

KONGUNADU ARTS AND SCIENCE COLLEGE
(Autonomous)
Coimbatore - 641 029



VALUE ADDED COURSES SYLLABUS

Academic Year 2014-2015

DEPARTMENT OF COMMERCE (PG)

JOC-2 TALLY 9.0 PRACTICAL

[13PCM0J2]

Credits: 2

Instruction Hours : 30

Objectives: To enable the students to use computer resources efficiently and make them to learn various commonly used software in the functional areas of an organization.

CREATING A COMPANY

1) Create a Company with all relevant details including VAT options

Creating Ledger

2. Create the ledgers under appropriate predefined groups

Cash a/c	Computer sales a/c
Buildings a/c	Machinery a/c
Furniture a/c	Commission received a/c
Printer purchase a/c	Commission paid a/c
Rent received a/c	Salary a/c
Rent paid a/c	Indian bank a/c
Wages a/c	Sales returns a/c
Capital a/c	Depreciation a/c
Purchase returns a/c	

John & Co. a/c (purchased goods from this company)

Ram agency a/c (sold goods to this company)

3. Create vouchers and view Profit and loss a/c and Balance sheet for the following:

Hindustan Ltd. started the business on 01-04-....

1. Contributed capital by cash Rs 2, 00,000
1. Cash deposited in Indian bank Rs 50,000
2. Credit purchases from Krishna traders Rs. 20000 invoice no 12
3. Credit purchases from PRAVIN traders Rs 20,000 invoice no 12
4. Credit purchase from KRISHNA traders Rs 20000 invoice no 14
5. Credit purchase from PRAVIN traders Rs 20,000 invoice no 44
6. Returned goods to KRISHNA traders Rs 5000 invoice no 12
7. Returned goods to PRAVIN traders Rs 5000 invoice no 44
8. Credit sales to RAVI & Co Rs 50,000 inv no 1
9. Credit sales to KUMAR & Co Rs 50,000 inv no 2
10. Cash sales Rs 20,000 inv no 3
11. Credit sales to RAVI & Co Rs 50,000 inv no 2
12. Credit sales to RAVI & Co Rs 50000 inv no 5
13. Goods returned by RAVI & Co Rs 5000 inv no 1
14. Goods returned by KUMAR & Co Rs 5000 inv no 1
15. Payment made by cheque to KRISHNA TRADERS Rs 30,000 ch no 505580
16. Payment made by cheque to PRAVIN TRADERS Rs 30,000 ch no 505592
17. Received cheque from: Ravi & Co and Kumar & Co 75,000 each.

Payments made by cash

3. Paid to petty cash by cash Rs.1000
4. Furniture purchased Rs.20000
5. Salaries paid Rs. 10000
6. Rent Rs.4000
7. Electricity charges Rs.3000
8. Telephone charges Rs.3500
9. Cash purchases Rs.5000

Payments made by petty cash

10. Conveyance Rs.150
11. Postage Rs.100
12. Stationeries Rs.200
13. Staff welfare Rs.100
14. Stationeries purchased from Sriram & Co 1500 on credit
15. Depreciation on furniture 10%

4. Emerald & Co., started a business of home appliances from 1-4_....

01-04 received cash for capital 5, 00,000

07-04 credit purchases from LG Limited invoice no 123

Ovan	100nos	at Rs 800
Mixies	100nos	at Rs 1000
DVD player	100nos	at Rs 1500
Fridge	100nos	at Rs 2000

10-04 Credit Sales to AMN invoice no 1:

Ovan	70nos	at Rs 1000
Mixies	70nos	at Rs 1500
DVD player	70nos	at Rs 2000
Fridge	70nos	at Rs 2500

+TNGST 4% ON TOTAL SALES

10-04 Cash Sales invoice no 2:

Ovan	10nos	at Rs 1000
Mixies	10nos	at Rs 1500
DVD player	10nos	at Rs 2000
Fridge	10nos	at Rs 2500

+TNGST 4% ON TOTAL SALES

CASH discount 5%

15-4 Paid cheque to LG limited Rs 2, 00,000

15-4 Received cheque from AMN&coRs 3, 00,000

Payment made by cash

Paid to petty cash Rs 2000, Furniture Rs 15000, Salaries Rs 10000

Wages Rs 7000, Carriage inward Rs 1500.

25-04 Payment made by petty cash

Conveyance Rs 200, Postage Rs 150, Stationeries Rs 150, Staff Welfare Rs 200

30-04 Journal depreciates 10% on furniture:

Prepare Trading Profit and Loss Account and Balance sheet.

5. From the Balances of Ms. Kavitha, Prepare Trading A/C, Profit And Loss A/C and

Balance Sheet for the Year Ending –

Stock 9,300	Misc. income 200
Repairs 310	Purchases 15,450
Machinery 12,670	Purchase returns 440
Furniture 1330	Sales return 120
Office expenses 750	Sundry creditors 12,370
Trading expenses 310	Advertisement 500
Land & Building 15,400	Cash in hand 160
Bank charges 50	Cash at bank 5,870
Capita 24,500	Sales 20,560
Loan 5,000	Sundry expenses 150
Closing stock 7,580	Insurance 500
Traveling expenses 200	

INVENTORY VALUATION

6. From the Information given below create unit of measurement, stock groups and stock items Find the stock summary:

Stock groups: 1. Magazine 2. Baby drinks 3. Cool drinks 4.dailynews paper 5. Hot drinks 6. Stationeries 7. Vegetables

Stock items:

Item	Qty	Rate	Units
Boost	25	80	nos
Sports star	20	15	nos
Potato	260	30	kgs
Star dust	20	25	nos
The Hindu	50	3.25	nos
Tomato	150	15	kgs
Fanta	10	25	lit
Dinamalar	40	2,50	nos
Coco	55	120	nos
Horlicks	60	70	nos
India today	10	10	nos
Lactogin	10	100	nos

MAINTAIN BILLWISE DETAILS

7. Create bill wise details from the following

1. Ravi commenced business with a capital of Rs 2, 00,000
2. Purchased goods from Kumar & Co Rs.15, 000 paid in three installments within 5 days gap
3. Purchased goods for cash Rs.8000

4. Sold goods to Ratna & co Rs. 20,000 amount to be paid in two instalments
5. Sold goods for cash for Rs .5000
6. Received cash from Ratna & co Rs. 75000
7. Paid to Kumar & co Rs. 7500
8. Sold goods for cash Rs.5000

CONSOLIDATION OF ACCOUNTS

8. Bharath Agencies, A Wholesaler Gives The Following Information:

Opening balances:

Capital: 20, 00,000 cash at bank: 10, 00,000

Cash in hand: 5, 00,000 furniture: 5, 00,000

Bharath agencies are dealing in stationeries. The selling prices are as follows;

Pen Rs 35 per dozen pencil Rs. 30 per dozen

Ink pens Rs 140 per dozen

The following transactions take on a particular date:

1. Purchased 100 dozens of pens from Ravana bros. @ Rs.25 per dozen for cash
2. Purchased 200 dozens of pencils from Gughan bros. @ Rs.21.50 per dozen for credit less discount of Rs 100
3. Sold 10 dozens of pens to Dharma bros. For cash
4. Sold 10 dozens of pens to Bema bros for credit
5. Sold 50 dozens of pencils to Arjuna bros.
6. Purchased from Ravana bros 50 dozens of ink pens @ Rs.120 and
by cheque.

Prepare following statements using Ex-accounting packages:

- Stores ledger, Trading account, Income statement, Balance sheet
- Account summary Ignore dates

FOREIGN GAINS/LOSS

9. Calculate

01.01.2005 Purchased goods from U.K supplier 1000 £

02.01.2005 Sold goods to U.S buyer 1500

03.01.2005 Cash received from U.S buyer 1500

(Selling rate rs.46/\$)

04.02.2005 Paid cash to U.K supplier 1000

(Selling rate Rs 53/ £)

Dollar \$: Pound £:

STD rate - 1\$ - 43 Rs Std rate - 1 £ - 51 Rs

Sales rate - 1\$ - 44 Rs Sales rate - 1 £ - 50 Rs

Buying rate - 1\$ - 42 Rs Buying rate - 1 £ - 52 Rs

10. MEMO VOUCHER

An advance amount paid Rs 1500 given to sales executive for traveling. The actual expenses for traveling expenses for the sales is Rs 500

11. CHEQUE PRINTING

Print a cheque:

Company name on cheque: Wipro India Ltd.: name of the bank Indusind bank. Width 168, height 76, starting location 116, distance from top 23.

12. RATIO ANALYSIS

Enter the following details comment upon the short-term solvency position of the company:

Working capital Rs 20560492

Cash 14500

Bank	18500
Debtors	518260
Creditors	429337
Sales	515252
Purchases	433310
Stock	125982

Net profit ...?

