Paper : (BC 502) : INTRODUCTION TO INDIAN ECONOMY

Paper: BC502   Max. Marks: 40+10
PPW: 2 Hrs   Exam Duration: 1½ Hrs

Objectives: 1) to provide an overview of Indian economy
2) to make the student acquaint with the latest developments in the economy

UNIT I: STRUCTURE OF THE INDIAN ECONOMY:

Indian Economy-Characteristics-Developmental issues-Structural changes in the Indian Economy-Human Development-concept and measures-Occupational distribution and economic development-Natural Resource: Land, Forest, Water & Minerals-Environmental degradation-Infrastructure: Energy, Power, Transport-Social infrastructure

UNIT II: POLICY ASPECTS OF INDIAN ECONOMY:

Liberalization - Privatization-Globalization-Poverty- Unemployment: nature and problems - The parallel economy – Industrial Policy.

SUGGESTED READINGS:

1) Meera Naidu "Introduction to Indian Economy" HPH
2) Ruddar Datt and K.P.M. Sundharam "Indian Economy", S. Chand & Company Ltd., New Delhi, 2013.
3) S.K.Misra & V.K.Puri "Indian Economy-Its Development Experience"Himalaya Himalya Publishing Company, New Delhi, 2013.
4) Introduction to Indian Economy: Dr. P. Venugopal Rao, PBP.
5) Vivek Mittal "Business Environment" Excel Publications, New Delhi, 2013.
6) Aswathappa.K. "Essentials of Business Environment – Text, cases & Exercises" Himalaya Himalya Publishing Company, New Delhi, 2013.
7) Economic Survey—Government of India, Ministry of Finance, Oxford University Press, New Delhi,
8) The Economic Times, News paper
9) Business Line, News paper

Laplace Transforms

2 Credits

Unit I : Laplace transforms

Definition of Integral Transform - Definition of Laplace transform - linearity property- Piecewise continuous functions - Existence of Laplace transform - Functions of exponential order and of class A - First and second shifting theorems of Laplace transform - Change of scale property- Laplace transform of derivatives - Initial value theorem – Final value theorem - Laplace transform of integrals - Multiplication by powers of t - Division by t –Evaluation of Integrals - Laplace transform of periodic functions and some special functions.

Unit-II : Inverse Laplace transforms

Definition of Inverse Laplace transform – Definition of Null function - Linearity property - First and second shifting theorems of inverse Laplace transform, Change of scale property – Inverse Laplace transform of derivatives - Inverse Laplace transform of Integrals – Multiplication by powers of p - Division by powers of p – Definition of Convolution – convolution theorem - Heaviside's expansion theorem or formula and applications – The Beta function.

Prescribed text Book: Scope as in *Integral transforms* by A.R. Vasishtha & Dr. R.K. Gupta Published by Krishna Prakashan Media Pvt. Ltd. Meerut. Chapter I, Chapter II: All sections except 2.3 and 2.18

Reference Book: *Operational Mathematics* by R.V.Churchil, McGraw Hill Company

Medical Diagnostics

2 Credits

Unit I: Introduction to medical diagnostics, Diagnostic methods for analysis of blood and urine

1.1   Introduction to medical diagnostics and its importance
1.2   Blood composition, Leishman's staining, Platelet count using haemocytometer, Erythrocyte sedimentary Rate (ESR) ,packed cell volume(P.C.V)
1.3   Urine analysis Physical characteristics, abnormal constituents.

Unit II: Non-infection , Infection diseases & Tumours

1.1   Non-infection diseases –causes, types, symptoms, complications, diagnosis and prevention of diabetes (type-I&II), Hypertension (Primary &secondary), testing of blood glucose using glucometer/ kit.
1.2   Infectious diseases- causes, types, symptoms complication, diagnosis and prevention of tuberculosis and hepatitis.
1.3   Tumours – Types (Benign) Malignant) , detection & metastasis.

