaerobic digestion, energy use pattern and future need projection in different parts of the world, energy conservation policies.

UNIT IV Solid and Hazardous Waste Management

Solid wastes: Definition, types, sources, characteristics, and impact on environmental health. Waste generation rates. Concepts of waste reduction, recycling and reuse. Collection, segregation and transport of solid wastes Handling and segregation of wastes at source. Collection and storage of municipal solid wastes. Solid waste processing technologies. Mechanical and thermal volume reduction. Biological and chemical techniques for energy and other resource recovery.

Composting, Vermicomposting, Incineration of solid wastes. Disposal in landfills: site selection, design, and operation of sanitary landfills; secure landfills and landfill bioreactors; leachate and landfill gas management; landfill closure and post-closure environmental monitoring; landfill remediation. Hazardous wastes: Definition, sources and characteristics: Hazardous waste categorization, generation, collection, transport, treatment and disposal. Legislation on management and handling of municipal solid wastes and hazardous wastes.

UNIT V Social Issues

Urban issues - Energy - water conservation - environmental ethics - global warming -resettlement and rehabilitation issues - environmental legislations - environmental protection Act. 1986 - Air, Water, Wildlife and forest conservation Act - Population growth and Explosion - Human rights and Value education - environmental health - HIV/AIDS - Role of IT in environment and human health - Women and child welfare - Public awareness.

Text Books

- 1.Sharma,B.K. and Kaur, H (1996): Environmental Chemistry, Goel Publishing House, Meerut, India.
2. Jadhav, H.V (1992): Elements of Environmental Chemistry, Himalaya.
3. [Samir, K. Banerji](#) (1999): Environmental Chemistry, PHI Learning Pvt. Ltd.

References

1. Moore, J. W. and Moore, E. A (1976): Environmental Chemistry, Academic Press, New York.
2. Lunn, G. and Sansone, E.B (1990): Destruction of hazardous chemicals in the laboratory, Wiley, New York.
3. Dara, S.S (2005): A Text book of Environmental Chemistry and Pollution Control 8thEdn, Publisher, S. Chand & Company.

SEMESTER III

Subject Code	Title of the Subject	L	T	P	Total of L+T+P	C
PCY15E84	Materials Technology	2	-	-	2	2
INSTRUCTIONAL OBJECTIVES						
(i)	To study in about material selection and design					
(ii)	To study in depth about refractories					
(iii)	To acquire knowledge about biomaterials					
(iv)	To educate students on the various material characterization techniques					

UNIT I Materials Selection and Design

Criteria for selection of materials, application of statistics in materials selection, specification of steels, Composition, heat treatment, microstructure and properties of ferrous and non-ferrous alloys, ceramics and polymers for light and heavy structural, corrosion resistant, magnetic, electrical and electronic applications, medical implants and prostheses application.

UNIT II Composite Materials and Adhesives

Composites Materials: Introduction, Constitution (i) Matrix phase (ii) Dispersed phase. Characteristic properties of composite materials Classification – (A) Particle – reinforced composites (i) Large – particle composites (ii) Dispersion-Strengthened Composites. (B) Fiber – Reinforced Composites (i) Continuous aligned (ii) Discontinuous(short) (a) aligned b) Randomly oriented. (C) Structural Composites – (i) Laminates (ii) Sandwich Panels.

Adhesives: Introduction, adhesive action, physical factors influencing adhesive action, chemical factors influencing adhesive action, bonding processes by adhesives.

UNIT III Ceramics and Refractories

Ceramics: Introduction, ceramic materials, structure and polymorphism, Synthesis of ceramics, ceramic forming processes, silicates and non-silicate ceramics, structural and functional (electronic, optic) and bio-ceramics.

Refractories- Principles, properties and strength under load, thermal spalling, chemical properties. Fractures of refractories, corrosion of refractories, different refractory lines, Alumina-silica brick, magnesia refractories, Doloma refractories, carbonaceous refractories, spinel containing refractories. Manufacture of refractory: Preliminary treatment, Blending and mixing, Forming or moulding, Drying firing, Common refractory bricks.