13. INTEREST CALCULATIONS

Cash deposited in Scotia bank Rs 1, 00,000

Sold goods to Ganesh Rs 25,000

31-12- cash deposited at Scotia bank Rs 50,000

Sold goods to Ganesh 50,000

Interest parameters rate 14% per 365 days year

14. Calculate Interest

Cash deposited in SBI 1, 00,000 Rs

1-12 purchased goods from suppliers Rs 20,000

Deposited in SBI Rs.50, 000

Purchased goods from suppliers Rs 40,000

Interest parameters rate 16% per 365 days year

15. Display the interest calculations for the period 1-4 to 31-12

Opening balance

Ram & Co Rs 25,000

Krishna traders Rs 20,000

Interest parameters rate 12% per 365 days year

Interest parameters rate 12% and 16% for sundry creditors per 365 days year

Purchased goods from Krishna for 25,000(credit period 45 days)

Sold goods to Ram for Rs. 50,000(credit period 30 days)

Paid to Krishna the amount plus interest

Received from Ram plus interest

16. Create stock items, stock groups, sales categories, godowns, units of measure.

Stock	Category	Group	Godown	Unit	Std Price	Selling Price	Op. Qty	Total
Inter Celeron	Processor	Celeron	Mumbai	Nos	15000	20000	2	30000
Intel Pentium III	Processor		Chennai	Nos	20000	25000	3	60000
Tally Silver	Accounting	Tally	Chennai	Nos	20000	22500	5	100000
Tally gold	Accounting	Tally	Chennai	Nos	42000	45000	5	210000

17. using the above exercise create various vouchers including VAT calculation for the following:

Date Transactions

09/4/2006 Intel Pentium III (3 Nos) @ 25,000 delivered to Vijay & CO, from Madras Godown.

10/4/2006 10 Nos of Intel Celeron @ 15000 per unit received from Jayaram and Co, and sent to Madras Go down.

12/4/2006 2Nos of Intel Premium III received from Vijay & CO, as it was not in a working Position.

13/4/2006 2Nos of Intel Celeron returned to Jayaram & Co from Madras Go down.

14/4/2006 Physical Stock verification shows Shortage of 1 No Intel Pentium III.

18. Create the following Inventory vouchers with data from any cost accounting book.

- a. Purchase order b. sales order
- c. Rejection out d. Rejection in
- e. Stock journal f. Delivery note
- g. Receipt note h. Physical stock

19. In addition to the above mentioned lab exercises work out a problem from any advanced accountancy book with a minimum of 20 transactions and generate the tally reports in full.

Credits:2

Objectives: To impart the conceptual and practical aspects of employee relations and legal framework

Unit I

Industrial Relations – Meaning - Importance – Nature of industrial relations- Significance of industrial relations- Conditions for good industrial relations- Causes for poor industrial relations- Effect of poor Industrial relations-Suggestions to improve Industrial relations.

Unit II

Industrial Disputes: Salient feature of Industrial Disputes Act- Forms of industrial disputes- Settlement of industrial disputes- Collective bargaining- Benefits of collective bargaining.

Unit III

Factories Act 1948 – Labour welfare- Types of labour welfare service - Safety, counseling, health- Duties of labour welfare officer- Machinery connected with labour welfare works.

Unit IV

Social security- Social security legislations-ESI Act 1948, The Employees' Provident Fund Act 1952-The workmen compensation Act 1923 - The Payment of Bonus Act 1965 - The Payment of Gratuity Act 1972

Unit V

Workers Participation in Management - Objectives – Works committee - Joint management council - Quality circles - Trade unions and industrial relations-Trade Unions Act 1926.

Text Books:

Personnel Management
Mercantile Law

-P.C. Tripathi, Sultan Chand & Sons
- Kapoor ND, Sultan Chand & Sons.

Reference Books

Personnel Management Text & Cases - C. B. Memoria, S.V.Gankar, Himalaya Publishing House

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VALUE ADDED COURSES SYLLABUS

Academic Year 2015-2016

Department of Botany

JOC: Floriculture and Landscaping

Objectives:

- To know the latest technologies developed in the field
- To develop skills in the area of floriculture and landscaping
- To get employment opportunities

Total Hours: 4

Credits: 2

UNIT I

Floriculture – Global floriculture – Floriculture in India – Economic flowers – Rose, Jasmine, Crossandra, Chrysanthemum – Cultivation and uses.

UNIT II

Cut flowers – Significance of cut flower industry in India – Export – Flower arrangement and decoration – dehydrated flowers, foliage and floral craft.

UNIT III

Green house cultivation of cut flowers –Green house technology – advantages – Green house cultivation of Orchids – Anthurium – Gerbera – Dahlia – Tuberosa.

UNIT IV

Landscape gardening – important principles in layout a garden – Arboriculture – Shrubs and climbers – annual, biennial herbaceous perennials – Ornamental palms – Succulents and Cacti.

UNIT V

Water garden, Rock garden, Roof garden, Lawn, Bonsai – Horticultural shows.

TEXT BOOKS

1. Kumar, N. 1999. An introduction to horticulture. Rajalakshmi Publication, Nagarcoil.
2. T.K. Bose, R.G. Maity, R.S. Dhua and P.Das, 1999. Floriculture and Landscaping, Naya Prokash, Calcutta.
3. S.Prasad and U.Prasad. 2013.A handbook of Floriculture.

REFERENCES

1. Roy Edwin Biles, 2003. The complete Book of Gardening. Biotech Books, Delhi – 35.
2. Bhattacharjee, S.K. 2006. Advances in Ornamental Horticulture. Pointer Publication, Jaipur.
3. Doesh Beer Singh and Poonam Wazir,2002. Bonsai – An art. Scientific Publishers, Jodhpur.

JOC: Food Processing and Preservation

Objectives:

- To know the latest technologies developed in the field
- To develop skills in the area of Food processing and Preservation
- To get employment opportunities

Total Hours: 4

Credits: 2

UNIT I

Food groups – Basic groups basic Four, Five and Seven, food in relation to health. Preliminary preparation of food – cleaning, peeling, stinging, cutting and grafting, soaking marinating, sprouting, fermenting, grinding, drying and filtering. Their advantages and disadvantages.

UNIT II

Cereals and cereal products, structure composition and nutritive value of cereals – wheat and wheat products, rice and its products; fermented and unfermented products.

UNIT III

Pulses composition and nutritive value of pulses, toxic constituents, Trypsin inhibitor, haemagglutinins, cyanogenic glucoside, saponins and tannins. Nutritive value of nuts and oil seeds toxin such as aflatoxins and gossypol. Fruits and vegetables – Classification, composition and nutritive value.

UNIT IV

Milk and Milk products, nutritive value of milk, processing – clarification, pasteurization and homogenization. Milk products – fermented milk products – butter, cheese and curd. Preparation of cheese only. Non fermented products – skimmed milk, dry milk, ice cream. Flesh foods – meat, fish and poultry – composition and nutritive value.

UNIT V

Food preservation by high and low temperatures – outline. Preservation by high osmotic pressure – High concentration of sugar, jam and jelly preparation. High concentration of salts. Principles and preparation of pickles preservation by dehydration, principles and methods of drying such as freeze drying, sun drying, mechanical driers – spray drying and foam mat drying and by smoking.

REFERENCES

1. Food processing and preservation – G. Subblakshmi
2. Food Science by B. Srilakshmi
3. Food Microbiology by W.C. Frazier and D.C. Westhoff
4. Food Microbiology by M.R. Adams and M.O. Moss
5. Essentials of food and nutrition by M.S. Swaminathan

DEPARTMENT OF CHEMISTRY (PG)

15PCH0J1 JOC – Pharmaceutical chemistry

Credits: 2

Teaching hrs (out of class hours): 30

Objectives

- To give the students a thorough introduction to the study of drugs.
- To educate the students and to create an awareness about first aid.
- On successful completion of the syllabus, the students should have been aware of the causes, treatment and prevention of some common diseases, biological role of some elements, the structure, uses and adverse effects of analgesics, antiseptics and disinfectants.

UNIT –I THE NATURE AND SOURCES OF DRUGS (6 hrs)

Terminologies used in pharmaceutical chemistry-pharmacy, pharmacology, bacteria, virus, fungi, chemotherapy, pharmacopeia and toxicology, biological and chemical classification of drugs, metabolism of drugs-biotransformation-oxidative reaction-hydroxylation, oxidative dealkylation, oxidative deamination and hydrolytic (hydrolysis) reactions, conjugation reactions- glucuronide conjugation, aminoacid conjugation, sulphate conjugation, methylation and N-acetylation, routes of administration and the process of adsorption of drugs.

UNIT –II FIRST AID FOR ACCIDENTS (6 hrs)

Aims and rules of first aid, first aid treatment for cuts/abrasions/ bruises, bleeding, fracture, burns, fainting and poisonous bites, clinical symptoms of poisoning and basic therapeutic treatment, common poisons and their antidotes-acid, alkali, disinfectants, hallucinogens, alcohol, mercury and salicylate poisoning, articles to be kept in a standard first aid box.

UNIT –III COMMON DISEASES (6 hrs)

Some common diseases: Causes, treatment and prevention of malaria, filarasis, plague, diphtheria, whooping cough, influenza, measles, mumps, common cold, tuberculosis(T.B), cholera, typhoid, dysentery, jaundice, asthma, epilepsy, piles and leprosy.

Biological role of following elements and their compounds: potassium, calcium, iodine, copper and zinc.

UNIT – IV BLOOD AND DIABETES (6 hrs)

Composition of Blood: Plasma, RBC, WBC, platelets(thrombocytes)-their functions.

Blood pressure: Primary and secondary hypertension-hypotension-measurement of blood pressure.

Anaemia: Causes and control-sign, symptoms & types-antinaemic drugs.

Diabetes: Types-diabetes insipidus and diabetes mellitus-juvenile & adult, control of diabetes-insulin structure and sources, oral hypoglycemic drugs - tolbutamide, chlorpropamide, glibenclamide, bigunides (penformin and metformin)

Unit – V THERAPEUTIC AGENTS

(6 hrs)

Structure, uses and adverse effects of Analgesics agents: morphine, pethidine and methadone. Antipyretic-anti-inflammatory agents: aspirin, methyl salicylate, para acetamolphenacetin, analgin, indomethacin & ibuprofen. Antiseptic and disinfectants: distinction between disinfectants and antiseptics, standardization of disinfectants and antiseptics, source, structure and uses of the following compounds-cresols, thymol, chloroxylenol, chloramines-T, crystal violet, methylene blue, nitromersol, dequalinium chloride and formalin.