Suggested Readings:

1. Prakash, G.(2012). Lab Manual on Blood analysis and Medical Diagnostics. S. Chand and Co. Ltd., New Delhi.

SEC-4   (Credits 2)

Mushroom Culture Technology   Lectures: 30

UNIT-I
(15h)

1. Introduction & history. Medicinal value of edible mushrooms; Poisonous mushrooms. Types of edible mushrooms available in India - *Volvariella volvacea, Pleurotus citrinopileatus, Agaricus bisporus.*

2. Cultivation Technology: Infrastructure: substrates (locally available) Polythene bag, vessels, Inoculation hook, inoculation loop, low cost stove, sieves, culture rack, mushroom unit (Thatched house) water sprayer, tray, small polythene bag.

3. Pure culture: Medium, sterilization, preparation of spawn, multiplication. Mushroom bed preparation - paddy straw, sugarcane trash, maize straw, banana leaves.

4. Factors affecting the mushroom bed preparation - Low cost technology. Composting technology in mushroom production.

UNIT-II
(15h)

5. Storage: Short-term storage (Refrigeration - upto 24 hours) Long term Storage (canning, pickles, papads), drying, storage in salt solutions.

6. Nutritional value of Mushrooms: Proteins - amino acids, mineral elements nutrition - Carbohydrates, Crude fibre content - Vitamins.

7. Food Preparation: Types of foods prepared from mushroom. Research Centres - National level and Regional level. Cost benefit ratio - Marketing in India and abroad, Export Value.

Suggested Readings

1. Marimuthu, T. Krishnamoorthy, A.S. Sivaprakasam, K. and Jayarajan. R (1991) Oyster Mushrooms, Department of Plant Pathology, Tamil Nadu Agricultural University, Coimbatore.

2. Swaminathan, M. (1990) Food and Nutrition. Bappco, The Bangalore Printing and Publishing Co. Ltd., No. 88, Mysore Road, Bangalore - 560018.

3. Tewari, Pankaj Kapoor, S.C., (1988). Mushroom cultivation, Mittal Publications, Delhi.

4. Nita Bahl (1984-1988) Hand book of Mushrooms, II Edition, Vol. 1 & Vol. II.

B.Sc. (Computer Science)

Semester -III

OperatingSystems-1

BS302

SEC-2[B]

Theory   2Hours/Week   2 credits

Unit – I

Introduction: Computer-System Architecture, Computing Environments. Operating-System Structures: Operating-System Services, User Interface for Operating-System, System Calls, Types of System Calls, Operating System Structure.

Process Management: Process Concept, Process Scheduling, Operations on Processes, Inter process Communication, Examples–Producer-Consumer Problem.
Process Synchronization: Critical-Section Problem, Peterson's Solution, Synchronization, Semaphores, Monitors.

Unit – II

CPU Scheduling: Concepts, Scheduling Criteria, Scheduling Algorithms.
Deadlocks: System Model, Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock.

Text   AbrahamSilberschatz,PeterBaerGalvin,GregGagne,*OperatingSystemConcepts(9e)*

References   NareshChauhan, *Principles of Operating Systems* Thomas W. Doeppner, *Operating Systems in Depth* Andrew S. Tanenbaum, *Modern Operating Systems*
William Stallings, *Operating Systems – Internals and Design Principles* Dhananjay M. Dhandhere, *Operating Systems – A Concept Based Approach*

B.Sc. (Computer Science)

Semester -IV

SEC-4

Operating Systems-2

BS402

Theory   2Hours/Week   2credits

Unit – I
Main Memory: Introduction, Swapping, Contiguous Memory Allocation, Segmentation, Paging.
Virtual Memory: Introduction, Demand Paging, Page Replacement, Allocation of Frames, Thrashing.
Mass-Storage Structure: Overview, Disk Scheduling, RAID Structure.
File Systems: File Concept, Access Methods, Directory and Disk Structure, File-System Mounting,
Protection.

