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Website: www.ncbgudi.com

NAAC Accredited 'B++' Grade

Open Elective Syllabus for I Semester under NEP-2020

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Course Code: GE1-BT1

Subject: BOTANY

Title: Plants and Human Welfare

Total No. of Teaching Hours: 42

No. of Hours per Week : 3

Internal Marks : 40

Exam Marks : 60

Credits: 3

Pedagogy: Classroom lecture, Practical, Field and laboratory visits, Participatory Learning Seminars, Assignments, Group discussion, Specimen Collection etc.,

Course Description:

It includes the knowledge of Cereals, Legumes, Fruits, Cash Crops, Spices, Beverages, Oils & fats, Essential Oils and Drug yielding plants and information of forest and forest products.

Course Objectives:

Includes brief account of millets and their nutritional importance. Medicinal importance of Beverages, spices & fiber yielding plants. Knowledge of forest products, concepts of reserve forests, sanctuaries and national parks.

Course Outcomes (Cos):

To make the students familiar with economic importance of diverse plants that are resources to human life.

Awareness about medicinal value, nutritional value and economic values of diverse plants.

Generate interest among students in the today life, conservation of medicinal & economically important plants.

Knowledge of ecosystem & Sustainability.

Unit-I:

13 Hours

Chapter - 1: Introduction to fungi, Economic importance of fungi in Medicine, Agriculture & Industry. Mushroom Culture & Common edible mushrooms.

Chapter - 2: Cereals: Rice & Wheat (Morphology, Post-harvest processing & Uses) Brief account of millets and their nutritional importance.

Chapter - 3: Legumes Chief pulses grown in Karnataka - Red gram, green gram. Chick pea, Soybean. Importance to man & ecosystem.

Chapter 4: Microgreen - What & How to grow microgreen & its importance.

Unit-II:

13 Hours

Chapter- 5: Cash Crops: Sugarcane & Natural Rubber -Morphology Cultivation & economic importance.

Chapter -6: Spices: Morphology & Economic importance of Clove, Cinnamon, Cardamom & Black pepper.

Chapter - 7: Beverages: Tea, Coffee & Cocoa - Morphology & economic importance.

Chapter - 8: Oils & Fats: Edible Oil - Ground nut, Coconut & Mustard oil - Morphology & Economic importance. Non-Edible Oil yielding plants & its importance as biofuel. Example Neem.

Unit-III:**13 Hours**

Chapter – 9: Essential Oils – Sandal wood oil, Rose oil & Eucalyptus oil. Economic importance as medicine perfumes & insect repellents.

Chapter 10: Drug-yielding Plants – Cinchona, Digitalis, Aloe vera & Cannabis – Therapeutic and habit- forming drugs.

Chapter – 11: Fibres: Cotton, Jute & Coir -Morphology & economic Importance.

Chapter – 12: Forests: Forest & forest products. Community forestry. Concepts of reserve forests, sanctuaries and national parks with reference to India. Endangered species and red data book.

Text Books:

1. Kochhar, S.L. (2012). Economic Botany in Tropics. New Delhi, India: MacMillan & Co.
2. Wickens, G.E. (2001). Economic Botany: Principles & Practices. The Netherlands: Kluwer Academic Publishers.
3. Chrispeels, M.J. and Sadava, D.E. (1994) Plants, Genes and Agriculture. Jones & Bartlett- Publishers.

Reference:

1. Kochhar, S.L. (2012). Economic Botany in Tropics. New Delhi, India: MacMillan & Co.
2. Wickens, G.E. (2001). Economic Botany: Principles & Practices. The Netherlands: Kluwer Academic Publishers.
3. Chrispeels, M.J. and Sadava, D.E. (1994) Plants, Genes and Agriculture. Jones & Bartlett- Publishers

Course Code: GE1-CH1

Subject: Chemistry

Title : CHEMISTRY IN DAILY LIFE

Total No. of Teaching Hours: 42

No. of Hours per Week : 3

Internal Marks : 40

Exam Marks : 60

Credits: 3

Pedagogy: Classrooms lecture, Case studies, Group discussion, Seminar & field work etc.,

Course Description: After studying this paper the student would be able to:

1. Describe the composition of the milk and dairy products.
2. Detect/determine the amount of caffeine, chicory in coffee and chloral hydrate in toddy.
3. Explain the preservatives used in food products and their effects and possible adulterants.
4. Acquire detailed information about the colorants used in food products.
5. Differentiate various vitamins, their sources and deficiencies.
6. Examine purity of the oils.
7. Explain how electrical energy is stored in batteries.
8. Classify commonly used polymers in our daily lives.

Course Objectives:

The objective of this paper is to equip the non-chemistry students with knowledge about chemistry of some of the products which are commonly used in daily life.

Course Outcomes (Cos):

At the end of this course, student should be able to:

Describe the analysis of important constituents in food items such as fat content in dairy products, caffeine in coffee/tea, methanol in alcoholic beverages, etc.

Give details of possible food additives, preservatives, colorants and adulterants commonly used in processed food.

Explain the nutritional aspects of macro and micronutrients, namely oils/fats and vitamins respectively.

Explain the chemistry of daily used products like soaps/detergents, batteries/fuel cells and polymers.

Unit-I:

14 Hours

Dairy Products: Composition of milk and milk products. Analysis of fat content, minerals in milk and butter. Estimation of added water in milk. Beverages: Analysis of caffeine in coffee and tea, detection of chicory in coffee, chloral hydrate in toddy, determination of methyl alcohol in alcoholic beverages.

Food additives, adulterants, and contaminants- Food preservatives like benzoates, propionates, sorbates, and disulphites. Artificial sweeteners: aspartame, saccharin, dulcin, sucralose, and sodium cyclamate. Flavors: vanillin, alkyl esters (fruit flavors), and monosodium glutamate.

Artificial food colorants: Coal tar dyes and non-permitted colors and metallic salts.
Analysis of pesticide residues in food.

Unit-II: **14 Hours**

Vitamins: Classification and nomenclature. Sources, deficiency diseases, and structures of vitamin A1, vitamin B1, vitamin C, vitamin D, vitamin E & vitamin K1.
Oils and fats: Composition of edible oils, detection of purity, rancidity of fats and oil. Tests for adulterants like argemone oil and mineral oils. Halphen test.
Soaps & Detergents: Definition, classification, manufacturing of soaps and detergents, composition and uses

Unit-III: **13 Hours**

Chemical and renewable energy sources: principles and applications of primary & secondary batteries and fuel cells. Basics of solar energy, future energy storer.
Polymers: basic concept of polymers, classification and characteristics of polymers. Applications of polymers as plastics in electronic, automobile components, medical fields, and aerospace materials. Problems of plastic waste management. Strategies for the development of environment-friendly polymers.

Text Books and References:

B. K. Sharma: Introduction to Industrial Chemistry, Goel Publishing, Meerut (1998)
The chemical analysis of foods. . Pearson, David, 1919-1977. Cox and Pearson. 7th ed. Published Edinburgh; New York: Churchill Livingstone, 1976.
Foods: Facts and Principles. N. Shakuntala Many and S. Swamy, 4th ed. New Age International (1998)
W. Billmeyer, Text book of polymer science, 3rd Edn., 2007, Wiley.
Foods: Facts and Principles. N. Shakuntala Many and S. Swamy, 4th ed. New Age International (1998)
Subalakshmi, G and Udipi, SA(2006): Food processing and preservation, 1st Ed. New Age International (P)Ltd.
Srilakshmi B(2018): Food Science, 7th Colour Ed. New Age International (P) Ltd

Course Code: GE1-BM1

Subject: Commerce-C1

Title : Accounting for Everyone

Total No. of Teaching Hours: 40

No. of Hours per Week : 3

Internal Marks: 40

Exam Marks : 60

Credits: 3

Pedagogy: Classrooms lecture, Case studies, Group discussion, Seminar & field work etc.,

Course Description: Accounting information, Basic terms of accounting, Double entry system, Financial statements, Company accounts with simple problems and Review and governance of Management reports

Course Objectives:

To understand the accounting concepts.

- To prepare journal entries, ledger accounts and cash book.
- To prepare balance sheet and statement of profit and loss account.
- To understand the different types of management reports.

Course Outcomes (Cos):

On successful completion of the course, the Students will be able to

- Analyze various terms used in accounting;
- Make accounting entries and prepare cash book and other accounts necessary while running a business;
- Prepare accounting equation of various business transactions;
- Analyze information from company's annual report;
- Comprehend the management reports of the company

Unit-I:

08 Hours

Introduction to Accounting:

Meaning, Importance and Need, Its objectives and relevance to business establishments and other organizations, and individuals. Accounting information: meaning, users and utilities, sources of accounting information. Some Basic Terms – Transaction, Account, Asset, Liability, Capital, Expenditure & Expense, Income, Revenue, Gain, Profit, Surplus, Loss, Deficit. Debit, Credit, Accounting Year, Financial Year.

Unit-II:

08 Hours

Transactions and Recording of Transactions:

Features of recordable transactions and events, Basis of recording – vouchers and another basis. Recording of transactions: Personal account, Real Account and Nominal Account; Rules for Debit and Credit; Double Entry System, journalizing transactions; Preparation of Ledger, Cash Book including bank transactions. (Simple Problems)

Unit-III:**10 Hours**

Preparation of Financial Statements:

Fundamental Accounting Equation; Concept of revenue and Capital; Preparation of financial statements. (Simple problems)

Unit-IV:**08 Hours**

Company Accounts:

Explanation of certain terms – Public Limited Company, Private Limited Company, Share, Share Capital, Shareholder, Board of Directors, Stock Exchange, Listed Company, Share

Price, Sensex - BSE, NSE; Annual report, etc. Contents and disclosures in Annual Report, Company Balance Sheet and Statement of Profit and Loss. Content Analysis based on

annual report including textual analysis.

Unit-V:**08 Hours**

Management Reports:

Reports on Management Review and Governance; Report of Board of Directors - Management discussion analysis- Annual Report on CSR – Business responsibility report – Corporate governance report – Secretarial audit report.

Skill Development Activities:

- Download annual reports of business Organisations from the websites and go through the contents of the annual report and present the salient features of the annual report using some ratios and content analysis including textual analysis.
- Prepare accounting equation by collecting necessary data from medium sized firm.
- Prepare financial statements collecting necessary data from small business firms.
- Collect the management reports of any large scale organisation and analyse the same.

Any other activities, which are relevant to the course

Text Books and References:

1. Hatfield, L. (2019). Accounting Basics. Amazon Digital Services LLC.
2. Horngren, C. T., Sundem, G. L., Elliott, J. A., & Philbrick, D. (2013). Introduction to Financial Accounting. London: Pearson Education.
3. Siddiqui, S. A. (2008). Book Keeping & Accountancy. New Delhi: Laxmi Publications Pvt. Ltd.
4. Sehgal, D. (2014). Financial Accounting. New Delhi: Vikas Publishing House Pvt. Ltd.

5. Tulsian, P. C. (2007). Financial Accounting. New Delhi: Tata McGraw Hill Publishing Co. Ltd.
6. Mukharji, A., & Hanif, M. (2015). Financial Accounting. New Delhi: Tata McGraw Hill Publishing Co. Ltd.
7. Maheshwari, S. N., Maheshwari, S. K., & Maheshwari, S. K. (2018). Financial Accounting. New Delhi: Vikas Publishing House Pvt. Ltd.
8. Khan, M.Y. and Jain, P.K. Management Accounting. McGraw Hill Education.
9. Arora, M.N. Management Accounting, Vikas Publishing House, New Delhi
10. Note: Latest edition of text books may be used.

Course Code: GE1-CS1

Subject: Computer Science

Title : Journey into Fundamentals and C Programming Concepts

Total No. of Teaching Hours: 40

No. of Hours per Week : 3

Internal Marks : 42

Exam Marks : 60

Credits: 3

Pedagogy: Classrooms lecture, Case studies, Group discussion, Seminar & field work etc.,

Course Outcomes (Cos):

- After completing this course satisfactorily, a student will be able to:
- Confidently operate Desktop Computers to carry out computational tasks
- Understand working of Hardware and Software and the importance of operating systems
- Understand programming languages, number systems, peripheral devices, networking, multimedia and internet concepts
- Read, understand and trace the execution of programs written in C language
- Write the C code for a given problem
- Perform input and output operations using programs in C
- Write programs that perform operations on arrays

Unit-I:

06 Hours

Fundamentals of Computers: Introduction to Computers -Hardware, software-System software, Application software, Utility software, Operating System; Computer Languages - Machine Level, Assembly Level & High-Level Languages, Translator Programs – Assembler, Interpreter and Compiler; Introduction to Free and Open Source Software, Definition of Computer Virus, Types of Viruses, Use of Antivirus software; Planning a Computer Program –Algorithm and Flowchart with Examples.