REFERENCE BOOKS

1. Jayashree Ghosh, A Text Book of Pharmaceutical Chemistry 3rd Edn 2008, S.Chand & Co Ltd.,
2. L.M.Atherden, Text Book of Pharmaceutical Chemistry, 8th Edn, 1995, Oxford University Press
3. C.R.Chatwal, Pharmaceutical Chemistry Vol. I & II, III Edn, 2007, Himalaya Publishing House

DEPARTMENT OF ZOOLOGY

PZO 52

15PZO2J1

JOC-ECO TOURISM

UNIT I BASIC CONCEPTS IN TOURISM

Definition of Tourism- Technologies Related to Tourism- Elements of Tourism- Growth of Tourism- Basic Patterns of Tourism- Special Patterns of Tourism- Sectors in the Tourism Industry.

UNIT II PROTECTIVE MEASURES

Environment (protection) Act- Air (prevention & control of pollution) Act- Water (prevention & control of pollution) Act- Wild Life (protection) Act- Forest (Conservation) Act.

UNIT III ROLE OF INFORMATION TECHNOLOGY

Advent of Information Technology in the tourism industry: impact of Information Technology in the tourism industry.

UNIT IV TRAVEL FORMALITIES

Passport and Visa Formalities- Health Documents- Health Preventive Measures for Travelers- Travel Insurance.

UNIT V MITIGATION MEASURES

Tsunami, Earthquake, Cyclone, Flood, Global Warming, Land slides, Soil erosion and Volcanoes Impact of Tourism on Environment.

PZO 53

Text books

1. A text book of Environmental Studies. P. Arul, Environment Agency, Chennai, 2004
2. Tourism Management and Marketing- A.K. Bhatia, Sterling publications, New Delhi, 1997.

Reference Books

1. Facts on Tourism- R. ShanthaKumari- 1st edit.- Imprint- Chennai Shantha Publishers (1996).
2. South India Tourist Guide-Vatsalalyengar and MalathiRahavan3rdEdit.Vasan book depot (1997).
3. Ecology and Environment- P.D. Sharma, Rastogi Publications, Meerut, India (1993).
4. Biodiversity – Principles and Conservation- Second Edition. U. Kumar & MahenderaJectAsija. Student Edition Chopasani Road, Jodhpur. (2005)

JOC- VERMITECHNOLOGY**UNIT I**

Introduction to Earthworm - origin and evolution - Distribution - different species of earthworm. General body structure - External characters - Body wall - Food and feeding habits digestive system - Gut microflora and their importance - Reproductive system cocoon formation.

UNIT II

Role of Earthworms in sustainable agriculture - organic farming - Earthworm activities - soil fertility and texture - soil aeration. Vermitechnology - Definition - History - in other countries - in India.

UNIT III

Advantages of vermiculture - Vermi - cast - Decomposition of bio-degradable Wastes and vermicomposting - vermiculture in pollution abatement - Miscellaneous usages of vermiculture. Vermiculture - General Planning - Selection of suitable species - Basic characteristics of suitable species - Description of suitable species - Maintenance of Base culture.

UNIT IV

Vermicomposting - Advantages of vermicomposting - small scale vermicomposting - large scale vermicomposting. Type of vermicomposting - requirements for vermicomposting - vermicomposting schemes - Maintenance of vermicomposting.

UNIT V

Recycling of different wastes by vermi composting - Organic wastes - Solid wastes - Municipal wastes - Animal Drug - Agricultural wastes. Application of Vermicompost - In horticulture - in agriculture - Quality management - storage - pricing - marketing. Vermitechnology - by products - economy.

PZO 55**Text books**

1. Vermiculture and Vermicomposting. Bhatnagar, R.K. and Palta, R.K., Kalyani publishers, New Delhi (1996).
2. A hand book of Organic Farming, Arun K. Sharma, Agrobios, Jodhpur, India (2002)
3. The Earthworm book, S.A. Ismail. Other India press, Goa - 403 507, India (2005)

Reference Books

1. Vermicompost- Crown Jewel of organic farming. R. D. Kale, Author publication, 4- Archana apartment, (S-1), 12 cross, Margosa Rd, Malleswaram, Bangalore-560 003, India (2006).
2. A Hand book of organic farming, ArunK.Sharma, Agrobios, Jothpur, India (2002).
3. The Earthworm book, S.A.Ismail. other India press. Goa 403 507, India (2005).
4. Earthworms in Agriculture, Talashilkar&Dosani. Published by Agrobios (India).Chopasani Road Jodhpur- 342003.
5. The complete technology book on " Vermiculture and Vermicompost" published by National Institute of Industrial Research, Delhi(2004).

DEPARTMENT OF COMMERCE (PG)

ALC-2 INSURANCE PRINCIPLES AND PRACTICE

[15PCM0D2]

Credits: 2

Objectives: To impart the students with the concepts and principles of insurance and to update them on the best practices of the industry.

Unit I

Insurance – Meaning – Law relating to Life and General Insurance – Risk-classification – Principles of risk insurance – Risk management – Re- Insurance- Privatization of Insurance in India- Globalization of Insurance

Unit II

Indian Insurance Industry- Regulations of Insurance business in India- Registration of Licensing of Insurance- IRDA (Insurance Regulatory Development Authority) –Taxation aspects of Insurance

Unit III

Introduction to life Insurance- Principles- Proposal-Assignment-nomination-Policy loan-Duplicate policies – Surrender value – Claim settlement.

Unit IV

Fire Insurance – Nature- Double Insurance- Fire Insurance Policy – Fire Insurance coverage- Claim of recovery: Automobile Insurance or Motor and Accident Insurance – Third party insurance – Motor insurance policies – Premium calculation – Claim settlement.

Unit V

Marine Insurance – Marine Insurance policy – Principles- Proximate- Voyage-warranties – Claim settlement- RBI Guidelines on Marine Insurance.

Text Book:

Insurance Principles and Practice - Mishra M N, S.Chand & Company Ltd.

Reference Books:

Insurance and Risk Management - Dr. Gupta P K, S.Chand & Company Ltd.,
Principles and Practice of Insurance - Saravanavel, Himalaya Publishing House,
Fundamentals of Business Law - Syed Badre Alam, Himalaya Publishing House.

ALC-3 ADVERTISING MANAGEMENT

Credits: 2

[15PCM0D3]

Objectives: To facilitate the students on planning and creating advertisements and the promotional aspects which help them to manage promotional programs.

Unit – I

Advertising – Meaning - Definition – Nature and Scope of Advertising – Types of Advertising - Benefits of Advertising - Role of Advertisement in Modern Business World– Ethics in Advertising - Advertisement and Publicity – Advertising as a Career - Career Opportunities in Companies – Career opportunities in Advertising Agency – Career Opportunities in Media.

Unit - II

Advertisement Media - Concept of Media - Types of Media – News paper and Magazines – Merits and Demerits - TV Vs Other Media - Merits and Demerits of TV advertising – Satellite TV Advertising - Direct to Home (DTH) Broadcast - Creativity in TV Advertising - Radio Advertising - Merits and Demerits – Radio Vs TV Advertising – FM Channel – Reach and Frequency –Forms for Advertisement in TV and Radio - Internet and Website Advertising – Direct Advertising

Unit - III

Outdoor and Transit Media – Outdoor Vs Other media – Bills Boards – Merits and Demerits – Posters – Neon Sign Boards – Ten Commandments of Outdoor advertising - Transit advertising - Hoardings – Technology and outdoor advertising - Computerized Imaging Technology

Unit - IV

Advertisement Message design and positioning – Message presentation - Appeals – Advertising Message structure – Negative advertising - Message format – Appeals and advertising message – Types of appeals - Advertisement Copy for different Media – Different types of Copy – Celebrity in Advertisements

Unit - V

Advertising Research - Media Research – Copy Research – Message Testing Evaluation of Advertising effectiveness - Methods of measuring advertising effectiveness - Retesting and post testing. Advertising Agencies - Their Role and importance in advertising - Organization patterns - Functions – Selection of Advertising Agency.

Text Book:

Foundations of Advertising Theory and Practice: S.A.Chunawalla K.C,Sethia, Himalaya pub.

Reference Books:

1. Advertising Management : B.S. Rathor, Himalaya Publishing
2. Advertising Theory & Practice : S.A. Chunawalla, Kumar, Sethia, Himalaya Publishing
3. Advertising Management : Rajeev Batra, John.G. Myers David A. Aakar, Prentice Hall of India

15PCTOD1 ALC. 1 PROGRAMMING IN C #

Credit Points: 2

UNIT I

Basic Elements of C #: .Net frame work – C # language – Features – Character set – Lexical elements - Escape sequence – Identifiers – Keywords – Concepts of data – Operators – Punctuators – Primitive data types – Preprocessing Directives.

UNIT II

C# Program Structure: Program Structure – Methods – Instance – new operator Member access – Invoking a method – Parameter Types - Constructor – Destructor – Default Constructor – this reference – Access Modifiers – Static members – Formatted method – Header of main method – Enumeration operators types – type conversion – Merging of String - is operator – Checked & unchecked operator.