Unit – II
File System Implementation, Directory Implementation, Allocation Methods, Free-Space
Management.
Recovery, Network File System.
Protection and Security: Goals of Protection, Principles of Protection, Domain of Protection,
Access Matrix, Access Control, Revocation of Access Rights, The Security Problem, Program
Threats, System and Network Threats, Cryptography as a Security Tool, User Authentication,
Implementing Security Defenses, Firewalling to Protect Systems and Networks, Computer-Security
Classifications. Case Study: Windows 7 and Linux System.

Text   AbrahamSilberschatz,PeterBaerGalvin,GregGagne,*OperatingSystemCon
cepts(9e)*

Reference s   Naresh Chauhan, *Principles of Operating Systems*
Thomas W. Doeppner, *Operating Systems in Depth*
Andrew S. Tanenbaum, *Modern Operating Systems*
William Stallings, *Operating Systems – Internals and Design Principles*
Dhananjay M. Dhandhere, *Operating Systems – A Concept Based
Approach*

B.Sc. Chemistry II Year
Semester III
Skill Enhancement Course- II (SEC –II) (2 Credits)
REMEDIAL METHODS FOR POLLUTION, DRINKING WATER AND SOIL FERTILITY STANDARDS

UNIT I: Remedial Methods for Pollution Prevention and control of air pollution
15 h (1 hr/week)

Ozone hole-causes and harm due to ozone depletion. The effect of CFC's in Ozone depletion and their replacements. Global Warming and Greenhouse Effect Precautions to control global warming. Deleterious effect of pollutants - Endangered Monuments- acid rain. Precautions to protect monuments. Sources of Radiation pollution - Chernobyl accident and its Consequences. Radiation effect by the usage of cell phones and protection tips. Deleterious effects of cell phone towers and health hazards.

Sources of water pollution-(i). Pollution due to pesticides and inorganic chemicals, (ii). Thermal pollution (iii). Ground water pollution (iv). Eutrophication. Methods for control of water pollution and water recycling. Dumping of plastics in rivers & oceans and their effect on aquatic life. Determination of (i) Dissolved Oxygen and (ii) Chemical Oxygen Demand in polluted water - Illustration through charts (or) demonstration of experiments. Sources of soil pollution (i). Plastic bags, (ii). Industrial and (iii). Agricultural sources. Control of soil pollution. Environmental laws in India. Environmental benefits of planting trees.

UNIT II: Drinking Water and Soil Fertility Standards and Analysis
15 h (1 hr/week)

Water Quality and Common Treatments for Private Drinking Water Systems: Drinking Water Standards-Primary Drinking Water Standards : Inorganics, Organics and Volatile Organic Water Chemicals. Secondary Drinking Water Standards-Inorganics and Physical Problems. Water Testing. Mineral Analysis. Microbiological Tests, Pesticide and Other Organic Chemical Tests. Principle involved in Water Treatment Techniques (i) Reverse osmosis (ii) Disinfection methods such as chlorination, ultraviolet light, ozonation etc (iii) Chemical oxidation and (iv) Ion exchange (water softeners). Visit to nearby drinking water plants and interaction at sites.

Introduction to Soil Chemistry- Basic Concepts. Effect of pH on nutrient availability. Macronutrients and their effect on plants -Carbon, Hydrogen, Oxygen, Nitrogen and Phosphorus other micronutrients-Calcium, Magnesium and Sulfur. Micronutrients and their effect on plants. Boron ($B_4 O_7$ 2-), Copper (Cu^{2+}), Iron (Fe^{2+}, Fe^{3+}) Manganese (Mn^{2+}) Molybdenum (MoO4 2-) Zinc (Zn^{2+}) Cobalt (Co^{2+}) Chlorine (Cl-) and Others. Determination of soil nitrogen by Kjeldahl method- Illustration through charts (Or) demonstration of experiment. Visit to nearby agricultural farms and interaction with farmers. Discussion with farmers on the use of Soil Analysis Kits.