Unit-II:

10 Hours

Number System: Decimal Number System, Binary Number System, Octal Number System, Hexadecimal Number System, Number System Conversion: Binary to Decimal Conversion, Decimal to Binary Conversion, Octal to Decimal Conversion, Decimal to Octal Conversion, Hexadecimal to Decimal Conversion, Decimal to Hexadecimal Conversion

Unit-III:

08 Hours

Basics of Operating System Definition of Operating System Objectives, types, and

functions of Operating Systems Working with Windows Operating System:
Introduction, The Desktop, Structure of Windows, Windows Explorer, File and Folder Operations, The Search, The Recycle Bin, Configuring the Screen, Adding or Removing New Programs using Control Panel, Applications in windows (Paint, Notepad, WordPad, Calculator)

Unit-IV:

08 Hours

Introduction to C Programming: Over View of C; History and Features of C; Structure of a C Program with Examples; Creating and Executing a C Program; Compilation process in C.

C Programming Basic Concepts: C Character Set; C tokens - keywords, identifiers, constants, and variables; Data types; Declaration & initialization of variables; Symbolic constants.

Input and output with C: Formatted I/O functions - *printf* and *scanf*; control stings and escape sequences, output specifications with *printf* functions; Unformatted I/O functions to read and display single character and a string - *getchar*, *putchar*, *gets* and *puts* functions.

Unit-V:

08 Hours

C Operators & Expressions: Arithmetic operators; Relational operators; Logical operators; Assignment operators; Increment & Decrement operators; Bitwise operators; Conditional operator; Special operators; Operator Precedence and Associativity; Evaluation of arithmetic expressions; Type conversion.

Control Structures: Decision making Statements - *Simple if*, *if_else*, *nested if_else*, *else_if ladder*,

Switch-case, *goto*, *break* & *continue* statements; Looping Statements - Entry controlled and Exit controlled statements, *while*, *do-while*, *for* loops, Nested loops.

Text Books and References:

1. Pradeep K. Sinha and Priti Sinha: Computer Fundamentals (Sixth Edition),BPB Publication
2. E.Balgurusamy: Programming in ANSI C (TMH)

References Books:

1. Kamthane: Programming with ANSI and TURBO C (Pearson Education)
2. V. Rajaraman: Programming in C (PHI -EEE)
3. S. Byron Gottfried: Programming with C (TMH)
4. Kernighan & Ritchie: The C Programming Language (PHI)
5. Yashwant Kanitkar: Let us C
6. P.B. Kottur: Programming in C (Sapna Book House)

Course Code : GE1-EC1

OPEN ELECTIVE - ECONOMICS

Title :INDIAN ECONOMY PRIOR TO ECONOMIC REFORMS

Total No. of Teaching Hours: 42

No. of Hours per Week : 3

Internal Marks : 40

Exam Marks : 60

Credits: 3

Pedagogy: Classrooms lecture, Problem Solving , Case studies, Group discussion, Seminar & field work etc.,

Course Description:

This course examines sector-specific policies and their impact in shaping trends in key economic indicators in India. It highlights major policy debates and evaluates the Indian empirical evidence.

Course Objectives:

To enable the student to understand the basic features of the Indian economy prior to economic reforms and gives an insight into the basic economic issues of the Indian economy. It helps to understand and analyze the recent reforms initiated in India also equip the student with theoretical and statistical knowledge to appear for competitive examinations.

Course Outcomes (Cos):

1. Trace the evolution of Indian Economy
2. Identify the structural features and constraints of the Indian economy
3. Evaluate planning models and strategy adopted in India
4. Analyze the sector specific problems and contributions towards overall economic growth
5. Review various economic policies adopted

Unit-I: FEATURES AND PROBLEMS OF INDIAN ECONOMY

15 Hours

Chapter 1: Features of Indian Economy

4

- India as a developing economy,
- Demographic features
- Human Development (HDI),
- Problems of Poverty, Unemployment, Inflation, income inequality

Chapter 2: Issues in Agriculture sector in India

6

- Land reforms
- Green Revolution
- Agriculture marketing in India
- Agricultural price policy

Chapter 3: Industrial and Service Sector

5

- Industrial development;
- Micro, Small and Medium Enterprises,

- Industrial Policy
- Performance of public sector in India,
- Service sector in India.

Practicum:

1. Identifying economic problems and their causes;
2. Mini-project on any aspect of Indian agriculture, industry, service and public sectors

Unit-II: ECONOMIC POLICIES 13 Hours

Chapter 4: Planning 5

- Mixed Economy
- Bombay Plan
- Gandhian Model
- Nehru Mahalanobis Model
- Objectives and achievements of economic planning in India

Chapter 5: Monetary policy in India 2

- Instruments of Monetary Policy
- Black money in India – Magnitude and Impact

Chapter 6: Fiscal Policy in India 6

- Tax Revenue
- Public expenditure
- Budgetary deficits
- Fiscal reforms
- Public debt management and reforms
- Centre state Finance Relations and Finance commissions in India.

Practicum: Assignment on successes and failures of India's planning;
Monetary and Fiscal Policy instruments

Unit-III:EXTERNAL SECTOR AND NATURE OF REFORMS IN INDIA 14 Hours

Chapter 7: India's foreign trade 6

- Salient features
- Value, composition and direction of trade
- Balance of payments
- Goal of self-reliance based on import substitution and protection
- Tariff policy
- Exchange rate

Chapter 8: Post-1991 strategies **6**

- Stabilisation and structural adjustment packages
- Liberalisation Privatisation Globalisation (LPG) Model
- Impact of LPG Policies on Indian Economy

Chapter 9: NITI Ayog **2**

- Organization
- Functions

Practicum: Calculation of BoP and evaluating trade policies;
Assignment and group discussion on the impact of LPG Policies

Text Books:

1. Dutt Ruddar and K.P.M Sundaram (2001): Indian Economy, S Chand & Co. Ltd. New Delhi.
2. Mishra S.K & V.K Puri (2001) "Indian Economy and -Its development experience", Himalaya Publishing House.
3. Kapila Uma: Indian Economy: Policies and Performances, Academic Foundation
4. Bardhan, P.K. (9th Edition) (1999), The Political Economy of Development in India, Oxford University Press, New Delhi.
5. Jalan, B. (1996), India's Economic Policy- Preparing for the Twenty First Century, Viking, New Delhi.

Reference:

- Bardhan, P.K. (9th Edition) (1999), The Political Economy of Development in India, Oxford University Press, New Delhi.
- Bhaduri Amit, (2015), A Model of Development By Dispossession, Fourth Foundation
- Byres Terence J. (ed.), (1998), The State, Development Planning and Liberalisation 'in India, Delhi, OUP
- Frankel Francine R., (2004), India's Political Economy, Delhi. OUP Jenkins Rob, 2000, Economic Reform in India, Cambridge, CUP
- Joshi Vijaya and L.M.D. Little, (1998), India's Economic Reform 1991-2001, Delhi, OUP.
- Kapila Uma: Indian Economy: Policies and Performances, Academic Foundation
- Mishra S.K & V.K Puri (2001) "Indian Economy and -Its development experience", Himalaya Publishing House.
- Mukharji Rahul (ed.) (2007), India's Economic Transition: The Politics of Reforms, edited by Rahul Mukherji, Oxford University Press , New Delhi.
- Stuart and John Harris, (2000), Reinventing India, Cambridge Polity.

Course Code: GE1-EL1

Subject: ELECTRONICS

Title : Digital Fundamentals and Consumer Electronics

Total No. of Teaching Hours: 42

No. of Hours per Week : 3

Internal Marks : 40

Exam Marks : 60

Credits: 3

Pedagogy: Classrooms lecture, Problem Solving , Case studies, Seminar.

Course Description:

In developing Nations demand of consumer electronics appliances is increasing day by day. This requires large number of technically trained people. Looking towards the present condition the knowledge about the digital electronics and consumer electronics is given.

Course Objectives:

The aim of this is to help the student to attain the industry identified competency through various teaching learning experience

Course Outcomes (Cos):

At the end of the course the student should be able to:

1. Gain knowledge between different types of number systems, and their conversions.
2. Design various logic gates and simplify Boolean equations.
3. Troubleshoot the different types of microphones and speakers.
4. Maintain audio system
5. Troubleshoot the different display system.
6. Maintain various consumer appliances.

Unit-I:

11 Hours

Number System: Decimal, Binary, Octal and Hexadecimal – their inter conversion. BCD numbers (8421), Gray, Excess 3, ASCII and EBCDIC codes. Error detecting and correcting codes. Arithmetic operations in Binary, Hexadecimal. BCD addition and Excess 3 addition.

Sign magnitude convention, 1's and 2's Complements-2's Complement Subtraction, signed number arithmetic-addition.

Unit-II:

11 Hours

Positive and Negative Logic, Basic Logic gates-AND, OR and NOT gates (Logic symbols and Truth tables)

Boolean algebra- Laws and Theorems, NAND and NOR gates (Logic symbols and Truth tables), De Morgan's theorems, NAND and NOR as Universal gates. Simplification of Logic Expressions using Boolean algebra, SOP and POS expressions. Karnaugh maps-K-Map techniques to solve 3 variable and 4 variable expressions

Unit-III: 10 Hours

Audio Systems: PA system, Microphones, Amplifier, Loudspeakers, Radio Receivers, AM/FM, Audio Recording, and reproduction, Installation of Audio/Video systems – site preparation, electrical requirements, cables and connectors. Study of PA systems for various situations – Public gathering, Closed theatre / Auditorium, Conference room, Prepare bill of material (Costing)

Unit-IV: 10 Hours

TV and Displays: set top box, CATV and Dish TV, LCD, Plasma, LED, OLED, QDLED and LED TV, Projectors: DLP, Home Theatres, Remote controls.

Text Books:

1. Thomas L. Floyd ,”Digital Fundamentals”, Pearson Education Inc, New Delhi, 2003
2. R Audio and Video systems, G. Gupta, Tata McGraw Hill, 2004

Reference:

1. Morris Mano, “Digital Design”, 5 Th Edition, Prentice Hall, 2013
2. R.P.Jain, “Modern Digital Electronics”, 3rd Edition, Tata Mc Graw Hill, 2003.
3. Bignell and Donovan, “Digital Electronics”, 5th Edition, Thomson Publication, 2007.
4. Consumer Electronics, R.P.Bali, Pearson Education, 2008
5. 3D Flat Panel – Practical tool for self-assessment., TVs and Displays, Gerardus Blokdyk., edition, 2018
6. Basic TV Technology – Digital and Analog, Robert L Harwing., 4 th Edition, Routhledge, 2012.
7. The TVs of Tomorrow: How RCA’s Flat-Screen Dreams Led to the First LCDs (Synthesis), Benjamin Gross., Illustrated edition, University of Chicago Press; 2018
8. OLED Display – Fundamentals and Applications., Takatoshi Tsujimura., Willey, 2012

Course Code : GE1-EN1

Subject: English

Title : FUNCTIONAL ENGLISH GRAMMAR AND STUDY SKILLS

Total No. of Teaching Hours: 42

No. of Hours per Week : 3

Internal Marks : 40

Exam Marks : 60

Credits: 3

Pedagogy: Classrooms lecture, Problem Solving , Case studies, Group discussion, Seminar & field work etc.,

Course Description:

The course is designed for one semester and is offered by The Department of English as an Open Elective for Semester I. The syllabus is designed to equip the learners with the foundational grammar of the English Language and also become better interpreters of the language through various study skills acquired through the course.

Course Objectives:

To equip the learner with basic grammar of the English language.

To enable the learner to become a better writer.

To equip the learner with study skills.

Course Outcomes (Cos):

Learners are equipped with functional English Grammar.

Learners are equipped with writing skills.

Learners are equipped with study skills.