UNIT III

Statements: Classification – Expression – Control Flow – Block – Declaration – Empty – Exception – Lock – Labeled – Checked & unchecked. Arrays: Regular & Jagged Arrays – Two & Three dimensional arrays – Local Arrays - Features of arrays – System Arrays – Passing array as a parameter – Application of arrays – Recursive methods – Structure – Nested Structures.

UNIT IV

Inheritance: Introduction – Types - .Net building blocks – Name Hiding – Virtual and override methods – Dynamic binding – Abstract method & class – Advantages. Interface and Operator overloading: Interface – Declaration of Interface – Polymorphism of Interface– Operator overloading – method overloading – Collection Interfaces – Variable method Interfaces list.

UNIT V

File Operations and Multithreading: Stream – File management – File operations Multitasking – Multi threading – Operation of threads - Secondary threads –Synchronization.

TEXT BOOK:

1. S.Thamarai Selvi, R.Murugesan, “A Text Book on C# A systematic approach to Object Oriented Programming”, Pearson Education, first Edition 2003. [UNIT I to V]

REFERENCE BOOK:

E.Balaguruswamy, “Programming in C#”, Tata McGraw Hill, 2002.

15PCT0D2 ALC. 2 J2EE

Credit Points: 2 UNIT-I

J2EE and J2SE - The Birth of J2EE - Databases - The Maturing of Java - Java Beans and Java Message Service - Why J2EE? J2EE Multi-Tier Architecture - J2EE Best Practices - J2EE Design Patterns and Frameworks.

UNIT-II

J2EE FOUNDATION - Java servlets - Java Server Pages

UNIT-III

Enterprise JavaBeans - JavaMail API - Java Interface Definition Language and CORBA.

UNIT-IV

Java Remote Method Invocation - Java Message Service – Security - Java Naming and Directory Interface API

UNIT-V

WEB SERVICES - SOAP - Universal Description, Discovery, and Integration (UDDI) - Electronic Business XML - The Java API for XML Registries (JAXR) - Web Services Description Language (WSDL)

TEXT BOOK:

1. James Keogh, “J2EE - The complete Reference”, Mc-Graw Hill, 2002.

REFERENCE BOOK:

1. Stephanie Bodoff, Eric Armstrong, Jennifer Ball, Debbie Bode Carson, Ian Evans, Dale Green Kim, Haase Eric Jendrock, “ The J2EE Tutorial”, Second Edition, Pearson Education, 2004.

DEPARTMENT OF COSTUME DESIGN AND FASHION

BASICS OF FASHION DESIGNING

15CDF01

OBJECTIVES

- To enable students to gain knowledge of fashion design
- To understand the fashion design concept and process.

(Total hours = 60)

UNIT I

(11 hours)

FASHION TERMINOLOGIES – Fashion, Fad, Style, Classic, Collection, Custom Made, Mannequin, High Fashion, Trend, Advantage, Bridge, Buying House, Fashion Merchandising, Fashion Cycle, Forecasting, Haute Couture, Couture, Couturier, Pre- A- Porter. Theories of fashion – Trickle down, Bottom up, and Trickle across.

UNIT II

(10 hours)

DESIGN & ELEMENTS OF A DESIGN – Design- Definition, Types – Structural and Decorative design. Elements of a Design – Line, Shape or Form, Colour, Size and Texture.

UNIT III

(12 hours)

PRINCIPLES OF DESIGN – Balance – Formal and Informal, Rhythm – through Repetition, Radiation and Gradation, Emphasis – grouping of design units, using contrast hues, by leading lines, a combination of any of the above, repeating details such as tucks, gathers, buttons, etc., unusual shapes and textures, applied design on a contrast background, Harmony and Proportion- planning of the basic shapes and division of shapes for a good relationship.

UNIT IV

(12 hours)

COLOUR –Meaning, Dimensions of Colour - Prang colour theory, colour harmonies - Monochromatic, Analogous, Complementary, Double complementary, Spilt complementary, and Triad colour harmony.

UNIT V

(15 hours)

DESIGNING DRESSES FOR FIGURE IRREGULARITIES – Becoming and Unbecoming ,Stout figure, Thin Figure, Slender Figure, Large Bust, Flat Chest, Large Hip, Large Abdomen, Round Face, Large Face, Small Face, Prominent Chin and Jaw, Prominent Forehead, Narrow Shoulders, Broad Shoulders, Round Shoulders. Illustrating garment design using elements of design, principles, colour harmonies.

TEXT BOOKS

1. The Dynamics of fashion –Elaine Stone, Fair child Publications, New York.2002
2. Fashion Studies – An Introduction, Payal Jain, Anand Publications Pvt., Ltd., India, 2005.

REFERENCES

1. Fashion Technology handbook-Meenakshi Narang, Asia pacific Business Press,2001
2. Handbook of Garment Manufacturing Technology, EIRI Board, Sudhir Gupta,Delhi.2006
3. Introduction to Fashion Technology - Pooja Khurana and MonikaSRTHI, Firewall Media Pvt, Ltd., New Delhi, 2007.
4. Elements of Fashion and Apparel Design – Sumathi. G.J., New Age International publishers. New Delhi, 2002.

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VALUE ADDED COURSES SYLLABUS

Academic Year 2016-2017

DEPARTMENT OF ZOOLOGY (PG)

JOC - ORNAMENTAL FISH CULTURE TECHNOLOGY 15PZO2J2

Aim:

The course is intended to impart thorough knowledge on all aspects related to ornamental fishes to students for make them equipped to independently operate a ornamental fish breeding unit. Therefore, visit to ornamental fish farms should be carried out along with the theory classes to get hands on experience.

Objectives :

1. To give overview on the potential ornamental fishes and their breeding habits
2. To develop idea about the various management practices for breeding and rearing of ornamental fishes
3. To have a basic understanding of aquarium setting and aquarium accessories involved.

Unit 1: Introduction

Introduction to aquarium, ornamental fishes and aquarium accessories. World aquarium trade and present status. Design and construction of public fresh water and marine aquaria. Aerators and filters. Water quality requirements. Temperature control. Biofilters in aquarium.

Aquarium Management

Cleaning the aquarium; maintenance of water quality. Control of snail and algal growth. Handling, care and transportation of fish. Temperature acclimation, oxygen packing.

Unit 2: Freshwater Ornamental Fishes

Species of ornamental fishes; their taxonomy and biology- Live bearers, Gold fish and koi, Gourami, Barbs and Tetras, angel fish, cichlids. Maturation, secondary sexual characters, breeding habits, spawning, parental care, fertilization and development of eggs. Hatching, larval rearing and their health.

Unit 3: Commercial Production of Freshwater Ornamental Fishes

Requirements and design for the commercial production units of ornamental fishes.

Commercial production of goldfish, live bearers, gouramies, barbs and tetras, angel fish.

Natural ponds for the mass production of ornamental fishes and their economics.

Unit 4: Marine Ornamental Fishes

Marine ornamental fishes – varieties and their habitat. Major marine ornamental fish resources of India. Method of collection and transportation of live fish. Use of anesthetics.

Quarantine measures. Breeding of marine ornamental fishes. Reef aquarium and live rocks.

Other ornamental organisms – anemones, worms, lobsters, shrimps, octopus, starfish and their economic value.

Unit 5: Nutrition and Disease

Nutritional requirements of aquarium fishes. Different kinds of feeds. Culture of fish food organisms; Preparation of dry feeds; feeding methods. Use of pigments for colour enhancement. Larval feeds and feeding. Provision of nutrients and optimum environmental conditions for their growth. Identification of common parasites infecting ornamental fishes. Study of bacterial, viral, fungal diseases of ornamental fishes and their control and prophylaxis. infecting ornamental fishes.

Text Books

1. Marine Aquarium keeping : The Sciences, Animals and Art. John Wiley & Sons, New York
2. Ramachandran.A, Breeding, Farming and Management of Fishes, CUSAT
3. Madhusoodanakurup et al – Ornamental Fish – Breeding, Farming and Trade CUSAT.
4. Jhingran, V.G. Fish and Fisheries of India.
5. Santhanam, et.al. a Manual of Freshwater Aquaculture

Reference Books

1. Murthi.V.S. 2002 Marine ornamental Fishes of Lakshadweep CMFRI, Special publication
2. Butting.B., Holthus, P.S. Dalding,S. 2003, Marine Aquarium Industry and conservation.
3. Oliver, K 2003. World trade in ornamental species
4. Marine Ornamental species; collection,..... and Conservation
5. Fish Disease and Disorders, CAB international, Oxford.

DEPARTMENT OF BOTANY (PG)

JOC: Floriculture and Landscaping

15PBO2J1

Objectives:

- To know the latest technologies developed in the field
- To develop skills in the area of floriculture and landscaping
- To get employment opportunities

Total Hours: 4

Credits: 2

UNIT I

Floriculture – Global floriculture – Floriculture in India – Economic flowers – Rose, Jasmine, Crossandra, Chrysanthemum – Cultivation and uses.

UNIT II

Cut flowers – Significance of cut flower industry in India – Export – Flower arrangement and decoration – dehydrated flowers, foliage and floral craft.

UNIT III

Green house cultivation of cut flowers –Green house technology – advantages – Green house cultivation of Orchids – Anthurium – Gerbera – Dahlia – Tuberosa.

UNIT IV

Landscape gardening – important principles in layout a garden – Arboriculture – Shrubs and climbers – annual, biennial herbaceous perennials – Ornamental palms – Succulents and Cacti.

UNIT V

Water garden, Rock garden, Roof garden, Lawn, Bonsai – Horticultural shows.