References

1. A Text book for 'Remedial methods for pollution, drinking water and soil fertility standards', First Edition, Authors: Dr Mudvath Ravi, Gopu Srinivas, Putta Venkat Reddy, Vansafi Ravi Kumar, Battini Ushaish, ISBN No. 978-93-5311-183-0.

2. Remedial methods for pollution, drinking water and soil fertility standards, Author: Dr G. Vanjatha.

3. Remedial methods for pollution, drinking water and soil fertility standards, Telugu version, Authors: Dr N. Yogi Babu, Dr. G. Vanjatha, M. Srilatha.

4. Environmental Pollution, download.nos.org/333courseE/10.pdf

5. CFC Replacements, butane.chem.uiuc.edu/pshapley/Environmental/L21/3.html

6. Effects of Acid Rain on Buildings www.air-quality.org.uk/12.php

7. Acid Rain Effects - Buildings - Chemistry chemistry.elmhurst.edu/vchembook/190buildings.html 8. How to protect national heritage - ways to protect monuments www.youthkiawaaz.com/2011/03/how-to-protect-national-heritage/.

9. Chernobyl nuclear power plant accident - NRC www.nrc.gov/reading-rm/doc-collections/fact-sheets/chernobyl-bg.pdf

10. Side-effects of harmful radiation from mobile phones and towers pib.nic.in/newsite/printrelease.aspx?relid=116304

11. Cell Phone Radiation Protection - Highly Effective Tips https://www.electricsense.com/775/how-to-protect-yourself-from-cell-phone-radiation/

12. Chemical Waste That Impact on Aquatic Life or Water Quality blog.idservironmentalco.it/chemical-waste-that-impact-on-aquatic-life-or-waterquality

13. Trees and Your Environment - Clean Air Gardening www.cleanairgardening.com/plantingtrees 14. water quality and common treatments for private drinking water . extension.uga.edu/publications/detail.html?number=b939

15. Soil chemistry https://caes.ncsc.edu/about/publications/Teaching-Organic-Farming/PDF-downloads/2.2-soil-chemistry.pdf

16. Soil Analysis-Determination of Available Nitrogen... - Amrita Virtual Lab vlab.amrita.edu/?sub=2&brch=294&sim=1551&cnt=1

17. Determination of dissolved oxygen (DO) www.cutm.ac.in/pdf/cnt%20engg%20lab%26manual.pdf 18. Determination of chemical oxygen demand of wastewater www.pharmaguideline.com › quality control › test

14

Women & Child Rights

2 Credits

Unit - I

1. Introduction: Definition, perspectives and foundations of Human Rights.
2. Universal Declaration of Human Rights (1948).
3. National Human Rights Commission of India.
4. Women's Rights as Human Rights; UN Convention on Elimination of all forms of Discriminations against Women (CEDAW). Crime Against Women – Domestic Violence – Dowry Related Harassment and Dowry Deaths – Molestation – Sexual Abuse and Rape – Loopholes in Practice – Law Enforcement.
5. Women Rights in Indian Constitution – Fundamental Rights and Directive Principles.
6. Protective legislation for women in India - SITA (1956), Dowry Prohibition Act (1961), PNDT (1994), Domestic violence (Prevention) Act (2005) and Prevention Sexual Harassment of women at Workplace Act (2013).
7. Women's Right to Property.