Section I: Functional English Grammar

1. Grammar of Spoken and Written English

2. Basic Sentence Patterns in English – Analysis of Sentence Patterns (SVO, SV,SVOC, SVOA, SVOA/C)

3. Functions of Various Types of Phrases: Noun Phrases, Verb Phrases, Adjective Phrases, Adverbial Phrases, Prepositional Phrases

4. Functions of Clauses: Noun Clause, Adjective Clause and Adverbial Clause and Prepositional Clauses

5. Verbs – Tense and Aspects, Modal Verbs, Functions and Uses

Section II: Writing Skills

1. Writing as a Skill – Its Importance, Mechanism of Writing, Words and Sentences, Paragraph as a Unit of Structuring the Whole Text, Analysis of Paragraph

2. Functional Uses of Writing: Personal, Academic and Business

3. Writing Process: Planning a Text, Finding Materials, Drafting, Revising, Editing, Finalising Draft

4. Models of Writing: Expansion of Ideas, Dialogue Writing, Drafting an Email

Section III: Reading Skills

1. Meaning and Process of Reading

2. Strategies and methods to Improve Reading Skill

3. Sub-skills of Reading: Skimming, Scanning, Extensive Reading, Intensive Reading

Suggested Reading

1. Geoffrey Leech and Svartik. *Communicative Grammar of English*, Pearson
2. Geoffrey Leech. *English Grammar for Today*, Palgrave
3. Prasad P. *The Functional Aspects of Communicative Skills*.
4. Leena Sen. *Communication Skills*, Princeton Hall
5. Vandana Singh. *The Written Word*, OUP

Course Code: GE1-JR1

Subject: Journalism

TITLE : WRITING FOR MEDIA

Total No. of Teaching Hours: 42

No. of Hours per Week : 3

Internal Marks : 40

Exam Marks : 60

Credits: 3

Pedagogy: Classrooms lecture, Problem Solving , Case studies, Group discussion, Seminar & fieldwork

The goal of Journalism and Mass Communication pedagogy is to stir student's critical consciousness and empower them with the knowledge, multimedia tools that help them in employability.

Course Objectives/ Course Description:

- To make them familiar with writing for media and develop interest in writing
- Introduce the students to cultivating of sources.
- Equip the students with new trends in media writing.

Course Outcomes (Cos):

At the end of the course, the students should be able

- To Develop the skills in writing scripts for Television and Radio
- To identify different skills of writing
- to develop the art of writing for social media

Unit-I:

12 Hours

Print Media: Introduction to writing for print media. Media Literacy, rules and ethics of writing for media. Forms of journalistic writing-news reporting, column, article, feature. editorial, letter to the editor, preparing press release etc..). Content development: choosing a topic, identifying sources, gathering information and importance of rewriting

Unit-II:

12 Hours

Radio: Introduction to writing for radio: Principles and elements of scripting: Aesthetics of language and grammar for radio scripting: Script design and different scripts formats.

Unit-III:

12 Hours

Television: Basic principles and techniques of TV writing: elements of TV scripting, language and grammar, TV script formats; Writing a script for entertainment programme and news.

Unit-IV:

12 Hours

New Media: Introduction to writing for online media: Writing techniques for new media. Content writing for social media (Facebook, Twitter. LinkedIn. Instagram). Introduction to blogging and current trends in Web Journalism.

Reference:

1. History of Indian Journalism: Nadig Krishnamurthy- University of Mysore press
2. Dilwali, Ashok. (2002). All about photography. New Delhi: National Book Trust.
2. Kobre, Kenneth. (2000). Photo journalism. The professional approach (4th Ed). London: Focal Press
4. Horton, Brian. (2000). Guide to photojournalism. New York: McGraw-Hill
4. Chapnick, Howard. (1994). Truth needs no ally: Inside photojournalism. New York: University of Missouri Press
5. British Press Photographers Association. (2007). 5000 Days: Press photography in a changing world. London: David & Charles.
6. Nair. Archana. (2004). All about photography. New Delhi: Goodwill Publishing House.

Course Code: GE1-KN1

Subject: Kannada

TITLE : ಕನ್ನಡ ವ್ಯಾಕರಣಗಳು

Total No. of Teaching Hours: 42

No. of Hours per Week : 3

Internal Marks : 40

Exam Marks : 60

Credits: 3

Course Objectives:

ವ್ಯಾಕರಣದ ಪ್ರಕಾರ ಮತ್ತು ವೈವಿಧ್ಯತೆಯ ಬಗೆಗೆ ಅರಿವು ಮೂಡಿಸುವುದು.

Course Description:

ಕನ್ನಡವನ್ನು ಒಂದು ಬಾಷೆಯಾಗಿ ಕಲಿಸುವುದರ ಜೊತೆಗೆ, ಸಾಹಿತ್ಯ ಪ್ರಕಾರಗಳಾದ ಹೊಸಗನ್ನಡ ಹಾಗೂ ನಡುಗನ್ನಡ ವ್ಯಾಕರಣ ಪ್ರಕಾರಗಳನ್ನು ಪರಿಚಯಿಸುವುದು. ಇದರ ಮೂಲಕ ಭಾಷೆಯಲ್ಲಿ ಪರಿಣಿತಿಯನ್ನು ಸಾಧಿಸುವುದು.

Course Outcomes (Cos):

ಸಾಹಿತ್ಯದ ವಿವಿಧ ವಲಯಗಳಲ್ಲಿ ಅಂದರೆ, ಬರವಣಿಗೆಯ ಕೌಶಲ್ಯ, ಓದುವ ಕೌಶಲ್ಯ, ಮಾತನಾಡುವ ಕೌಶಲ್ಯಗಳಿಗೆ ಸಂಬಂಧಿಸಿದ ವಲಯಗಳಲ್ಲಿ ವೃತ್ತಿಯನ್ನು ಹೊಂದಲು ಸಹಕಾರಿಯಾಗಿದೆ. ಸ್ಪರ್ಧಾತ್ಮಕ ಪರೀಕ್ಷೆಗಳ ವ್ಯಾಕರಣದ ಬಗೆಗೆ ವಿವರಿಸುವುದು.

ಪೀಠಿಕೆ

1. ವ್ಯಾಕರಣದ ಉದ್ದೇಶ
2. ಕನ್ನಡ ವ್ಯಾಕರಣಕಾರರು ಮತ್ತು ಅವರ ಗ್ರಂಥಗಳು

ಅಧ್ಯಾಯ-1 ಸಂಜ್ಞಾಪ್ರಕರಣ

1. ಸಂಜ್ಞೆಗಳು
2. ಅಕ್ಷರ ಹುಟ್ಟುವ ಸ್ಥಾನ

ಅಧ್ಯಾಯ-2, ಸಂಧಿಪ್ರಕರಣ

1. ಸಂಧಿ
2. ಕನ್ನಡ ಸಂಧಿಗಳು
3. ಸಂಸ್ಕೃತ ಸಂಧಿಗಳು

ಅಧ್ಯಾಯ-3, ದೇಶ್ಯ-ಅನ್ಯದೇಶ್ಯ-ತತ್ಸಮ-ತದ್ಭವ ಪ್ರಕರಣ

ಅಧ್ಯಾಯ-4, ನಾಮಪದಗಳು

1. ನಾಮಪದ-ನಾಮಪ್ರಕೃತಿ-ನಾಮವಿಭಕ್ತಿ ಪ್ರತ್ಯಯ
2. ಲಿಂಗಗಳು
3. ವಚನಗಳು
4. ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯಗಳು

ಅಧ್ಯಾಯ-5, ಕ್ರಿಯಾಪ್ರಕರಣ

(ಧಾತು-ಸಾಧಿತ ಧಾತು, ಸಕರ್ಮಕ ಅಕರ್ಮಕ ಧಾತುಗಳು, ಕ್ರಿಯಾಪದಗಳು, ಕ್ರಿಯಾಪದಗಳ ಅರ್ಥದಲ್ಲಿ ಬರುವ ಬೇರೆ ಪದಗಳೂ, ಕರ್ಮಣಿ ಪ್ರಯೋಗಗಳು ಮುಖ್ಯವಾದ ಕೆಲವು ಧಾತುಗಳು)

ಅಧ್ಯಾಯ-6, ಸಮಾಸಪ್ರಕರಣ, ಸಮಾಸಗಳು, ದ್ವಿರುಕ್ತಿ

ಅಧ್ಯಾಯ-7, ಕೃದಂತ, ತದ್ವಿತಾಂತ ಪ್ರಕರಣ

1. ಕೃದಂತ

2. ತದ್ವಿತಾಂತ

ಅಧ್ಯಾಯ-8, ಅವ್ಯಯ ಪ್ರಕರಣ

ಅಧ್ಯಾಯ-9, ವಾಕ್ಯಗಳು

(ಸಾಮಾನ್ಯ, ಸಂಯೋಜಿತ, ಮಿಶ್ರವಾಕ್ಯಗಳು, ವಾಕ್ಯವಿಭಜನೆ, ರೂಪನಿಷ್ಪತ್ತಿ)

ಅಧ್ಯಾಯ-10, ಛಂದಸ್ಸು

ಅಧ್ಯಾಯ-11, ಅಲಂಕಾರಗಳು

ಲೇಖನ ಚಿಹ್ನೆಗಳು

Reference:

1. ಕನ್ನಡ ವ್ಯಾಕರಣ ದರ್ಪಣ

2. ಕನ್ನಡ ಮಧ್ಯಮ ವ್ಯಾಕರಣ

Course Code : GE1-MT1

Subject: MATHEMATICS

Title : Corporate Mathematics

Total No. of Teaching Hours: 42

No. of Hours per Week : 3

Internal Marks : 40

Exam Marks : 60

Credits: 3

Pedagogy: Classrooms lecture, Problem Solving , Case studies, Group discussion, Seminar & field work etc.,

Course Objectives:

- Understand and explain the importance of critical thinking
- Develop their ability to reason by introducing them to elements of formal reasoning.
- Identify the core skills associated with critical thinking

Course Outcomes (Cos): This course will enable the students to

- Learn types of equations and methods to solve linear, quadratic equations.
- Learn how to represent data through graphs and analyze.
- Learn definitions of proportions and properties.
- Apply these concepts in commercial problems.
- Translate the real world problems through appropriate mathematical modelling.
- Analyze and demonstrate the mathematical skills required in mathematically intensive areas in economics and business problems.

Unit-I: Theory of Equations:

14 Hours

Introduction meaning and types of equations. Simple linear equations, simultaneous equations (only two variables) elimination method, Substitution method and rule of cross multiplication (RCM). Quadratic equations, factorization method formula method and application problems.

Unit-II: Data Interpretation and Mathematical Reasoning:

14 Hours

Data Interpretation - Tables; Interpretation of data; Important points for Statistical analysis; Graphs; Line graphs; Bar graphs; Pie chart; Cumulative graphs.

Mathematical Reasoning-Letter series; Number series; Ratio series; Mixed series; Other formats; Missing terms; Verbal classification (odd man out); Letter classification; Number classification; Word/Item classification; Solved example; Coding decoding.

Seating Arrangements.

Unit-III: Commercial Arithmetic**14 Hours**

Average; Ratio and Proportion; Profit and Loss; Simple Interest; Percentage; Time and Work; Work and wages; Pipes and Cisterns; Calendar and Clocks. (Definitions, Important conversations, Types of problem and working rule)

Reference:

1. Quantitative Aptitude, Dhillon Group of Publications Dr. S.S. Cheema, Navratan Singh, Monika Saha
2. Quantitative Ability, Vikas Publishing House Pvt Ltd, Career Launcher India Ltd.
3. Quantitative Aptitude, S. Chand and Company Ltd. Bharat Jhunjhunwala

Course : GE1-PH1

Subject: Physics

Title : Physics for all

Total No. of Teaching Hours: 39

No. of Hours per Week : 3

Internal Marks: 40

Exam Marks : 60

Credits: 3

Course Description:

This course, provides an introduction to the basic concepts of Energy explosions Gravity and Nuclei and Radioactivity Introduces students to understanding concepts of Energy explosions Gravity and Nuclei and Radioactivity using mathematical tools.

Course Objectives:

To understand the different physical processes of nature in terms of Energy explosions Gravity and Nuclei and Radioactivity

Course Outcomes (Cos):

The student should be able to apply.

Unit-I:

13 Hours

Explosions and energy heat and its units Energy table and Discussions Discussion of cost of energy Measuring energy Power Different power sources Kinetic energy.

Unit-II:

13 Hours

Gravity, Force and Space

The force of Gravity Newton's third law Weightlessness Low earth orbit Geosynchronous satellites Spy satellites Medium Earth Orbit Satellite Circular Acceleration Momentum Rockets Airplanes, helicopters and fans Hot air and helium balloons angular momentum and torque.

Unit-III:

13 Hours

Nuclei and radioactivity

Radioactivity Elements and isotopes Radiation and rays Seeing radiation The REM – The radiation poisoning Radiation and cancer the linear hypothesis Different types of radiation The half-life rule Smoke detectors measuring age from radioactivity Environmental Radioactivity Glow of radioactivity nuclear fusion.

Reference:

This course is extracted from the book titled "Physics and Technology for Future Presidents: An Introduction to the Essential Physics Every World Leader Needs to Know" by Richard A Muller, WW Norton and Company, 2007. (Unit-1 to 4 are from chapters 1, 3, 4 and 10, respectively).