TEXT BOOKS

1. Kumar, N. 1999. An introduction to horticulture. Rajalakshmi Publication, Nagarcovil.
2. T.K. Bose, R.G. Maity, R.S. Dhua and P.Das, 1999. Floriculture and Landscaping, Naya Prokash, Calcutta.
3. S.Prasad and U.Prasad. 2013.A handbook of Floriculture.

REFERENCES

1. Roy Edwin Biles, 2003. The complete Book of Gardening. Biotech Books, Delhi – 35.
2. Bhattacharjee, S.K. 2006. Advances in Ornamental Horticulture. Pointer Publication, Jaipur.
3. Doesh Beer Singh and Poonam Wazir,2002. Bonsai – An art. Scientific Publishers, Jodhpur.

JOC: Food Processing and Preservation 15PBO2J2

Objectives:

- To know the latest technologies developed in the field
- To develop skills in the area of Food processing and Preservation
- To get employment opportunities

Total Hours: 4

Credits: 2

UNIT I

Food groups – Basic groups basic Four, Five and Seven, food in relation to health. Preliminary preparation of food – cleaning, peeling, stinging, cutting and grafting, soaking marinating, sprouting, fermenting, grinding, drying and filtering. Their advantages and disadvantages.

UNIT II

Cereals and cereal products, structure composition and nutritive value of cereals – wheat and wheat products, rice and its products; fermented and unfermented products.

UNIT III

Pulses composition and nutritive value of pulses, toxic constituents, Trypsin inhibitor, haemagglutinins, cyanogenic glucoside, saponins and tannins. Nutritive value of nuts and oil seeds toxin such as aflotoxins and gossypol. Fruits and vegetables – Classification, composition and nutritive value.

UNIT IV

Milk and Milk products, nutritive value of milk, processing – clarification, pasteurization and homogenization. Milk products – fermented milk products – butter, cheese and curd. Preparation of cheese only. Non fermented products – skimmed milk, dry milk, ice cream. Flesh foods – meat, fish and poultry – composition and nutritive value.

UNIT V

Food preservation by high and low temperatures – outline. Preservation by high osmotic pressure – High concentration of sugar, jam and jelly preparation. High concentration of salts. Principles and preparation of pickles preservation by dehydration, principles and methods of drying such as freeze drying, sun drying, mechanical driers – spray drying and foam mat drying and by smoking.

REFERENCES

1. Food processing and preservation – G. Subblakshmi
2. Food Science by B. Srilakshmi
3. Food Microbiology by W.C. Frazier and D.C. Westhoff
4. Food Microbiology by M.R. Adams and M.O. Moss
5. Essentials of food and nutrition by M.S. Swaminathan

DEPARTMENT OF COMMERCE (PG)

ALC-2 INSURANCE PRINCIPLES AND PRACTICE

[15PCM0D2]

Credits: 2

Objectives: To impart the students with the concepts and principles of insurance and to update them on the best practices of the industry.

Unit I

Insurance – Meaning – Law relating to Life and General Insurance – Risk-classification – Principles of risk insurance – Risk management – Re- Insurance- Privatization of Insurance in India- Globalization of Insurance

Unit II

Indian Insurance Industry- Regulations of Insurance business in India- Registration of Licensing of Insurance- IRDA (Insurance Regulatory Development Authority) –Taxation aspects of Insurance

Unit III

Introduction to life Insurance- Principles- Proposal-Assignment-nomination-Policy loan-Duplicate policies – Surrender value – Claim settlement.

Unit IV

Fire Insurance – Nature- Double Insurance- Fire Insurance Policy – Fire Insurance coverage- Claim of recovery: Automobile Insurance or Motor and Accident Insurance – Third party insurance – Motor insurance policies – Premium calculation – Claim settlement.

Unit V

Marine Insurance – Marine Insurance policy – Principles- Proximate- Voyage-warranties – Claim settlement- RBI Guidelines on Marine Insurance.

Text Book:

Insurance Principles and Practice - Mishra M N, S.Chand & Company Ltd.

Reference Books:

Insurance and Risk Management - Dr. Gupta P K, S.Chand & Company Ltd.,
Principles and Practice of Insurance - Saravanavel, Himalaya Publishing House,
Fundamentals of Business Law - Syed Badre Alam, Himalaya Publishing House.

ALC-3 ADVERTISING MANAGEMENT

Credits: 2

[15PCM0D3]

Objectives: To facilitate the students on planning and creating advertisements and the promotional aspects which help them to manage promotional programs.

Unit – I

Advertising – Meaning - Definition – Nature and Scope of Advertising – Types of Advertising - Benefits of Advertising - Role of Advertisement in Modern Business World– Ethics in Advertising - Advertisement and Publicity – Advertising as a Career - Career Opportunities in Companies – Career opportunities in Advertising Agency – Career Opportunities in Media.

Unit - II

Advertisement Media - Concept of Media - Types of Media – News paper and Magazines – Merits and Demerits - TV Vs Other Media - Merits and Demerits of TV advertising – Satellite TV Advertising - Direct to Home (DTH) Broadcast - Creativity in TV Advertising - Radio Advertising - Merits and Demerits – Radio Vs TV Advertising – FM Channel – Reach and Frequency –Forms for Advertisement in TV and Radio - Internet and Website Advertising – Direct Advertising

Unit - III

Outdoor and Transit Media – Outdoor Vs Other media – Bills Boards – Merits and Demerits – Posters – Neon Sign Boards – Ten Commandments of Outdoor advertising - Transit advertising - Hoardings – Technology and outdoor advertising - Computerized Imaging Technology

Unit - IV

Advertisement Message design and positioning – Message presentation - Appeals – Advertising Message structure – Negative advertising - Message format – Appeals and advertising message – Types of appeals - Advertisement Copy for different Media – Different types of Copy – Celebrity in Advertisements

Unit - V

Advertising Research - Media Research – Copy Research – Message Testing Evaluation of Advertising effectiveness - Methods of measuring advertising effectiveness - Retesting and post testing. Advertising Agencies - Their Role and importance in advertising - Organization patterns - Functions – Selection of Advertising Agency.

Text Book:

Foundations of Advertising Theory and Practice: S.A.Chunawalla K.C,Sethia, Himalaya pub.

Reference Books:

1. Advertising Management : B.S. Rathor, Himalaya Publishing
2. Advertising Theory & Practice : S.A. Chunawalla, Kumar, Sethia, Himalaya Publishing
3. Advertising Management : Rajeev Batra, John.G. Myers David A. Aakar, Prentice Hall of India

DEPARTMENT OF BIOTECHNOLOGY (PG)

ALC.1 - FRONTIER TECHNOLOGIES IN BIOSCIENCES

15PBT0D1

UNIT I

Stem cell technology: Stem cell, definitions, types and properties. Scientific terms, factors governing manipulations and culturing of stem cells. Micro-environmental factors governing stem cell propagation. Applications: Tissue engineering, reprogramming of genome function through epigenic inheritance. Ethical and social considerations of stem cell technology.

UNIT II

Neurobiology: Chemistry, synthesis, storage and release of neurotransmitters. Classes and mode of action of neuropeptides. Neuropeptide receptors, coexistence of neuropeptides with other neurotransmitters in “Dorsomedial Hypothalamic Nucleus”. Neurodegenerative Disorders: Parkinson’s, Alzheimer’s disease, amyotrophic lateral sclerosis, senile dementia.

UNIT III

Nanobiotechnology: Definitions and terms, molecular motors, DNA hybridization control using metal ion crystal antennae. DNA-Based Nanofabrication. Self-Assembling DNA Tilings as Structural Templates, Molecular Electronics Microarray chips:- Microarray probes / chips, array fabrication, targets, assays, read out, image analysis, uses and examples.

UNIT IV

Diagnostic Techniques: Immunoassay Classification and Commercial Technologies, assay development. Cell Based and DNA based diagnostics. **Functional Proteomics:** Proteome, Mass spectroscopy of various protein complexes, Organization of proteome in an organism and its systematic study, Protein chips and Computation.

UNIT V

Biosensors: Concepts and applications, Noninvasive Biosensors in Clinical Analysis, Surface Plasmon Resonance, Biosensors based on Evanescent Waves, Applications of Biosensor-based instruments to the bioprocess industry, Application of Biosensors to environmental samples, Biochips and their application in modern Sciences.

Textbook

Biotechnology. U. Satyanarayana. Books and Allied (P) Ltd. August 2007.

References

1. The Science of Laboratory Diagnosis, J. Crocker and D. Burnett 2nd Edition. John Wiley Publishers. 2005.
2. Nanotechnology: A Gentle Introduction to the Next Big Idea, M. Ratner and D. Ratner. Prentice Hall. 2002
3. Text book of Medical Physiology, A.C. Guyton & J.E. Hall. 10th Edition. Harcourt, Asia. 2001.
4. Principles of Cell Biology. G. Ramsay.1998. Commercial Biosensors. John Wiley and Son, Inc. K. Smith and M. Kish. Harper-Cellins Pub. Inc. New Delhi.

DEPARTMENT OF COSTUME DESIGN AND FASHION

BASICS OF FASHION DESIGNING 15CDF01

OBJECTIVES

To understand the fashion design concept and process.

To enable students to gain knowledge of fashion design

(Total hours - 60)

UNIT I

(11 hours)

FASHION TERMINOLOGIES – Fashion, Fad, Style, Classic, Collection, Custom Made, Mannequin, High Fashion, Trend, Advantage, Bridge, Buying House, Fashion Merchandising, Fashion Cycle, Forecasting, Haute Couture, Couture, Couturier, Pre- A-Porter. Theories of fashion – Trickle down, Bottom up, and Trickle across.