UNIT IV Biomaterials

Properties of Materials, Materials in Medical Applications, Stainless steel alloys, Cobalt based alloys, titanium based alloys, polymers, Bioresorbable and Bioerodible materials, bioceramics, porous ceramics, bioactive glasses, calcium phosphates, collagen, thin films, grafts and coatings, biological functional materials Latex products.

UNIT V Materials Characterization Techniques

Materials characterization techniques, principles of different microscopes (optical, electron microscopes, SEM, TEM and AFM) and the preparation of samples, different modes and their applications, Thermal methods (TGA and DSC) interpretation of data.

Text Books

1. Khanna, O.P (1999): A Text Book of Materials Science and Technology, DanpatRaiPublications.
2. Dara S.S (2003): A Text Book of Engineering Chemistry, S. Chand and Company Ltd.

References

1. Daniel Yesudian, C.D and Harris Samuel, D.G (2004): Materials Science and Metallurgy, Scitech Publications (India PVT LTD).
2. Ashby, M.F (2005): Engineering Materials, 4th Edition, Elsevier.
3. Ashby, M.F(2005): Materials Selection in Mechanical Design, Butterworth Heinemann

SEMESTER III

Subject Code	Title of the Subject	L	T	P	Total of L+T+P	C
PCY15E85	Structural Chemistry for Biomolecules	2	-	-	2	2
INSTRUCTIONAL OBJECTIVES						
(i)	To study in about material selection and design To study in about material selection and design					
(ii)	a good exposure to stereochemistry and conformational analysis and principles of spectroscopy for structural elucidation.					

UNIT I Chemical Bonding

Introduction- chemical bonding: ionic bond, covalent bond, coordination bond and hydrogen bond - their characteristics- Factors affecting covalent bond - Inductive effect - applications - strength of acids, bases - electromeric effect - applications. Conjugation - mesomerism and resonance: applications, hyper conjugation - intra molecular interaction - hydrogen bond - application.

UNIT II Theory of Chemical Bonding

The valence bond approach - Sigma and pi bonds - Hybridization - Bond length - Bond angle - Bond energy - Dipole moment interaction - Modification of VB Theory - VSEPR theory - Shapes of simple molecules - concepts of Molecular orbital theory- applications to simple molecule H₂, H₂⁺, N₂, O₂, & CO.

UNIT III Chemistry of Carbohydrate and Proteins

Carbohydrates - Classification - D and L - Sugars- relative configuration of sugars: Glucose, Lactose, Maltose, fructose, starch - Structures and chemical properties an elementary account (Elucidation of Structure not necessary)- Amino acids: classification, stereochemistry, chemical properties peptides- Proteins - classification, structure and chemical properties.

UNIT IV Stereochemistry

Isomerism- Types - structural - stereoisomerism - optical isomerism - elements of symmetry & chirality - Resolution - Racemisation - Asymmetric synthesis - Walden inversion - Stereo specific and stereo selective synthesis - Tautomerism - Difference between Tautomerism and resonance.

UNIT V Conformational Analysis

Conformation and Configuration - conformational isomers - various notations- New Mann, sawhorse, Fisher - representations, inter conversion - stereoisomerism. Conformations of cyclohexane - Geometrical isomerism - Nomenclature of E and Z system - Optical activity - Symmetry elements and chirality - Optical isomerism - Optical isomers of lactic acid, Malic acid and tartaric acid - Specification of configuration - D & L notation, R & S notation - Sequence rules - specification of configuration of compounds with more than one chiral carbons.

Text Books

- 1 Soni. P.L, Text book of Organic Chemistry, 20th Edition, Sultan Chand and Sons, New Delhi
- 2 K.S. Tewari, N.K. Vishnoi, A Text book of organic chemistry, Vikhyas publishing house, 1998
- 3 E.L. Eliel & S.H Wilen, Stereo Chemistry, John Wiley & Sons, 1994

Reference Books

- 1 D. Nasipur, Stereo Chemistry of Organic Chemistry, 2nd Edition, Wiley Easkera Ltd, 1991
- 2 I.L. Finar, Organic Chemistry, Vol. I, Vol. II, Addison - Wesley Longman, 1973
- 3 R.T. Morrison, R.W. Boyd, Organic chemistry, Prentice Hall, 2002