Course Code : GE1-SO1

Subject: SOCIOLOGY

Title : Sociology of Everyday Life

Total No. of Teaching Hours: 39

No. of Hours per Week : 3

Internal Marks : 40

Exam Marks : 60

Credits: 3

Pedagogy: Classrooms lecture, Problem Solving , Case studies, Group discussion, Seminar & field work etc.,

Course Description:

Focuses to understand our everyday life with Sociological perspective which helps students interact with the people.

Conceptualizing to understand the social world by understanding the culture from local to global.

Course Objectives:

1. Importance of studying our everyday life with sociological eye
2. Focuses on understanding social Institutions of Society.
3. Understanding the role of media in constructing self, identity and society.
4. To Know the impact of globalization on culture

Course Outcomes (Cos):

1. Look at the familiar world from a new perspective
2. Able to appreciate how our social world is constructed
3. Able to communicate effectively in written and oral formats

Unit-I: Introduction

14 Hours

Chapter No. 1: Sociology as a study of Social Interaction and its Need

Chapter No. 2: Everyday Life - Meaning; Why Study Everyday Life? (Contributions of Erving Goffman and Anthony Giddens); Role of Socialisation in establishing habits and practices- action, thinking and feeling

Chapter No. 3: Social Institutions as Established Practices and Customs - Definition and Elements

Chapter No. 4: Challenges and Problems of Everyday Life

Unit-II: Self and Society

13 Hours

Chapter No. 5: Definition of Situation (W I Thomas Principle)

Chapter No. 6: The Looking-Glass Self; Relation between Individual and Society

Chapter No. 7: Role of Social Media in Constructing Self and Identity

Unit-III: Culture in Everyday Life

12 Hours

Chapter No. 8: Definition of Culture; Types of Culture: High Culture, Popular Culture, Recorded Culture and Lived Culture.

Chapter No. 9: Mass Media and Everyday Life

Chapter No. 10: Globalisation and Cultural Diffusion

Text Books:

1. Berger, P L 1963, Invitation to Sociology: A Humanistic Perspective, Doubleday, Garden City, N.Y
2. Bruce, Steve, 2018, Sociology: A Very Short Introduction, 2nd edition, Oxford University Press, New York
3. Corrigan-Brown, Catherine 2020, Imagining Sociology: An Introduction with Readings, 2nd Edition, Oxford University Press, Canada
4. Coser, Lewis 1977 Masters of Sociological Thought, Harcourt Brace Jovanovich, New York
5. Davis, Kingsley 1949, Human Society, Macmillan, Delhi
6. Ferrante, Joan 2013, Seeing Sociology: An Introduction, 3rd Edition, Cengage Learning, USA
7. Ferris, Kerry and Jill Stein, 2018, The Real World: An Introduction to Sociology, 6th Edition, W W Norton, New York
8. Giddens, Anthony and Philip W Sutton, 2013, Sociology, 7th edition, Wiley India Pvt. Ltd. New Delhi
9. Harlambos, M and R M Heald, 1980, Sociology: Themes and Perspectives, Oxford University Press, Delhi
10. Inkeles, Alex 1987, What is Sociology? Prentice-Hall of India, New Delhi
11. Jayaram, N 1989, Sociology - Methods and Theories, Macmillan India Ltd. Bangalore.
12. Johnson, H M 1995, Sociology: A Systematic Introduction, Allied Publishers, New Delhi
13. Lemert, Charles 2012, Social Things: An Introduction to the Sociological Life, Rowman and Littlefield Publishers, Maryland

Reference:

- <http://www.csun.edu/~hbsoc126/soc1/Charles%20Horton%20Cooley.pdf>
- <https://www.khanacademy.org/test-prep/mcat/individuals-and-society/self-identity/v/charles-cooley-looking-glass-self>
- <https://www.oxfordbibliographies.com/view/document/obo-9780199756384/obo-9780199756384-0186.xml> An article on Habit
- <https://courses.lumenlearning.com/alamo-sociology/chapter/reading-pop-culture-subculture-and-cultural-change/>
- https://en.wikisource.org/wiki/Body_Ritual_among_the_Nacirema This is an excellent article on how a group of people take care of their body everyday of their life.

Course Code:GE1-ZO1

Subject: Zoology

Title : OPEN ELCTIVE: ECONOMIC ZOOLOGY

Total No. of Teaching Hours: 42

No. of Hours per Week : 3

Internal Marks : 40

Exam Marks : 60

Credits: 3

Pedagogy: Classrooms lecture, Problem Solving , Case studies, Group discussion, Seminar & field work etc.,

Course Description:

The NEP-2020 offers an opportunity to effect paradigm shift from a teacher-centric to student- centric higher education system in India. It caters skill based education where the graduate attributes are first kept in mind to reverse-design the programs courses and supplementary activities to attain the graduate attributes and learning attributes. The learning outcomes-based curriculum framework for a degree in B.Sc. (Honors) Zoology is intended to provide a comprehensive foundation to the subject and to help students develop the ability to successfully continue with further studies and research in the subject while they are equipped with required skills at various stages. Effort has been made to integrate use of recent technology and use of MOOCs to assist teaching-learning process among students. The framework is designed to equip students with valuable cognitive abilities and skills so that they are successful in meeting diverse needs of professional careers in a developing and knowledge-based society. The curriculum framework takes into account the need to maintain globally competitive standards of achievement in terms of the knowledge and skills in Zoology and allied courses, as well develop scientific orientation, spirit of enquiry problem solving skills and human and professional values which foster rational and critical thinking in the students. This course serves as plethora of opportunities in different fields right from classical to applied Zoology.

Course Objectives:

- The Programme offers both classical as well as modern concepts of Zoology in higher education.
- It enables the students to study animal diversity in both local and global environments.
- To make the study of animals more interesting and relevant to human studies more emphasis is given to branches like behavioral biology, evolutionary biology and economic Zoology.
- More of upcoming areas in cell biology, genetics, molecular biology, biochemistry, genetic engineering and bioinformatics have also been included.
- Equal importance is given to practical learning and presentation skills of students.
- The lab courses provide the students necessary skills required for their employability.

- Skill enhancement courses in classical and applied branches of Zoology enhance enterprising skills of students.
- The global practices in terms of academic standards and evaluation strategies.
- Provides opportunity for the mobility of the student both within and across the world.
- The uniform grading system will benefit the students to move across institutions within India to begin with and across countries.
- It will also enable potential employers in assessing the performance of the candidates across the world.

Course Outcomes (Cos):

At the end of the course the student will be able to:

1. Gain knowledge about silkworms rearing and their products.
2. Gain knowledge in Bee keeping equipment and apiary management.
3. Acquaint knowledge on dairy animal management, the breeds and diseases of cattle and learn the testing of egg and milk quality.
4. Acquaint knowledge about the culture techniques of fish and poultry.
5. Acquaint the knowledge about basic procedure and methodology of Vermiculture.
6. Learn various concepts of lac cultivation.
7. Students can start their own business i.e. self-employments.
8. Get employment in different applied sectors

Unit-I:

14 Hours

Chapter 1. Sericulture:

- History and present status of sericulture in India
- Mulberry and non-mulberry species in Karnataka and India
- Mulberry cultivation
- Morphology and life cycle of *Bombyx mori*
- Silkworm rearing techniques: Processing of cocoon, reeling
- Silkworm diseases-pests and their control

Chapter 2. Apiculture:

- Introduction and present status of apiculture
- Species of honey bees in India, life cycle of *Apis indica*
- Colony organization, division of labour and communication
- Bee keeping as an agro based industry; methods and equipments: indigenous methods, extraction appliances, extraction of honey from the comb and processing
- Bee pasturage, honey and bees wax and their uses
- Pests and diseases of bees and their management

Unit-II:**14 Hours****Chapter 3. Live Stock Management:**

1. **Dairy:** Introduction to common dairy animals and techniques of dairy management
2. Types, loose housing system and conventional barn system; advantages and limitations of dairy farming
3. Establishment of dairy farm and choosing suitable dairy animals-cattle
4. Cattle feeds, milk and milk products
5. Cattle diseases
6. **Poultry:** Types of breeds and their rearing methods
7. Feed formulations for chicks
8. Nutritive value of egg and meat
9. Disease of poultry and control measures

Chapter 4. Aquaculture:

Aquaculture in India: An overview and present status and scope of aquaculture
Types of aquaculture: Pond culture: Construction, maintenance and management; carp culture, shrimp culture, shellfish culture, composite fish culture and pearl culture

Unit-III:**14 Hours****Chapter 5. Fish culture:**

- Common fishes used for culture.
- Fishing crafts and gears.
- Ornamental fish culture: Fresh water ornamental fishes- biology, breeding techniques
- Construction and maintenance of aquarium: Construction of home aquarium, materials used, setting up of freshwater aquaria, aquarium plants, ornamental objects, cleaning the aquarium, maintenance of water quality. control of snail and algal growth.
- Modern techniques of fish seed production

Chapter 6. Prawn culture:

- Culture of fresh and marine water prawns.
- Preparation of farm.
- Preservation and processing of prawn, export of prawn.

Chapter 8. Lac Culture:

- History of lac and its organization, lac production in India. Life cycle, host plants and strains of lac insect.
- Lac cultivation: Local practice, improved practice, propagation of lac insect, inoculation period, harvesting of lac.
- Lac composition, processing, products, uses and their pests

Reference:

1. (1999). Silkworm Breeding (Translated from Japanese). Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi.
2. Ganga, G. (2003). Comprehensive Sericulture Vol-II: Silkworm Rearing and Silk Reeling. Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi.
3. Mahadevappa, D., Halliyal, V.G., Shankar, D.G. and Bhandiwad, R., (2000). MulberrySilk Reeling Technology Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi.
4. Roger, M (1990). The ABC and Xyz of Bee Culture: An Encyclopedia of Beekeeping, Kindle Edition.
5. Shukla and Upadhyaya (2002). Economic Zoology, Rastogi Publishers
6. YadavManju (2003). Economic Zoology, Discovery Publishing House.
7. JabdePradip V (2005). Textbook of applied Zoology, Discovery Publishing House, New Delhi.
8. Cherian & Ramachandran Bee keeping in-South Indian Govt. Press, Madras.
9. Sathe, T.V. Vermiculture and Organic farming.
10. Bard. J (1986). Handbook of Tropical Aquaculture.
11. Santhanam, R. A. Manual of Aquaculture.
12. Zuka. R.1 and Hamiyn (1971). Aquarium fishes and plants
13. Jabde, P.V. (2005) Text Book of Applied Zoology: Vermiculture, Apiculture, Sericulture, Lac culture.
14. Animal Disease- Bairagi K. N. Anmol Publications Pvt.Ltd 2014
15. Economics Of Aquaculture - Singh (R.K.P) - Danika Publishing Company 2003
16. Applied and Economic Zoology (SWAYAM) web https://swayam.gov.in/nd2_cec20_ge23/preview



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Course Code:GE2-BT2

Subject: BOTANY

Title: Plant Propagation, Nursery Management and Gardening

Total No. of Teaching Hours: 42

No. of Hours per Week : 3

Internal Marks : 40

Exam Marks : 60

Credits: 3

Pedagogy: Classroom lecture, Practical, Field, Lab visits, Participatory Learning, Group discussion, Seminar, Assignments, specimen submission etc.,

Course Description: Nursery keeping, Planting and transplants. Seed structure, types and dormancy of seeds, Vegetative propagation, Gardening & Sowing of seeds and seedling.

Course Objectives: Awareness about Nursery Keeping, Knowledge of Seed dormancy and seed storage, seed bank and seed germination. Importance of Gardening, types of vegetative propagation, Management of pests, diseases and harvesting.

Course Outcomes (Cos):

To gain knowledge of gardening, cultivation, multiplication and raising of seedlings of garden plants.

Awareness of modern techniques of plant propagation.

Develop interest in the nature and cultivation of different & unique plants.

Unit-I:

10 Hours

Nursery: Definition, objectives and scope and general practices and building up of infrastructure for nursery, planning and seasonal activities. Planting - direct seeding and transplants, Soil free/soilless/ synthetic growth mediums for pots and nursery

Unit-II:

10 Hours

Seed: Structure and types - Seed dormancy; causes and methods of breaking dormancy. Seed storage. Types of storage, Seed banks, factors affecting seed viability, seed germination and seed production technology. Seed testing and certification.

Unit-III:

10 Hours

Seed: Structure and types - Seed dormancy; causes and methods of breaking dormancy. Seed storage. Types of storage, Seed banks, factors affecting seed viability, seed germination and seed production technology. Seed testing and certification.

Unit-IV:

11 Hours

Gardening: Definition, objectives and scope. Different types of gardening landscape and home/terrace gardening, parks and its components. Plant materials and design. Computer applications in landscaping, Gardening operations. soil laying, manuring, watering, management of pests and diseases and harvesting.