UNIT II

(10 hours)

DESIGN & ELEMENTS OF A DESIGN – Design- Definition, Types – Structural and Decorative design. Elements of a Design – Line, Shape or Form, Colour, Size and Texture and Illustrating garment design using elements of design.

UNIT III

(12 hours)

PRINCIPLES OF DESIGN – Balance – Formal and Informal, Rhythm – through Repetition, Radiation and Gradation, Emphasis – grouping of design units, using contrast hues, by leading lines, a combination of any of the above, repeating details such as tucks, gathers, buttons, etc., unusual shapes and textures, applied design on a contrast background, Harmony and Proportion- planning of the basic shapes and division of shapes for a good relationship and Illustrating garment design using principles of design.

UNIT IV

(12 hours)

COLOUR –Meaning, Dimensions of Colour - Prang colour theory, colour harmonies - Monochromatic, Analogous, Complementary, Double complementary, *Spilt complementary, and Triad colour harmony and illustrating garment design using colour harmonies.

UNIT V

(15 hours)

DESIGNING DRESSES FOR FIGURE IRREGULARITIES – Becoming and Unbecoming ,Stout figure, Thin Figure, Slender Figure, Large Bust, Flat Chest, Large Hip, Large Abdomen, Round Face, Large Face, Small Face, Prominent Chin and Jaw, Prominent Forehead, Narrow Shoulders, Broad Shoulders, Round Shoulders.

TEXT BOOKS

1. The Dynamics of fashion –Elaine Stone, Fair child Publications, New York.2002
2. Fashion Studies – An Introduction, Payal Jain, Anand Publications Pvt., Ltd., India, 2005.

REFERENCES

1. Fashion Technology handbook-Meenakshi Narang, Asia pacific Business Press,2001
2. Handbook of Garment Manufacturing Technology, EIRI Board, Sudhir Gupta,Delhi.2006
3. Introduction to Fashion Technology - Pooja Khurana and MonikaSRTHI, Firewall Media Pvt, Ltd., New Delhi, 2007.
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VALUE ADDED COURSES SYLLABUS

Academic Year 2017-2018

DEPARTMENT OF BOTANY (PG)

JOC: Floriculture and Landscaping 17PBO2J1

Objectives:

- To know the latest technologies developed in the field
- To develop skills in the area of floriculture and landscaping
- To get employment opportunities

Total Hours: 4

Credits: 2

UNIT I

Floriculture – Global floriculture – Floriculture in India – Economic flowers – Rose, Jasmine, Crossandra, Chrysanthemum – Cultivation and uses.

UNIT II

Cut flowers – Significance of cut flower industry in India – Export – Flower arrangement and decoration – dehydrated flowers, foliage and floral craft.

UNIT III

Green house cultivation of cut flowers –Green house technology – advantages – Green house cultivation of Orchids – Anthurium – Gerbera – Dahlia – Tuberosa – Gladioli.

UNIT IV

Landscape gardening – important principles in layout a garden – Arboriculture – Shrubs and climbers – annual, biennial herbaceous perennials – Ornamental palms – Succulents and Cacti.

UNIT V

Water garden, Rock garden, Roof garden, Vertical garden, Hydroponics, Lawn, Bonsai – Horticultural shows.

TEXT BOOKS

1. Kumar, N. 1999. An introduction to horticulture. Rajalakshmi Publication, Nagarcoil.
2. T.K. Bose, R.G. Maity, R.S. Dhua and P.Das, 1999. Floriculture and Landscaping, Naya Prokash, Calcutta.
3. S.Prasad and U.Prasad. 2013.A handbook of Floriculture.

REFERENCES

1. Roy Edwin Biles, 2003. The complete Book of Gardening. Biotech Books, Delhi – 35.
2. Bhattacharjee, S.K. 2006. Advances in Ornamental Horticulture. Pointer Publication, Jaipur.
3. Doesh Beer Singh and Poonam Wazir,2002. Bonsai – An art. Scientific Publishers, Jodhpur.

JOC: Food Processing and Preservation 15PBO2J2

Objectives:

- To know the latest technologies developed in the field
- To develop skills in the area of Food processing and Preservation
- To get employment opportunities

Total Hours: 4

Credits: 2

UNIT I

Food groups – Basic groups basic Four, Five and Seven, food in relation to health. Preliminary preparation of food – cleaning, peeling, stinging, cutting and grafting, soaking marinating, sprouting, fermenting, grinding, drying and filtering. Their advantages and disadvantages.

UNIT II

Cereals and cereal products, structure composition and nutritive value of cereals – wheat and wheat products, rice and its products; fermented and unfermented products.

UNIT III

Pulses composition and nutritive value of pulses, toxic constituents, Trypsin inhibitor, haemagglutinins, cyanogenic glucoside, saponins and tannins. Nutritive value of nuts and oil seeds toxin such as aflatoxins and gossypol. Fruits and vegetables – Classification, composition and nutritive value.

UNIT IV

Milk and Milk products, nutritive value of milk, processing – clarification, pasteurization and homogenization. Milk products – fermented milk products – butter, cheese and curd. Preparation of cheese only. Non fermented products – skimmed milk, dry milk, ice cream. Flesh foods – meat, fish and poultry – composition and nutritive value.

UNIT V

Food preservation by high and low temperatures – outline. Preservation by high osmotic pressure – High concentration of sugar, jam and jelly preparation. High concentration of salts. Principles and preparation of pickles preservation by dehydration, principles and methods of drying such as freeze drying, sun drying, mechanical driers – spray drying and foam mat drying and by smoking.

REFERENCES

1. Food processing and preservation – G. Subblakshmi
2. Food Science by B. Srilakshmi
3. Food Microbiology by W.C. Frazier and D.C. Westhoff
4. Food Microbiology by M.R. Adams and M.O. Moss
5. Essentials of food and nutrition by M.S. Swaminathan

DEPARTMENT OF COMMERCE (PG)

ALC-1 BANKING AND FINANCIAL SERVICES [15PCM0D1]

Credits:2

Objectives: To create awareness on the various financial services rendered by banks and update the students with the recent concepts and practices.

Unit I

Banking Business in India-Financial services rendered by organized sector-class banking and mass banking-**Commercial Banking functions***-Micro Credit-Emphasis on Rural Development and Agricultural lending

Unit II

Central Bank-Functions-Role of RBI in banking sector-State Bank of India-Objectives and progress. Risk Management-Credit Risk, Market Risk and Operational risk-Basel II-Requirements on capital adequacy and 3 pillar approach-Asset Liability management.

Unit III

Merchant Banking-progress of Merchant banking in India-Export Finance-Pre-shipment-post-shipment credit-RBI & Export Finance-Exim Bank. Private Sector Bank-Public Sector Banks-Mergers and acquisition-Consolidation

Unit IV

Priority sector lending in banks-Small Scale Industries and Tiny sector-Functions of DICGC-Services of banks-Telebanking –**credit cards***-ATM-Core banking in India-Impact of globalization on banking services

Unit V

Project evaluation-Technical feasibility-Commercial feasibility-Financial feasibility-Ratio Analysis-Break even analysis-Working capital analysis-Risk analysis-Profitability analysis.

***Self Study and questions for examinations may be taken from the self study portions also**

Text Book:

Money Banking, Foreign Exchange & International Trade- K.P.M. Sundaram, Sultan Chand & Sons

Reference Books:

Banking –M.Radhaswami & S.V.Vasudevan, Sultan Chand& Sons Ltd
Modern Banking in India and abroad- P.Saravanavel, Margham Publications
Principles and Practice of Bank Management- P.Suba Rao, Himalaya Publishing House
Development Banking Issues and Options- Vasanth Desai, Himalaya Publishing House

ALC-2 INSURANCE PRINCIPLES AND PRACTICE [15PCM0D2]

Credits: 2

Objectives: To impart the students with the concepts and principles of insurance and to update them on the best practices of the industry.

Unit I

Insurance – Meaning – Law relating to Life and General Insurance – Risk-classification – Principles of risk insurance – Risk management – Re- Insurance- Privatization of Insurance in India- Globalization of Insurance

Unit II

Indian Insurance Industry- Regulations of Insurance business in India- Registration of Licensing of Insurance- IRDA (Insurance Regulatory Development Authority) –Taxation aspects of Insurance

Unit III

Introduction to life Insurance- Principles- Proposal-Assignment-nomination-Policy loan-Duplicate policies – Surrender value – Claim settlement.

Unit IV

Fire Insurance – Nature- Double Insurance- Fire Insurance Policy – Fire Insurance coverage- Claim of recovery: Automobile Insurance or Motor and Accident Insurance – Third party insurance – Motor insurance policies – Premium calculation – Claim settlement.

Unit V

Marine Insurance – Marine Insurance policy – Principles- Proximate- Voyage-warranties – Claim settlement- RBI Guidelines on Marine Insurance.

Text Book:

Insurance Principles and Practice - Mishra M N, S.Chand & Company Ltd.

Reference Books:

Insurance and Risk Management - Dr. Gupta P K, S.Chand & Company Ltd.,
Principles and Practice of Insurance - Saravanavel, Himalaya Publishing House,
Fundamentals of Business Law - Syed Badre Alam, Himalaya Publishing House.