Unit-V:

11 Hours

Sowing/raising of seeds and seedlings - Transplanting of seedlings - Study of cultivation of different vegetables and flowering plants Cabbage, Brinjal, Lady's finger, Tomatoes, Carrots, Bougainvillea, Roses, Geranium, Ferns, Petunia, Orchids etc.

Storage and marketing procedures. Developing and maintenance of different types of lawns. Bonsai technique

Text Books:

1. Agrawal, PK. (1993). Hand Book of Seed Technology. New Delhi, Delhi: Dept of Agriculture and Cooperation, National Seed Corporation Ltd.
2. Bose T.K, Mukherjee, D. (1972). Gardening 111 India. New Delhi, Delhi: Oxford & IBH Publishing Co.
3. Jules, J. (1979). Horticultural Science, 3rd edition. San Francisco, California: W.H. Freeman and Co.
4. Kumar, N. (1997). introduction to Horticulture. Nagercoil, Tamil Nadu: Rajalakshmi Publications.

Reference:

1. Musser E., Andres. (2005). Fundamentals of Horticulture. New Delhi, Delhi: McGraw Hill Book Co.
2. Sandhu, M.K. (1989). Plant Propagation. Madras, Bangalore: Wile Eastern Ltd.

Course :GE2-CH2

Subject: Chemistry

Title : Molecules of Life

Total No. of Teaching Hours: 39

No. of Hours per Week : 3

Internal Marks : 40

Exam Marks : 60

Credits: 3

Pedagogy: Classrooms lecture, Problem Solving, Case studies, Group discussion, Seminar & field work etc.,

Course Description: After studying this paper the student would be able to:

1. Acquire knowledge about different types of sugars and their chemical structures
2. Identify different types of amino acids and determine the structure of peptides.
3. Explain the actions of enzymes in our body and interpret enzyme inhibition
4. Predict action of drugs.
5. Depict the importance of lipids in the metabolism
6. Differentiate RNA and DNA and their replication.
7. Explain production of energy in our body.

Course Objectives:

To make the non-chemistry students aware of various biochemicals/biomolecules involved in various biological processes.

Course Outcomes (Cos):

At the end of this course, student should be able to:

1. Describe the biomolecules, namely carbohydrates, amino acids, lipids and nucleic acids on the basis of their classification and structure.
2. Explain enzyme action, factors influencing enzyme action, co-enzymes and enzyme specificity.
3. Depict the action of drugs in biological systems based on Receptor theory, SAR studies and binding action of various groups.
4. Study the energy dynamics of biological systems in terms of calorific values of macronutrients, their metabolic pathways and ATP as energy currency.

Unit-I:

13 Hours

Carbohydrates

Classification of carbohydrates, reducing and non-reducing sugars, general properties of glucose and fructose, their open chain structures. Epimers, mutarotation and anomers.

Linkage between monosaccharides, structure of disaccharides (sucrose, maltose, lactose) and polysaccharides (starch and cellulose) excluding their structure elucidation.

Amino acids, peptides and proteins

Classification of amino acids, Zwitter ion structure and isoelectric point. Overview of primary, secondary, tertiary and quaternary structure of proteins. Determination of primary structure of peptides.

Unit-II:**13 Hours****Enzymes and correlation with drug action**

Mechanism of enzyme action, factors affecting enzyme action, co-enzymes and cofactors and their role in biological reactions, Specificity of enzyme action (including stereospecificity).

Enzyme inhibitors and their importance, phenomenon of inhibition (competitive and non-competitive inhibition including allosteric inhibition).

Drug action - receptor theory. Structure-activity relationships of drug molecules, binding role of -OH group, -NH₂ group, double bond and aromatic ring.

Lipids

Introduction to lipids, classification. Biological importance of triglycerides, phospholipids, glycolipids, and steroids (cholesterol).

Unit-III:**13 Hours****Nucleic acids**

Components of nucleic acids: Adenine, guanine, thymine and cytosine (structure only), other components of nucleic acids, nucleosides and nucleotides (nomenclature), structure of polynucleotides: structure of DNA (Watson-Crick model) and RNA (types of RNA), Genetic code, biological roles of DNA and RNA: replication, transcription and translation.

Concept of energy in bio systems

Calorific value of food. Standard caloric content of carbohydrates, proteins and fats. Oxidation of foodstuff (organic molecules) as a source of energy for cells. Introduction to metabolism (catabolism, anabolism), ATP: the universal currency of cellular energy, ATP hydrolysis and free energy change. Conversion of food into energy. Outline of catabolic pathways of carbohydrate - Glycolysis, fermentation, Krebs cycle. Overview of catabolic pathways of fats and proteins. Interrelationships in the metabolic pathways of Proteins, fats and carbohydrates.

Text Books:**1. University chemistry open elective-II****2. College chemistry-II****Reference:**

W. H. Freeman. Berg, J.M., Tymoczko, J. L. & Stryer, L. Biochemistry, 2002.

Morrison R. T. and Boyd R. N. Organic Chemistry, Sixth Edition Prentice Hall India, 2003.

Berg, J.M., Tymoczko, J.L. and Stryer, L. (2006) Biochemistry. VI the Edition. W.H. Freeman and Co.

Nelson, D. L., Cox, M. M. and Lehninger, A. L. (2009) principles of Biochemistry. IV Edition. W.H. Freeman and Co.

Murray, R.K., Granner, D.K., Mayes, P.A. and Rodwell, V.W. (2009) Harper's Illustrated Biochemistry. XXVIII edition. Lange medical Books/ McGraw-Hill *Chemistry (Volume 2)*, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).

Crichton R. H. Biological Inorganic Chemistry – An Introduction, Elsevier, 2008.

Berg J. M., Tymoczko J. L., Stryer I. Biochemistry, W. H. Freeman, 2008.

Nelson, D. L. & Cox, M. M. Lehninger's Principles of Biochemistry 7th Ed. 2006.

Course Code: GE2-BM2

Subject: Commerce-C1

Title : Investing in Stock Markets

Total No. of Teaching Hours: 40

No. of Hours per Week : 3

Internal Marks : 40

Exam Marks : 60

Credits: 3

Pedagogy: Classrooms lecture, Problem Solving , Case studies, Group discussion, Seminar & field work etc.,

Course Description:

The purpose of the course is to understand topics such as corporate and government securities, real property and financial intermediaries, risk-return tradeoff, mutual funds, security markets, stock and bond valuations, security analysis, and derivatives. The intent of the course is to provide students with a basic understanding of various investment alternatives and how to value those investments.

Course Objectives:

Understand different investment alternatives in the market

Understand how securities are traded in the market

Be able to analyze and price different securities

Understand basics in derivatives

Course Outcomes (Cos):

On successful completion of the course, the Students will be able to

Explain the basics of investing in the stock market, the investment environment as well as risk & return;

Analyse Indian securities market;

Examine EIC framework and conduct fundamental analysis; mm) Perform technical analysis;

Invest in mutual funds market.

Unit-I:

10 Hours

Basics of Investing:

Basics of Investment & Investment Environment. Risk and Return, Avenues of Investment - Equity shares, Preference shares, Bonds & Debentures, Insurance Schemes, Mutual Funds, Index Funds. Indian Security Markets - Primary Market, Secondary Market and Derivative Market. Responsible Investment.

Unit-II:**08 Hours**

Fundamental Analysis:

Top down and bottom up approaches, Analysis of international & domestic economic scenario, Industry analysis, Company analysis (Quality of management, financial analysis: Both Annual and Quarterly, Income statement analysis, position statement analysis including key financial ratios, Cash flow statement analysis, Industry market ratios: PE, PEG, Price over sales, Price over book value, EVA), Understanding Shareholding pattern of the company.

Unit-III:**08 Hours**

Technical Analysis :

Trading rules (credit balance theory, confidence index, filter rules, market breath, advances vs declines and charting (use of historic prices, simple moving average and MACD) basic and advanced interactive charts. Do's & Don'ts of investing in markets.

Unit-IV:**08 Hours**

Indian Stock Market :

Market Participants: Stock Broker, Investor, Depositories, Clearing House, Stock Exchanges. Role of stock exchange, Stock exchanges in India- BSE, NSE and MCX. Security Market Indices: Nifty, Sensex and Sectoral indices, Sources of financial information. Trading in securities: Demat trading, types of orders, using brokerage and analyst recommendations.

Unit-V:**08 Hours**

Investing in Mutual Funds.:

Concept and background on Mutual Funds: Advantages, Disadvantages of investing in Mutual Funds, Types of Mutual funds- Open ended, close ended, equity, debt, hybrid, index funds and money market funds. Factors affecting choice of mutual funds. CRISIL mutual fund ranking and its usage, calculation and use of Net Asset Value.

Skill Development Activities:

Work on the spreadsheet for doing basic calculations in finance.

Learners will also practice technical analysis with the help of relevant software.

Practice use of Technical charts in predicting price movements through line chart, bar chart, candle and stick chart, etc., moving averages, exponential moving average.

Calculate of risk and return of stocks using price history available on NSE website.

Prepare equity research report-use of spreadsheets in valuation of securities, fundamental analysis of securities with the help of qualitative and quantitative data available in respect of companies on various financial websites, etc.

Any other activities, which are relevant to the course.

Text Books and Reference:

Chandra, P. (2017). Investment Analysis and Portfolio Management. New Delhi: Tata McGraw Hill Education.

Kevin, S. (2015). Security Analysis and Portfolio Management. Delhi: PHI Learning. Ranganatham,

M., & Madhumathi, R. (2012). Security Analysis and Portfolio Management. Uttar Pradesh: Pearson (India) Education.

Pandian, P. (2012). Security Analysis and Portfolio Management. New Delhi: Vikas Publishing House.

Note: Latest edition of text books may be used.

Course Code GE2-CS2

Subject: Computer Science

Title : E Commerce

Total No. of Teaching Hours: 42

No. of Hours per Week : 3

Internal Marks: 40

Exam Marks : 60

Credits: 3

Pedagogy: Classrooms lecture, Problem Solving , Case studies, Group discussion, Seminar & field work etc.,

Course Objectives:

This course provides an introduction to information systems for business and management. It is designed to familiarize students with organizational and managerial foundations of systems, the technical foundation for understanding information systems

Course Outcomes (Cos):

Understand the basic concepts and technologies used in the field of management information systems.

- Have the knowledge of the different types of management information systems.
- Understand the processes of developing and implementing information systems.
- Be aware of the ethical, social, and security issues of information systems.

Unit-I:

10 Hours

Internet and commerce: Business Operations; e-commerce practices versus traditional business practices; concepts B2B,B2C,C2C,G2H, and G2C,benefits of e-commerce to organization, consumers etc. Limitations of e-commerce.

Unit-II:

10 Hours

e-commerce operations: Credit card transaction, secure hyper-text transfer protocol(SHTP), Electronic payment systems; Secure Electronic Transactions(SET); Cyber Cash; Indian Payment Models.

Unit-III:

11 Hours

Applications in B2B: Consumer's shopping procedure on the internet; Impact on dis-intermediation and re-intermediation, global market; strategy of traditional department stores; products in B2C model; Success factors of e-brokers, benefits and impact of e-commerce on travel industry, Online stock trading and banking- its benefits, e-auctions.

Unit-IV:

11 Hours

Applications in B2B: Applications of B2B; key technologies for B2B, architectural models of B2B, characteristics of the supplier-oriented market place, Buyer oriented market place, benefits of B2B on procurement re-engineering; Time delivery in B2B; marketing issues inB2B

Text Books and Reference:

1. David Whiteley, E-Commerce: Strategy, Technologies and Applications, Tata McGraw Hill Education Private limited.
2. Ravi Kalakota, Andrew B. Whinston, Frontiers of Electronic Commerce, Addison-Wesley Publications.
3. C. S. V. Murthy, E-commerce: Concepts, Models, Strategies, Himalaya Publishing House

Course Code : GE 2-EC2

Subject: ECONOMICS

Title : Contemporary Indian Economy

Total No. of Teaching Hours: 42

No. of Hours per Week : 3

Internal Marks: 40

Exam Marks : 60

Credits: 3

Pedagogy: Classrooms lecture, Problem Solving , Case studies, Group discussion, Seminar & field work etc.,

Course Description:

This course examines sector-specific policies and their impact in shaping trends in key economic indicators in India. It also designed to expose the students to the quantitative data on various economic aspects and policies in India.

Course Objectives:

The purpose of this paper is to enable students to have an understanding of the various issues of the Indian economy so that they are able to comprehend and critically appraise current Indian economic problems. It also exposes the students to the quantitative data on various economic aspects and policies in India.

Course Outcomes (Cos):

At the end of the course the student should be able to:

1. Understand the current problems of Indian Economy
2. Identify the factors contributing to the recent growth of the Indian economy
- 3 Evaluate impact of LPG policies on economic growth in India
4. Analyze the sector specific policies adopted for achieving the aspirational goals
5. Review various economic policies adopted

Unit-I: LPG POLICIES, ECONOMIC REFORMS AND AGRICULTURE

14 Hours

Chapter No. 1 Recent Issues

4

- Genesis and Impact of LPG
- India's population policy
- Demographic Dividend
- India's human development in global perspective

ChapterNo.2 Urbanization and governance

4

- Urbanization and Smart City Mission
- Informal sector
- Impact of COVID-19 Pandemic
- Atma Nirbhara Bharat Abhiyan

ChapterNo.3 Economic Reforms and Agriculture

6

- Agriculture and WTO
- Price policy and Subsidies

- Commercialization and Diversification
- Public Distribution System
- Impact of public expenditure on agricultural growth
- Agrarian Crisis, Doubling Farm Incomes, MGNREGS

Practicum

1. Mini-project to ascertain the impact of pandemic on lives of different sections of population
2. Field visits to understand the agrarian situation.

Unit-II: INDUSTRY, BUSINESS, FISCAL POLICY

14 Hours

Chapter No. 4. Industrial Policy

4

- New Industrial Policy and changes
- Public sector reform
- Privatisation and Disinvestment
- Competition Policy

Chapter No. 5. Business

5

- Ease of Doing Business
- Performance of MSMEs
- Role of MNC's in Industrial Development
- Make in India, development of economic and social infrastructure
- National Monetization Pipeline
- (The teacher should include the latest policy of the government)

Chapter No. 6. Fiscal Policy

5

- Tax, Expenditure, Budgetary deficits
- Pension and Fiscal Reforms
- Public debt management and reforms
- Fiscal Responsibility and Budget Management (FRBM) Act
- GST, Fiscal Federalism and Fiscal Consolidation
- Recommendations of the Current Finance Commission
- **Practicum:** Mini-projects to assess the business climate

Unit-III: MONETARY POLICY, FOREIGN TRADE AND INVESTMENT

14 Hours

Chapter No. 7 Monetary Policy

3

- Organization of India's money market
- Financial sector reforms
- Interest rate policy
- Review of monetary policy of RBI

ChapterNo8.MoneyandCapital Markets **5**

- Working of SEBI in India
- Changing roles of the Reserve Bank of India
- Commercial banks,
- Development Finance Institutions
- Foreign banks and Non-banking financial institutions
- Analysis of price behaviour in India, Anti-inflationary measures
- Demonetization and its impact

ChapterNo.9.Foreign Tradeand Investment **6**

- India's foreign trade
- India Balance of payment since 1991
- New Exchange Rate Regime: Partial and full convertibility
- Capital account convertibility
- FDI – Trends and Patterns
- New EXIM policy, WTO and India
- Bilateral and Multilateral Trade Agreements and Associations

Practicum:

1. Computation and analysis of Wholesale Price Index, Consumer Price Index: components and trends.
2. Group Discussions on India's trade policies and trade agreements

Text Books:

1. Indian Economy - DhingraIshwar C, , Sultan Chand & Sons, New Delhi.
2. Indian Economy Datt- R. and K.P.M. Sundharam , S. Chand & Co Ltd., New Delhi.
3. Indian Economy since Independence - Kapila U , Academic Foundation, New Delhi
4. Indian Economy — Its Development Experience - Misra, S.K. and V.K. Puri , Himalaya Publishing House, Mumbai

Reference:

- Bardhan, P.K. (9th Edition) (1999), The Political Economy of Development in India, Oxford University Press, New Delhi.
- Bhaduri Amit, (2015), A Model of Development By Dispossession, Fourth Foundation • Byres Terence J. (ed.), (1998), The State, Development Planning and Liberalisation 'in India, Delhi, OUP
- Dutt Ruddar and K.P.M Sundaram (2001): Indian Economy, S Chand & Co. Ltd. New Delhi.

- Frankel Francine R., (2004), India's Political Economy, Delhi. OUP Jenkins Rob, 2000, Economic Reform in India, Cambridge, CUP
- Jalan, B. (1996), India's Economic Policy- Preparing for the Twenty First Century, Viking, New Delhi.
- Joshi Vijaya and L.M.D. Little, (1998), India's Economic Reform 1991-2001, Delhi, OUP.
- Kapila Uma: Indian Economy: Policies and Performances, Academic Foundation
- Mishra S.K & V.K Puri (2001) "Indian Economy and –Its development experience", Himalaya Publishing House.
- Mukharji Rahul (ed.) (2007), India's Economic Transition: The Politics of Reforms, edited by Rahul Mukherji, Oxford University Press , New Delhi.
- Stuart and John Harris, (2000), Reinventing India, Cambridge Polity

Course Code: GE2-EL2

Subject: ELECTRONICS -GE2

Title : Digital Systems and its application in daily life

Total No. of Teaching Hours: 42

No. of Hours per Week : 3

Internal Marks: 40

Exam Marks : 60

Credits: 3

Pedagogy: Classrooms lecture, Problem Solving , Case studies, Seminar.

Course Description:

This course develops engineering capabilities pertaining to the design of digital electronic systems

Course Objectives:

In this course, students will be able to understand the working principle of CRO, Data processing circuits, Arithmetic Circuits, sequential circuits like registers, counters etc. based on flip-flops. In addition, students will get an overview of landline and telephony and also the electronic gadgets used in our daily life.

Course Outcomes (Cos):

At the end of the course the student should be able to:

Synthesis of Boolean functions, simplification and construction of digital circuits by employing Boolean algebra.

Sequential systems by choosing Flip-Flop as a building block- construct multivibrators, counters to provide a basic idea about memory including RAM, ROM and also about memory organization.

Understand the importance of the digital system in daily life.

Understand the mobile communication

Study the working principle of different gadgets used in our daily life.

Course Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (Pos)

Unit-I:

11 Hours

Combinational Logic Circuits:

Arithmetic logic circuits-Half adder, Full adder, 4-bit parallel binary adder, Half and full subtractor.

Two-bit comparator, Four-bit comparator, Decimal to BCD priority encoder, BCD to decimal decoder. BCD to seven segment decoders.

4:1 Multiplexers and its application.

1:4 Demultiplexer and its application.

Unit-II:**11 Hours****Sequential Logic Circuits:**

Flip-flops-Basic SR latch, Edge triggering and level triggering, Edge triggered S-R flip flop (NAND), D Flip Flop, T Flip Flop, and Edge triggered JK Flip Flop, Pulse Triggered M/S JK Flip Flop, Clear and Present inputs(All the flipflops qualitative study only).

Registers -4 bit serial in serial out, serial in parallel out, parallel in serial out, parallel in parallel out(Only Block Diagrams), Applications.

Counters-Asynchronous counters- Logic diagram, Truth table and timing diagrams of 3-bit asynchronous binary counter, 4-bit binary counter.

Synchronous counters- 3-bit synchronous binary counter and Decade counters, Up/down synchronous counters, Ring Counter, Applications.

D to A conversion – Characteristics and its applications

A to D conversion – Characteristics and its applications.

Unit-III:**10 Hours**

Landline and Mobile Telephony: Mobile Phones, Smart Phone, Smart Watch, GPRS and Bluetooth, GPS Navigation system.

Office Equipment: Scanners, Barcode / flat bed, printers, Xerox, Multifunction UNITs (Print, Scan, and copy)

Unit-IV:**10 Hours**

Electronic gadgets and Domestic Appliances: Digital Clock, Digital Camera, Handicam, Home security system, CCTV, Air conditioners, Refrigerators, washing machine / Dish washer, Microwave oven, Vacuum cleaners. Market survey of products (at least one from each module). Identification of block and tracing the system, Assembly and Disassembly of system using toolkit.

Text Books:

1. Thomas L.Floyd ,”Digital Fundamentals”, Peason Education Inc, New Delhi, 2003
2. Consumer Electronics, R.P.Bali, Pearson Education, 2008

Reference:

1. Morris Mano, “Digital Design”, 5 Th Edition, Prentice Hall, 2013
2. R.P.Jain, “Modern Digital Electronics”, 3rd Edition, Tata Mc Graw Hill, 2003.
3. Bignell and Donovan, “Digital Electronics”, 5th Edition, Thomson Publication, 2007.
4. (Synthesis), Benjamin Gross., Illustrated edition, University of Chicago Press; 2018
5. OLED Display – Fundamentals and Applications., Takatoshi Tsujimura., Willey, 2012

Course Code : GE2-EN2

Subject: English

Title : SPOKEN ENGLISH FOR CORPORATE JOBS

Total No. of Teaching Hours: 42

No. of Hours per Week : 3

Internal Marks: 40

Exam Marks : 60

Credits: 3

Pedagogy: Classrooms lecture, Problem Solving , Case studies, Group discussion, Seminar & field work etc.,

Course Description: The course is designed for one semester and is offered by The Department of English as an Open Elective for Semester II. The syllabus is designed to equip the learners with skills required for front desk management. The syllabus focuses on English for specific purposes, specifically the language required for the corporate world.

Course Objectives:

To equip the learner with necessary skills required for front desk management
To introduce the learner to Business English

Course Outcomes (Cos):

1. This paper teaches students the skills in front desk management.
2. It introduces them to business English.

Section I: English for Front Desk Management

1. Greeting, Welcoming
2. Dealing with Complaints, Giving Instructions or Directions
3. Giving Information: About various Facilities, Distance, Area, Local Specialties,
4. Consultation and Solution of Problems
5. Accepting Praises and Criticism, Apologizing

Section II: Fluency and Etiquette

1. Polite sentences and Words
2. Use of Persuading words
3. Intonation and Voice Modulation
4. Developing Vocabulary

Section III: Business Speeches

1. Principles of Effective Speech and Presentations
2. Speeches: Introduction, Vote of Thanks, Occasional Speech, Theme Speech
3. Use of Audio Visual Aids in Presentations

Section IV: Cross-Cultural Communication

1. Dealing with Language Differences
2. Probing Questions to get information
3. 3. Etiquette in Cross-cultural Communication

Suggested Reading

1. *More effective communication* – J V Vilanilam, Sage Publication Pvt Ltd.
2. *Effective Documentation & Presentation* – Rai & Raj Himalaya Publishing house – Mumbai
2. *Commercial Correspondence & Office Management* – R S N Pillai & Bhagawati, S Chand & Co.
3. *Communication Today* – Ray Rubeen, Himalaya Publishing House – Mumbai.
4. *Business Communication* – Lesikar & Pettit – AITBS – Publishers Delhi
5. *Business Communication Today* – Sushil Bahl – Response Books, Sage Publication, N. Delhi.
6. *The Essence of Effective Communication* – Ludlow & Panton PHI, N. Delhi.
7. *Business Communication*- Pradhan Bhende & thankur Himalaya Publishing House – Mumbai.
8. *Mastering Communication Skills and Soft Skills* – N Krishnaswamy, Lalitha Krishnaswamy and others – Bloomsbury, New Delhi, 2015
9. 10. *Developing Communication Skills* – Krishna Mohan and Banarji.

Course Code: GE2-JR2

Subject: Journalism

Title : PHOTO JOURNALISM

Total No. of Teaching Hours: 45

No. of Hours per Week : 3

Internal Marks : 40

Exam Marks : 60

Credits: 3

Pedagogy: Classrooms lecture, Problem Solving , Case studies, Group discussion, Seminar & fieldwork etc.,

The goal of Journalism and Mass Communication pedagogy is to stir student's critical consciousness and empower them with the knowledge, multimedia tools that help them in employability.

Course Objectives/ Course Description:

To attract students towards photo journalism

To give a practical knowledge in the field of photography

To familiarize the students to techniques of photography and photojournalism

Course Outcomes (Cos):

At the end of the course, the students should be able

To identify the different forms of camera and different forms of photography

To understand talent trends in photography

To develop the skills in photo editing using editing software

To develop skills in writing captions for photos

Unit-I:

12Hours

Concept of Photography- Evolution of Photography: Different types of cameras- Manual. Digital and phone cameras; Types of Photography--light and light equipment; Latest trends in photography

Unit-II:

10 Hours

Concept of Photojournalism-Nature and Scope of Photojournalism; Qualifications, role and responsibilities of Photojournalists; Sources of news for Photojournalists.

Unit-III:

13 Hours

Techniques of photo editing--Caption writing: Photo editing software: Leading press Photographers and Photojournalists in India.