DEPARTMENT OF BIOTECHNOLOGY (PG)

ALC. 2 – STEM CELL TECHNOLOGY 17PBT0D2

UNIT I

Cell Diversification and responses in the early animal embryo: *Xenopus* - Blastomeres and Spatial Segregation, inductive interactions, progressive pattern of new cell types generation. Morphogen gradient organization of complex pattern of cell responses, cell signal response, intracellular signals, early mammalian embryo and developmental potential, responses of mammalian embryonic stem cells to environmental stress and their pathway of development.

UNIT II

Renewal by stem cells: Stem cells division, epidermis and differentiated progeny, various keratins synthesis during stem cell development, basal cells, basal cell proliferation and thickness. Epidermal stem cells, secretory cells in the epidermis and population kinetics.

UNIT III

Specialized cells and their functions. Genesis, modulation, and regeneration of skeletal muscle: myoblasts fusion, muscle cells properties and protein isoforms, quiescent stem cells in the adult.

UNIT IV

Fibroblasts and their transformations: the connective-tissue cell family fibroblasts response to signals in the extracellular matrix, connective-tissue cell differentiation, fact cells signaling and production, bone remodeling, osteoblasts and bone matrix, osteoclasts and their ole to connective-tissue framework and body structure.

UNIT V

Hematopoietic stem cell: Types and functions. Hematopoietic stem cell disordersclassification and manifestations of aplastic, myelodysplastic, myeloproliplastic disorders. Clinical applications of colony stems. Complications of germline therapy, replacement therapy and marrow transplantation. Immunological principles, preservation and clinical use of blood and blood components, hemapheresis procedures and oxiplantation.

Textbook

Gilbert. S.F. 2000Developmental Biology. 6th Edition. Sinauer Associates, Inc. NY.

References

1. Kiessling A.A. and C.S. Anderson, 2003. Human Embryonic Stem Cells: An Introduction to the Science and Therapeutic Potential. Amazon Publishers.
2. Alberts, B., 2002. Molecular Biology of the Cell. 4th Edition. Garland Publishing, Inc., NY.

DEPARTMENT OF COSTUME DESIGN AND FASHION

BASICS OF FASHION DESIGNING

15CDF01

OBJECTIVES

(Total hours - 60)

- ✓ To enable students to gain knowledge of fashion design
- ✓ To understand the fashion design concept and process.

UNIT I

(11 hours)

FASHION TERMINOLOGIES – Fashion, Fad, Style, Classic, Collection, Custom Made, Mannequin, High Fashion, Trend, Advantage, Bridge, Buying House, Fashion Merchandising, Fashion Cycle, Forecasting, Haute Couture, Couture, Couturier, Pre- A- Porter. Theories of fashion – Trickle down, Bottom up, and Trickle across.

UNIT II

(10 hours)

DESIGN & ELEMENTS OF A DESIGN – Design- Definition, Types – Structural and Decorative design. Elements of a Design – Line, Shape or Form, Colour, Size and Texture and Illustrating garment design using elements of design.

UNIT III

(12 hours)

PRINCIPLES OF DESIGN – Balance – Formal and Informal, Rhythm – through Repetition, Radiation and Gradation, Emphasis – grouping of design units, using contrast hues, by leading lines, a combination of any of the above, repeating details such as tucks, gathers, buttons, etc., unusual shapes and textures, applied design on a contrast background, Harmony and Proportion- planning of the basic shapes and division of shapes for a good relationship and Illustrating garment design using principles of design.

UNIT IV

(12 hours)

COLOUR –Meaning, Dimensions of Colour - Prang colour theory, colour harmonies - Monochromatic, Analogous, Complementary, Double complementary, *Spilt complementary, and Triad colour harmony and illustrating garment design using colour harmonies.

UNIT V

(15 hours)

DESIGNING DRESSES FOR FIGURE IRREGULARITIES – Becoming and Unbecoming ,Stout figure, Thin Figure, Slender Figure, Large Bust, Flat Chest, Large Hip, Large Abdomen, Round Face, Large Face, Small Face, Prominent Chin and Jaw, Prominent Forehead, Narrow Shoulders, Broad Shoulders, Round Shoulders.

TEXT BOOKS

1. The Dynamics of fashion –Elaine Stone, Fair child Publications, New York.2002
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2. Handbook of Garment Manufacturing Technology, EIRI Board, Sudhir Gupta,Delhi.2006
3. Introduction to Fashion Technology - Pooja Khurana and MonikaSRTHI, Firewall Media Pvt, Ltd., New Delhi, 2007.
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VALUE ADDED COURSES SYLLABUS

Academic Year 2018-2019

DEPARTMENT OF BIOCHEMISTRY (PG)

ALC – Nutraceuticals and Functional Foods

18PBCOD2

Course Objectives

1. To learn the concept of nutraceuticals and functional foods
2. To know the available biochemical compounds in our system
3. To prepare functional foods from nutraceutical compounds

Course Outcomes (CO)

K1	CO1	The students will learn the complete history of nutraceuticals
K2	CO2	The students will learn the different nutraceuticals
K3	CO3	The students will learn the formulation methods of functional foods
K4	CO4	The students will learn about the role of functional foods in disease prevention and management

18PBCOD2

Syllabus

Unit I

Introduction to Nutraceuticals as Science: Nutraceutical- Definition, Classification - Dietary supplements, Functional foods, Historical perspective, scope & future prospects. Applied aspects of the Nutraceutical Science. Sources of Nutraceuticals. Relation of Nutraceutical Science with other Sciences: Medicine, Human physiology, genetics, food technology, ***chemistry and nutrition (brief description).**

Unit II

Classification, Properties and structure of various Nutraceuticals: Alkaloids, Terpenoids, Glycosides, Natural phenols, Isoprenoid derivatives, Glucosamine, Octacosanol, flavonoids, carotenoids, polyunsaturated fatty acids, lecithin, choline and spingolipids, Lycopene, Carnitine, Melatonin and Ornithine alpha ketoglutarate as nutraceuticals. Use of proanthocyanidins, grape products, flaxseed oil as Nutraceuticals.

Unit III

Nutraceuticals of plant and animal origin: Plant metabolites - Functions, sources - Alkaloids, phenols, Terpenoids. Applications with specific examples with reference to skin, hair, eye, bone, muscle, heart, brain, liver, kidney, general health and stimulants. Concept of cosmoceuticals and aquaceuticals. Animal metabolites – Functions, Sources - chitin, chitosan, glucosamine, chondroitin sulphate and other polysaccharides of animal origin. Uses and applications in preventive medicine and treatment.

Unit IV

Functional Foods: Definition. Applications of herbs to functional foods. Concept of free radicals and antioxidants; Nutritive and Non-nutritive food components with potential health effects. Soy proteins and soy isoflavones in human health; Role of nuts in cardiovascular disease prevention. Functional foods from wheat and rice and their health effects. Role of Dietary fibers in disease prevention. Vegetables, Cereals, milk and dairy products as Functional foods. Health effects of common beans, Capsicum annum, mustards, Ginseng, garlic, citrus fruits, fish oils, and sea foods.

Unit V

Food as remedies: Nutraceuticals bridging the gap between food and drug, Nutraceuticals in treatment for cognitive decline, Nutraceutical remedies for common disorders like Arthritis, Bronchitis, circulatory problems, hypoglycemia, Nephrological disorders, Liver disorders, Osteoporosis, Psoriasis and Ulcers etc. Brief idea about some Nutraceutical rich supplements e.g. Bee pollen, Caffeine, Green tea, Lecithin, Mushroom extract, Chlorophyll, Kelp and Spirulina etc.

* denotes Self study

Teaching Methods

Powerpoint presentation/Seminar/Quiz/Discussion/Assignment

Text Books:

1. Swaminathan M. (1985). Essentials of Food and Nutrition. 2nd edition, Ganesh and Co.
2. Gopalan C., et al. Dietary Allowances for Indians, NIH, Hyderabad.

Reference Books:

1. Todd and others. Clinical Diagnosis and Management. 17th edition, W.B.Saunders, Philadelphia.
2. Anita F.P. (1997). Clinical Dietetics and Nutrition. 4th edition, Oxford Univ Press.
3. Mahan, L.K. & Ecott-Stump, S. (2000). Krause's Food, Nutrition and Diet Therapy. 10th edition, W.B. Saunders Ltd.
- 4.Sizer, F. & Whitney, E. (2000). Nutrition-Concepts & Controversies. 8th edition, Wadsworth Thomson Learning.

MAPPING

PSO CO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	M	H	S	S
CO2	M	S	S	M	M
CO3	S	H	M	S	H
CO4	M	S	H	H	S

S – Strong

H – High

M – Medium

L – Low

Course Objectives

1. To learn about the technology of stem cells preparation
2. To learn the properties of stem cells
3. To prepare stem cells for gene therapy

Course Outcomes (CO)

K1	CO1	The students will recall the different types of stem cells and its applications
K2	CO2	The students also understand the importance of gene therapy in various diseases
K3	CO3	The students will implement the stem cell in therapies
K4	CO4	The students examine the molecular concepts of stem cell

Unit I

Introduction and Scope of stem cells: Definitions, Concepts of stem cells, differentiation, maturation, proliferation, pluripotency, self maintenance and selfrenewal, significations in measuring stem cells, preservation and storage protocols

Unit II

Types of stem cells: Intestinal stem cells, Mammary stem cells, Skeletal muscle stem cell, keratinocyte stem cells of cornea, skin and hair follicles, tumor stem cells. Factors influencing proliferation and differentiation of stem cells. Role of hormone in differentiation.

Unit III

Embryonic stem cells: Blastocyst, inner cell mass, Culturing of ES cells in lab, laboratory tests to identify ES cells, stimulation ES cells for differentiation, properties of ES cells, human ES cells, Monkey and Mouse ES cells.

Unit IV

Application of stem cell: Identification, Manipulating differentiation pathways, stem cell therapy vs cell protection, stem cell in cellular assays for screening, stem cell based drug discovery platforms, drug screening and toxicology, stem cell banking.

Unit V

Gene therapy: Genetically engineered stem cells, stem cells and animal cloning, transgenic animals and stem cells, Therapeutic applications, Parkinson's disease, Neurological disorder, limb amputation, heart disease, spinal cord injuries, diabetes, burns. Matching the stem cell with transplant recipient, HLA typing Alzheimer's disease, spinal cord injuries tissue engineering application, production of complete organ, kidney, eyes, heart, and brain. ***Stem cell case study.**

* **denotes Self study**

Teaching Methods

Powerpoint presentation/Seminar/Quiz/Discussion/Assignment

Text Books

1. Kursad and Turksen. (2002). Embryonic Stem cells, Humana Press.

Reference Books

1. Stem cell and future of regenerative medicine. By committee on the Biological and Biomedical applications of Stem cell Research. (2002). National Academic press.
2. Stem cells, Elsevier: CS Potten.

MAPPING

PSO CO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	H	M	S	H	S
CO2	S	S	M	H	S
CO3	M	H	S	M	H
CO4	H	S	S	M	M

S – Strong

H – High

M – Medium

L – Low

DEPARTMENT OF COMMERCE (PG)

ALC-2 Insurance Principles and Practice 18PCM0D2

Course Objectives

1. To facilitate the students to understand the fundamental principles of insurance business.
2. To enrich knowledge on concepts, procedures and policies of major insurance schemes.
3. To understand the various types of insurances

Course Outcomes (COs)

K1	CO1	Keep in mind the general principles and procedures of various insurance businesses
K2	CO2	Inculcate knowledge on the terms and conditions of each insurance policy.
K3	CO3	Select / suggest suitable insurance policy by comparing the nature, advantages and disadvantages of key policies for the business & life.
K4	CO 4	Apply the skills and knowledge to select suitable insurance policies

Syllabus

Unit I

Insurance – Meaning – Law relating to Life and General Insurance – Risk-classification – Principles of risk insurance – Risk management – Re- Insurance- Privatization of Insurance in India- Globalization of Insurance

Unit II

Indian Insurance Industry- Regulations of Insurance business in India- Registration of Licensing of Insurance- IRDA (Insurance Regulatory Development Authority) –Taxation aspects of Insurance

Unit III

Introduction to life Insurance- Principles- Proposal-Assignment-nomination-Policy loan-Duplicate policies – Surrender value – Claim settlement.

Unit IV

Fire Insurance – Nature- Double Insurance- Fire Insurance Policy – Fire Insurance coverage- Claim of recovery: Automobile Insurance or Motor and Accident Insurance – Third party insurance – Motor insurance policies – Premium calculation – Claim settlement.

Unit V

Marine Insurance – Marine Insurance policy – Principles- Proximate- Voyage-warranties – Claim settlement- RBI Guidelines on Marine Insurance.

Teaching Methods

Powerpoint presentation/ Seminar/Quiz/Discussion/Assignment

Text Book:

1) Mishra M. N and Dr.S.B. Mishra, 2013, Insurance Principles and Practice, S.Chand & Company Ltd, New Delhi, 20th Edition

Reference Books:

1) P. Periasamy, 2015, Principles and practice of Insurance, Himalaya Publishing House P.Ltd, Mumbai, 1st Edition

2)Dr. Gupta P K, 2015, Insurance and Risk Management ,S.Chand & Company Ltd., 1st Edition

3) Saravanavel, 2015, Principles and Practice of Insurance ,Himalaya Publishing House, 1st Edition

Mapping

CO \ PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO 1	S	S	S	S	S
CO 2	S	S	H	S	S
CO 3	H	S	H	S	S
CO 4	H	S	S	S	S

S-Strong

H-High

M-Medium

L-Low

ALC-3 Advertising Management [18PCM0D3]

Course Objectives

1. To facilitate the students with the concepts and ideas of creating advertisements
2. To develop them to create innovative advertisement which attracts customers
3. To update the students with the modern trends in advertisements

Course Outcomes (COs)

K1	CO1	Remember the concepts of media and its contribution towards promotion
K2	CO2	Understand the various types of media
K3	CO3	Apply research methods to ensure the effectiveness of advertisements
K4	CO 4	Analyse the patterns advertising agency and the merits and demerits of various types of advertising

Syllabus

Unit – I

Advertising – Meaning - Definition – Nature and Scope of Advertising – Types of Advertising - Benefits of Advertising - Role of Advertisement in Modern Business World– Ethics in Advertising - Advertisement and Publicity – Advertising as a Career - Career Opportunities in Companies – Career opportunities in Advertising Agency – Career Opportunities in Media.

Unit - II

Advertisement Media - Concept of Media - Types of Media – News paper and Magazines – Merits and Demerits - TV Vs Other Media - Merits and Demerits of TV advertising – Satellite TV Advertising - Direct to Home (DTH) Broadcast - Creativity in TV Advertising - Radio Advertising - Merits and Demerits – Radio Vs TV Advertising – FM Channel – Reach and Frequency –Forms for Advertisement in TV and Radio - Internet and Website Advertising – Direct Advertising

Unit - III

Outdoor and Transit Media – Outdoor Vs Other media – Bills Boards – Merits and Demerits – Posters – Neon Sign Boards – Ten Commandments of Outdoor advertising - Transit advertising - Hoardings – Technology and outdoor advertising - Computerized Imaging Technology

Unit - IV

Advertisement Message design and positioning – Message presentation - Appeals – Advertising Message structure – Negative advertising - Message format – Appeals and advertising message – Types of appeals - Advertisement Copy for different Media – Different types of Copy – Celebrity in Advertisements

Unit - V

Advertising Research - Media Research – Copy Research – Message Testing Evaluation of Advertising effectiveness - Methods of measuring advertising effectiveness - Retesting and post testing. Advertising Agencies - Their Role and importance in advertising - Organization patterns - Functions – Selection of Advertising Agency.

Teaching Methods

Powerpoint presentation/ Seminar/Quiz/Discussion/Assignment

Text Book:

1. S.A.Chunawalla K.C,Sethia,2000, Foundations of Advertising Theory and Practice , McGraw Hill, New Delhi,1st Edition.

Reference Books:

1. B.S. Rathor,1997, Advertising Management Himalaya Publishing,1st Edition
2. S.A. Chunawalla, Kumar K.J, Sethia K. C, 2004, Advertising Theory & Practice, Himalaya Publishing House, New Delhi, 1st Edition
3. Rajeev Batra, John.G. Myers David A. Aaka, 2006, Advertising Management, Pearson Education, New Delhi, 5th Edition

Mapping

CO \ PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO 1	S	S	S	H	S
CO 2	S	S	S	S	S
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DEPARTMENT OF BOTANY (UG)

18CCB101

Programme Code: 05	Title: CERTIFICATE COURSE - BONSAI		
Course Code: 18CCB101	C.P. 1. INTRODUCTION TO BONSAI PRINCIPLES AND TECHNIQUES		
Batch 2018-2019	Hours / Week 2	Total Hours 30	Credits 2

COURSE OBJECTIVES

- To know the latest development in the field of Bonsai.
- To develop skills in the area of designing, styles and making of bonsai.
- To create knowledge on self employment through and entrepreneur skills.

COURSE OUTCOMES

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

K1	CO1	Recognize about preliminary techniques about Bonsai.
K2	CO2	Understand the necessary skills to take care and maintain a Bonsai plant.
K3	CO3	Apply knowledge on Bonsai cultivation and marketing.
K3	CO4	Implement the acquired knowledge on commercial applications Bonsai

SYLLABUS

UNIT I:

(6 hours)

Introduction - history, aim, scope and importance of Bonsai - Identification and collection of suitable plants for bonsai making.

UNIT II:

(6 hours)

Tools, containers, wiring and preparation of media. Designing, Styles and making of bonsai. Training and pruning techniques in bonsai. Irrigation, pest and disease management.

UNIT III:

(6 hours)

Styles of Bonsai - Upright Style, Formal Upright, Informal Upright Style, Slanting Style Windswept Style, Broom Style.

UNIT IV:

(6 hours)

Cascade Styles of Bonsai - Semi Cascade Style, Formal Cascade Style, Informal or Vertical Cascade Style, Displaying Cascade Style Bonsai.

UNIT V:**(6 hours)**

Multiple tree styles of Bonsai - Two-Tree and Twin Trunk Style Bonsai. Forest Style Bonsai*. Bonsai with Special Characteristics.

*** Self study****Teaching Methods**

Power Point presentation/Seminar/Discussion/Assignment

TEXT BOOKS

1. Paul Lesniewicz., 1994. Bonsai in your home. Sterling publishing Co, New York.
2. Randhawa, G.S., and Amitabha Mukhopadhyay, 2000. Floriculture in India, Allied publishers, India.

REFERENCES

4. Roy Edwin Biles, (2003). The complete Book of Gardening. Biotech Books, Delhi - 35.
5. Bhattacharjee, S.K. (2006). Advances in Ornamental Horticulture. Pointer Publication, Jaipur.
6. Doesh Beer Singh and Poonam Wazir, (2002). Bonsai - An art. Scientific Publishers, Jodhpur.

MAPPING

PSO CO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	H	H	M	H
CO2	S	M	H	H	M
CO3	H	S	M	H	H
CO4	S	H	M	S	M

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