Unit-IV:**10 Hours**

Mobile Journalism: Using smart phones for taking effective pictures and shooting videos: Editing photos and videos taken on smart phones: Uploading news photos/ videos on digital platforms

Reference:

- Ang, T. (2013). Digital Photography Masterclass. Dorling Kindersley Ltd, Feinberg, M. (1970). Techniques of Photojournalism: Available Light and the 35mm. Camera (Vol. 15). Wiley.
- Talking through Pictures A Beginner's Guide to Photojournalism Jürg Wittwer, Jessica Holom
- Digital Photojournalism 1st Edition by Susan Zavoina (Author), John Davidson (Author)
- Associated Press Guide to Photojournalism McGraw-Hill Education – Europe
- Journalism of Ideas: Brainstorming, Developing, and Selling Stories in the Digital Age By Daniel Reimold Routledge
- Understanding Photojournalism by Jennifer Good Paul Lowe

Course code: GE2-KN2

Subject: Kannada

Title : ಕನ್ನಡ ಸೃಹಿತಾ, ಸಂಸೃತಿ

Total No. of Teaching Hours: 45

No. of Hours per Week : 3

Internal Marks : 40

Exam Marks : 60

Credits: 3

Unit-I:

12Hours

ಭಾಗ-1

ಕನ್ನಡ ಸಾಹಿತ್ಯದ ಪ್ರಾಥಮಿಕ ಪರಿಚಯ

- ಪ್ರಾಚೀನ ಕನ್ನಡದ ಕವಿಗಳು ಮತ್ತು ಕೃತಿಗಳ ಸಂಕ್ಷಿಪ್ತ ಪರಿಚಯ
- ಶ್ರೀವಿಜಯ, ಪಂಪ, ರನ್ನ, ನಾಗಚಂದ್ರ, ಜನ್ನ
- ದೇಶಿ ಸಾಹಿತ್ಯದ ಪ್ರಮುಖ ಕವಿಗಳು ಮತ್ತು ಕೃತಿಗಳ ಸಂಕ್ಷಿಪ್ತ ಪರಿಚಯ
- ಬಸವಣ್ಣ, ಅಲ್ಲಮಪ್ರಭು, ಅಕ್ಕಮಹಾದೇವಿ, ಜರಿಜರ, ರಾಘವಾಂಕ, ಪುರಂದರದಾಸ,
- ಕನಕದಾಸ, ಕುಮಾರವ್ಯಾಸ, ರತ್ನಾಕರವರ್ಣಿ, ಸಂಜೆಹೊನ್ನಯ್ಯ, ಸರ್ವಜ್ಞ

ಭಾಗ-2

ಆಧುನಿಕ ಸಾಹಿತ್ಯದ ಪ್ರಮುಖ ಲೇಖಕ/ಲೇಖಿನಿಯರ ಪರಿಚಯ

ಕುವೆಂಪು, ಬೇಂದ್ರೆ, ತಿವರಾಮ ಕಾರಂತ, ಗೋಪಾಲಕೃಷ್ಣ ಅಡಿಗ, ಯು.ಆರ್. ಅನಂತಮೂರ್ತಿ, ನಿರಂಜನ, ಪಿ. ಲಂಕೇಶ, ತೇಜಸ್ವಿ, ದೇವನೂರು ಮಹಾದೇವ, ಚಂದ್ರಕೇಶಿರ ಕಂಬಾರ, ಸಿದ್ದಲಿಂಗಯ್ಯ, ಬರಗೂರು ರಾಮಚಂದ್ರಪ್ಪ, ತ್ರಿವೇಣಿ ವೈದೇಹಿ, ಅನುಪಮಾ ನಿರಂಜನ, ಸಾರಾ ಅಬೂಬಕರ್

- 1) ಕನ್ನಡ ನಾಡಿನ ಪ್ರಮುಖ ಸಾಂಸ್ಕೃತಿಕ ಕೇಂದ್ರಗಳ ಸಂಕ್ಷಿಪ್ತ ಪರಿಚಯ
(ಬಳ್ಳಾರಿ, ಪಟ್ಟದಕಟ್ಟಿ, ಹಂಪಿ, ಬೇಲೂರು, ಸೋಮನಾಥ ಪುರ)
- 2) ಕರ್ನಾಟಕ ಜಾನಪದ ಸಂಸ್ಕೃತಿಯ ಸಂಕ್ಷಿಪ್ತ ಪರಿಚಯ

ಭಾಗ-4

ಅಧ್ಯಯನಕ್ಕೆ ಪಠ್ಯಗಳು

1. ಮಾವಾರ ಚಿನ್ನಯ್ಯನ ರಗಳೆ : ಜರಿಜರ
2. ವೆಂಕಟರಾಯಿಯ ಪ್ರಣಯ : ಮಾಸ್ತಿ (ಕತೆ)
3. ಕೋಗಿಲೆ ಮತ್ತು ಸೋಯಿಲೆ ರಘು : ಕುವೆಂಪು (ಕವನ)
4. ಕುದುರೆ ಕಾಂಚಾಣ : ದ.ರಾ.ಬೇಂದ್ರೆ (ಕವನ)
5. ಅಮಾಸ : ದೇವನೂರು ಮಹಾದೇವ (ಕತೆ)

Reference:

ಮಾಹುರ್ತವ ಗ್ರಂಥಗಳು:

1. ಕನ್ನಡ ಶಾಸನಗಳ ಸಾಂಸ್ಕೃತಿಕ ಅಧ್ಯಯನ : ಡಾ.ಎಂ.ಚಿದಾನಂದಯ್ಯಾರ್
2. ಕರ್ನಾಟಕ ಸಂಸ್ಕೃತಿ : ಶಂಭು ಚೂರಣಿ
3. ಕರ್ನಾಟಕ ಸಂಸ್ಕೃತಿ ಸಮೀಕ್ಷೆ : ಡಾ.ಎಚ್.ತಿಪ್ಪೇಂದ್ರಪ್ಪಾಚಾರ್ಯ
4. ಕರ್ನಾಟಕ ಜನಜೀವನ : ಬೆಂಗಳೂರು ಕೃಷ್ಣಶರ್ಮ
5. ಕರ್ನಾಟಕದ ಸಂಕ್ಷಿಪ್ತ ಇತಿಹಾಸ : ಸುಯ್ಯನಾಥ ಕಾಮತ್
6. ಕನ್ನಡ ನಾಡಿನ ಚರಿತ್ರೆ ಭಾ-1, 2 : ಡಾ.ಎಸ್.ಸಿ.ನಂದೀಮಠ
7. ಕನ್ನಡ ನಾಡಿನ ಚರಿತ್ರೆ ಭಾ-3 : ಎಂ.ಎಚ್.ಕೃಷ್ಣ
8. ಕರ್ನಾಟಕದ ವಾಸ್ತುಶಿಲ್ಪ ಮತ್ತು ಚಿತ್ರಕಲೆ : ರಾಜಶೇಖರ ಸಿಂಧಗಿ
9. ಸಾಮಾನ್ಯರಿಗೆ ಸಾಹಿತ್ಯ ಚರಿತ್ರೆ ಮಾಲೆಯು II ಸಂಪುಟಗಳು, ಪ್ರಸಾರಾಂಗ, ಬೆಂಗಳೂರು ವಿಶ್ವವಿದ್ಯಾಲಯ, ಬೆಂಗಳೂರು

Course Code : GE2-MT2

Subject: MATHEMATICS

Title : Commercial Mathematics

Total No. of Teaching Hours: 42

No. of Hours per Week : 3

Internal Marks : 40

Exam Marks : 60

Credits: 3

Pedagogy: Classrooms lecture, Problem Solving , Case studies, Group discussion, Seminar & field work etc.,

Course Objectives: To increase your Math knowledge and skill as it applies to many aspects of business and to help make you a more valuable player in the business arena. To provide students with reinforcement of mathematical computations.

Course Outcomes (Cos): This course will enable the students to

1. Learn concepts of set ,types of sets and Venn diagrams.
2. Learn concepts of Relations and functions
3. Learn concept of permutation and combination with application problems.
4. Learn concept of probability, definitions of events , occurrences of events.
5. Learn some rules of probability and application problems
6. Learn to calculate percentage and ratios in application problems.
7. Learn frequency distribution , mean, median and mode.
8. Learn GM, HM, AM concepts

Unit-I: Permutation and Combinations

10 Hours

Fundamental Principle of Counting, Factorial, Permutations: Definition, Examples, Types of Permutation-Problems, Circular Permutation-Problems. Combinations: Definition, examples, Proving $n_{C_r} = n_{P_r}/r!$, $n_{C_r} = n_{C_{n-r}}$, $n_{C_r} + n_{C_{r-1}} = n + 1_{C_r}$, Problems.

Unit-II: Set Theory and Probability

10 Hours

Set Theory: Sets, subset, empty set, power set, operations on sets, Venn diagrams, relations, types of relations, domain and range of a relations, functions, types of functions, binary operations.

Probability : Random experiments, Introduction to probability, sample spaces (Set representation), events; the probability of an event, some rules of probability .Occurrences of events. 'not', 'AND','OR' events, exhaustive events, mutually exclusive events. Axiomatic (set theoretic) probability ;probability of 'and', 'or', 'not', events and conditional probability Bayes theorem, problems and applications.

Unit-III: Statistical Methods:

22 Hours

Frequency distribution: Raw data, attributes and variables, Classification of data, frequency distribution, cumulative frequency distribution, Histogram. Requisites of ideal measures of central tendency, Arithmetic Mean, Median and Mode for ungrouped and grouped data. Combined mean, Merits and demerits of measures of central tendency, Geometric mean: definition, merits and demerits, Harmonic mean: definition, merits and demerits, Choice of A.M., G.M. and H.M. Concept of dispersion, Measures of dispersion: Range, Variance, Standard deviation (SD) for grouped and ungrouped data, combined SD, Measures of relative dispersion: Coefficient of range, coefficient of variation. Examples and problems.

Reference:

Business mathematics and Statistics, N.G. Das and Dr. J.K. Das Mc Graw Hill New Delhi

Statistical Methods, Gupta S.P. Sultan Chand and sons, New Delhi

Statistical methods: An introductory text, New age.

Fundamentals of Statistics, Goon A.M., Gupta M.K and Dasgupta, B. World Press Calcutta.

Course Code :GE2-PH2

Subject: Physics

Title : Energy sources

Total No. of Teaching Hours: 39

No. of Hours per Week : 3

Internal Marks: 40

Exam Marks : 60

Credits: 3

Course Description:

This course, provides an introduction to the basic concepts of Energy explosions Gravity and Nuclei and Radioactivity Introduces students to understanding concepts of Energy explosions Gravity and Nuclei and Radioactivity using mathematical tools.

Course Objectives:

To understand the different physical processes of nature in terms of Energy explosions Gravity and Nuclei and Radioactivity

Course Outcomes (Cos):

The student should be able to apply

Unit-I:

13 Hours

Non-Renewable energy sources Energy concept-sources in general, its significance &necessity. Classification of energy sources Primary and Secondary energy, Commercial and Non-commercial energy, Renewable and Non-renewable energy, Conventional and Non-conventional energy, Based on Origin-Examples and limitations. Importance of Non-commercial energy resources.

Unit-II:

13 Hours

Renewable energy sources

Need of renewable energy, non-conventional energy sources. An overview of developments in Offshore Wind Energy, Tidal Energy, Wave energy systems, Ocean Thermal Energy Conversion, solar energy, biomass, biochemical conversion, biogas generation, geothermal energy tidal energy, Hydroelectricity.

Solar energy:

Solar Energy-Key features, its importance, Merits & demerits of solar energy, Applications of solar energy. Solar water heater, flat plate collector, solar distillation, solar cooker, solar green houses, solar cell -brief discussion of each. Need and characteristics of photovoltaic (PV) systems, PV models and Equivalent circuits, and sun tracking systems.

13 Hours

Unit-III:

Wind and Tidal Energy harvesting

Fundamentals of Wind energy, Wind Turbines and different electrical machines in wind turbines, Power electronic interfaces, and grid inter connection topologies.

Ocean Energy Potential against Wind and Solar, Wave Characteristics and Statistics, Wave Energy Devices. Tide characteristics and Statistics, Tide Energy Technologies, Ocean Thermal Energy.

Geo thermal and hydroenergy

Geothermal Resources, Geothermal Technologies.

Hydro power resources, hydro power technologies, environmental impact of Hydro power sources.

Carbon captured technologies, cell, batteries, power consumption.

Reference:

1. Non-conventional energysources-G.DRai-KhannaPublishers,NewDelhi
2. Solarenergy-MPAgarwal- S Chand and Co.Ltd.
3. Solarenergy-SuhasPSukhativeTataMcGraw-HillPublishingCompanyLtd.
4. GodfreyBoyle,“RenewableEnergy,Powerforasustainablefuture”,
5. 2004,OxfordUniversityPress,inassociationwithTheOpenUniversity.
6. Dr. PJayakumar,Solar Energy:ResourceAssessment Handbook,
7. 2009
8. J.Balfour,M.ShawandS.Jarosek,Photovoltaics,LawrenceJGoodrich(USA).
9. http://en.wikipedia.org/wiki/Renewable_energy

Course Code : GE2-SO2

Subject: SOCIOLOGY

Title : SOCIETY THROUGH GENDER LENS

Total No. of Teaching Hours: 39

No. of Hours per Week : 3

Internal Marks : 40

Exam Marks : 60

Credits: 3

Pedagogy: Classrooms lecture, Problem Solving , Case studies, Group discussion, Seminar & field work etc.,

Course Description:

Focuses to understand Society through gender perspective.

Conceptualizing to understand the social gender discrimination in the social structure

Course Objectives:

1. Importance of studying Gender roles and socialization process.
2. Focuses on Gender Equality, Gender Neutrality and Gender Sensitivity.
3. Understanding the role of Mass media in constructing self, identity and Gender.
4. To Know the participation of women representation in politics

Course Outcomes (Cos):

1. Understand the role of socialization as a constructor of gender roles and status.
2. Appreciate the role of defining one's self identity in terms of gender.
3. Identify the gender bias and discrimination present in everyday social structure.
4. Take informed decisions about addressing gender justice issues.

Unit-I: Social Construction of Gender

14 Hours

Chapter 1: Gender and Sex, Patriarchy, Gender Relations, Gender Discrimination, Gender Division of Labour.

Chapter 2: Gender Equality, Gender Neutrality, Androgyny and Gender Sensitivity.

Chapter 3: Gender Representation of Women and Third Gender in Indian Social Institutions

Unit-II: Gender Representation and Violence

14 Hours

Chapter 4: Mass Media and Politics Chapter 5: Education, Employment and Health.

Chapter 5: Domestic Violence, Sexual Harassment at Work Place, Dowry and Rape, Dishonour Killing, Cyber Crime

Unit-III: Addressing Gender Justice

11Hours

Chapter 6: The Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW)

Chapter 8: 73rd and 74th Constitutional Amendment and Women's Empowerment **Chapter**

9: Right to self determination of gender - Supreme Court of India's Judgment in NLSA Vs Union of India and others (Writ Petition (Civil) No 400 of 2012)

Text Books:

1. Giddens, Anthony and Philip W Sutton, 2013, Sociology, 7th edition, Wiley India Pvt. Ltd. New Delhi.
2. Gouda, M Sateesh, Khan, A G and Hiremath, S L 2019, Spouse Abusal in India: A Regional Scenario, GRIN Publishing, Munich.
3. Harlambos, M and R M Heald, 1980, Sociology: Themes and Perspectives, Oxford University Press, Delhi .
4. Indira R 2011, Themes in Sociology of Indian Education, Sage Publications, Delhi.
5. Inkeles, Alex 1987, What is Sociology? Prentice-Hall of India, New Delhi.
6. Johnson, H M 1995, Sociology: A Systematic Introduction, Allied Publishers, New Delhi. 7. Ritzer, George and W W Murphy, 2020, Introduction to Sociology, 5th edition, Sage Publications, New Delhi

Reference:

Unit 1: Social Construction of Gender

- <https://web.stanford.edu/~eckert/PDF/Chap1.pdf> An Introduction to Gender
- <https://www.unicef.org/rosa/media/1761/file/Gender%20glossary%20of%20terms%20and%20concepts%20.pdf> Gender Equality: Glossary of Terms and Concepts
- <https://www.coe.int/en/web/gender-matters/sex-and-gender>
- <https://opentextbc.ca/introductiontosociology/chapter/chapter12-gendersex-and-sexuality/>

Unit 2: Gender Representation and Violence

- <https://hbr.org/2019/06/tackling-the-underrepresentation-of-women-in-media>
- <https://gsdrc.org/topic-guides/gender/gender-and-media/>
- <https://www.unwomen.org/en/digital-library/multimedia/2020/2/infographicvisualizing-the-data-womens-representation>
- <https://www.unwomen.org/en/what-we-do/leadership-and-politicalparticipation/facts-and-figures>
- <https://www.cambridge.org/core/journals/government-andopposition/information/gender-and-political-representation>
- <https://www.oxfordhandbooks.com/view/10.1093/oxfordhdb/9780199751457.001.0001/oxfordhdb-9780199751457-e-34>

Unit 3: Addressing Gender Justice

- https://en.wikipedia.org/wiki/National_Legal_Services_Authority_v._Union_of_India
- dia
- <https://web.archive.org/web/20140527105348/http://supremecourtindia.nic.in/outtoday/wc40012.pdf>
- <https://www.equalrightstrust.org/news/indian-supreme-court-recognises-right-self-identify-third-gender>
- <https://core.ac.uk/download/pdf/236436832.pdf> Third Gender Rights: Right to Equality
- <https://legislative.gov.in/sites/default/files/A2013-14.pdf> THE SEXUAL HARASSMENT OF WOMEN AT WORKPLACE (PREVENTION, PROHIBITION AND REDRESSAL) ACT, 2013
- <https://www.mondaq.com/india/employee-rights-labourrelations/876830/sexual-harassment-of-women-at-workplace-a-brief-analysis-of-the-posh-act-2013>
- <https://vikaspedia.in/social-welfare/women-and-child-development/womendevelopment-1/meera-didi-se-poocho/sexual-harassment-at-work-place>
- https://www.education.gov.in/sites/upload_files/mhrd/files/upload_document/74amend.pdf

Course Code: GE2-Z02

Subject: Zoology

Title : Parasitology

Total No. of Teaching Hours: 56

No. of Hours per Week : 3

Internal Marks: 40

Exam Marks : 60

Credits: 3

Pedagogy: Classrooms lecture, Problem Solving , Case studies, Group discussion, Seminar & field work etc.,

Course Description:

The NEP-2020 offers an opportunity to effect paradigm shift from a teacher-centric to student-centric higher education system in India. It caters skill based education where the graduate attributes are first kept in mind to reverse-design the programs courses and supplementary activities to attain the graduate attributes and learning attributes. The learning outcomes-based curriculum framework for a degree in B.Sc. (Honors) Zoology is intended to provide a comprehensive foundation to the subject and to help students develop the ability to successfully continue with further studies and research in the subject while they are equipped with required skills at various stages. Effort has been made to integrate use of recent technology and use of MOOCs to assist teaching-learning process among students. The framework is designed to equip students with valuable cognitive abilities and skills so that they are successful in meeting diverse needs of professional careers in a developing and knowledge-based society. The curriculum framework takes into account the need to maintain globally competitive standards of achievement in terms of the knowledge and skills in Zoology and allied courses, as well develop scientific orientation, spirit of enquiry problem solving skills and human and professional values which foster rational and critical thinking in the students. This course serves as plethora of opportunities in different fields right from classical to applied Zoology.

Course Objectives:

The Programme offers both classical as well as modern concepts of Zoology in higher education.

It enables the students to study animal diversity in both local and global environments.

To make the study of animals more interesting and relevant to human studies more emphasis is given to branches like behavioral biology, evolutionary biology and economic Zoology.

More of upcoming areas in cell biology, genetics, molecular biology, biochemistry, genetic engineering and bioinformatics have also been included.

Equal importance is given to practical learning and presentation skills of students.

The lab courses provide the students necessary skills required for their employability.

Skill enhancement courses in classical and applied branches of Zoology enhance enterprising skills of students.

The global practices in terms of academic standards and evaluation strategies. Provides opportunity for the mobility of the student both within and across the world. The uniform grading system will benefit the students to move across institutions within India to begin with and across countries. It will also enable potential employers in assessing the performance of the candidates across the world.

Course Outcomes (Cos):

At the end of the course the students will be able to:

Know the stages of the life cycles of the parasites and infective stages.

Develop ecological model to know population dynamics of parasite, establishment of parasite population in host body, adaptive radiations and methods adopted by parasite to combat with the host immune system.

Develop skills and realize significance of diagnosis of parasitic infection and treatment.

Understand about diseases caused by Protozoa, Helminthes, Nematodes and Arthropods at molecular level.

Develop their future career in medical sciences and related administrative services.

Unit-I:

14 Hours

Chapter 1. General Concepts

Introduction, Parasites, parasitoids, host, zoonosis

Origin and evolution of parasites

Basic concept of Parasitism, Symbiosis, Phoresy, commensalisms and mutualism

Host-parasite interactions and adaptations

Life cycle of human parasites

Occurrence, mode of infection and prophylaxis

Chapter 2. Parasitic Platyhelminthes

Study of morphology, life cycle, pathogenicity, prophylaxis and control measures of

Fasciolopsis buski

Schistosoma haematobium

Taenia solium

Hymenolepis nana

Chapter 3. Parasitic Protists

Study of morphology, life cycle, pathogenicity, prophylaxis and control measures of

Entamoeba histolytica

Giardia intestinalis

Trypanosoma gambiense

Plasmodium vivax

Unit-II:**14 Hours****Chapter 4. Parasitic Nematodes**

Study of morphology, life cycle, pathogenicity, prophylaxis and control measures of

Ascaris lumbricoides

Ancylostoma duodenale

Wuchereria bancrofti

Trichinella spiralis

Nematode plant interaction; Gall formation

Chapter 5. Parasitic Arthropods

Biology, importance and control of

Ticks (Soft tick *Ornithodoros*, Hard tick *Ixodes*)

Mites (*Sarcoptes*)

Lice (*Pediculus*)

Flea (*Xenopsylla*)

Bug (*Cimex*)

Parasitoid (Wasps)

Chapter 6. Parasitic Vertebrates

Cookicutter Shark

Hood Mocking bird and

Vampire bat and their parasitic behavior and effect on host

Unit-III:**14 Hours****Chapter 7. Molecular diagnosis & clinical parasitology**

General concept of molecular diagnosis for parasitic infection

Advantages and disadvantages of molecular diagnosis

Fundamental techniques used in molecular diagnosis of endo parasites

Immunoassay or serological techniques for laboratory diagnosis of endoparasites on the basis of marker molecules like *Giardia intestinalis*, *B. coli*, *E. histolytica*, *L. donovani*, Malarial parasite using ELISA, RIA

Counter Current Immuno electrophoresis (CCI)

Complement Fixation Test (CFT) PCR, DNA, RNAprobe

Reference:

- Arora, D. R and Arora, B. (2001) Medical Parasitology. II Edition. CBS Publications.
- E.R. Noble and G.A. Noble (1982) Parasitology: The biology of animal parasites. V Edition.
- Ahmed, N., Dawson, M., Smith, C. and Wood, Ed. (2007) Biology of Disease. Taylor and Francis Group.
- Parija, S. C. Textbook of medical parasitology, protozoology & helminthology (Text and colour Atlas), II Edition, All India Publishers & Distributors, Medical Books Publishers, Chennai, Delhi.

- Meyer, Olsen & Schmidt's Essentials of Parasitology, Murray, D. Dailey, W.C. Brown Publishers.
- K. D. Chatterjee (2009). Parasitology: Protozoology and Helminthology. XIII Edition, CBSnP.
- Gunn, A. and Pitt, S.J. (2012). Parasitology: An Integrated Approach. Wiley Blackwell.
- Noble, E. R. and G.A.Noble (1982) Parasitology: The biology of animal parasites. V th Edition, Lea &Febiger.
- Paniker, C.K.J., Ghosh, S. [Ed} (2013). Paniker's Text Book of Medical Parasitology. Jaypee, New Delhi.
- Parija, S.C. Text Book of Medical Parasitology, Protozoology & Helminthology (Text and color Atlas),II Edition, All India Publishers & Distributers, Medical Books Publishers, Chennai, Delhi.
- Roberts, L.S and Janovy, J. (2009). Smith & Robert 's Foundation of Parasitology.
- 8th. Ed.. McGraw Hill.
- Bogitsh, B. J. and Cheng, T. C. (2000). Human Parasitology. 2nd Ed. Academic Press, New York.
- Chandler, A. C. and Read. C. P. (1961). Introduction to Parasitology, 10th ed. John Wiley and Sons Inc.
- Cheng, T. C. (1986). General Parasitology. 2nd ed. Academic Press, Inc. Orlando. U.S.A.
- Schmidt, G. D. and Roberts, L. S. (2001). Foundation of Parasitology. 3rd ed. McGrawHill Publishers.
- Schmidt, G. D. (1989). Essentials of Parasitology. Wm. C. Brown Publishers.
- John Hyde (1996) Molecular Parasitology Open University Press.
- J Joseph Marr and Miklos Muller (1995) Biochemistry and Molecular Biology of Parasites 2 nd Edn AP.