Unit – II

1. Children's Rights: Definitions, meaning and importance.
2. The United Nations **Convention on the Rights of the Child (UNCRC) -1990.**
3. Safeguards of Indian Constitution for Rights of Children.
4. Barriers to realization of Child Rights.
5. National Commission for Protection of Child Rights (NCPCR)

References:

1. Agarwal, H.O., Implementation of Human Rights Covenants with Special Reference to India(Allahabad: Kitab Mahal, 1983).
2. Bajwa, G.S. and D.K. Bajwa, Human Rights in India: Implementation and Violations (New Delhi: D.K. Publishers, 1996).
3. Nitya Rao "Good Women do not Inherit Land" Social Science Press and Orient Blackswan 2008
4. International Solidarity Network "Knowing Our Rights" An imprint of Kali for Women 2006
5. P.D.Kaushik "Women Rights" Bookwell Publication 2007
6. Aruna Goal "Violence Protective Measures for Women Development and Empowerment" Deep and Deep Publications Pvt 2004
7. Monica Chawla "Gender Justice" Deep and Deep Publications Pvt Ltd.2006
8. Preeti Mishra "Domestic Violence Against Women" Deep and Deep Publications Pvt 2007

Paper SEC2 (a): PRACTICE OF LIFE INSURANCE

Objectives: To make students to learn Practice of Life Insurance.

UNIT-I: INTRODUCTION TO LIFE INSURANCE AND TYPES OF LIFE INSURANCE POLICIES AND PREMIUM CALCULATION: Meaning evolution, growth and principles of Life Insurance –Life Insurance Organizations in India – Competition and Regulation of Life Insurance - Types of Life Insurance Policies – Term, Whole Life, Endowment, Unit Linked and with or without Profit Policies – Customer Evaluation – Policy Evaluation – Group and Pension Insurance Policies – Special features of Group Insurance/Super Annuation Schemes – Group Gratuity Schemes. Computation of Premiums - Meaning of Premium, its calculation- Rebates – Mode of Rebates – Large sum assured Rebates – Premium Loading – Rider Premiums – Computation of Benefits – Surrender value – Paid up value.

UNIT-II: SETTLEMENT OF CLAIMS RISK & UNDERWRITTINGS AND FINANCIAL PLANNING & TAX SAVING: Settlement of claims: Intimation Procedure, documents and settlement procedures - Underwriting: The need for underwriting – Guiding principles of Underwriting – Factors affecting Insurability – Methods of Life Classification – Laws affecting Underwriting - Financial Planning and taxation: Savings – Insurance vis-à-vis- Investment in the Units Mutual Funds, Capital Markets – Life Insurance in Individual Financial Planning – Implications in IT treatment.

SUGGESTED READINGS:

1. Practice of Life Insurance: Insurance Institute of India, Mumbai.
2. Insurance and Risk Management: P.K Gupta, Himalaya Publishing House, Mumbai.
3. Fundamentals of Life Insurance Theories and Applications: Kanika Mishra, Prentice Hall
4. Principles of Life Insurance – Dr. V. Padmavathi, Dr. V. Jayalakshmi - PBP
5. Managing Life Insurance: Kurty, S.K., Prentice Hall of India: New Delhi
6. Life and Health Insurance: Black, Jr. Kenneth and Harold Skipper Jr., Prentice Hall, Inc., England.
7. Life Insurance: Principles and Practice: K.C. Mishra and C.S. Kumar, Cengage Learning. New Delhi.
8. Life Insurance in India: Sadhak, Respose Books, New Delhi.

I: PRINCIPLES OF INSURANCE

Objectives: The objectives of the course are to

- ✓ provide a basic understanding of the Insurance Mechanism
- ✓ identify the relationship between Insurers and their Customers and the importance of Insurance Contacts
- ✓ give an overview of major Life Insurance and General Insurance Products

UNIT I:Risk Management, Concept of Insurance, Business of Insurance, Insurance Market and Insurance Terminology

Understanding of Risk—Types of Risks--- Actual and Consequential Losses –Unexpected Eventualities—LossMinimization Techniques – Basics, Evolution and Nature of Insurance – Concept of Pooling in Insurance – Different Classes of Insurance – Importance of Insurance – Management of Risk by Individuals – Management of Risk by Insurers – Fixing of Premiums – Reinsurance and its Importance for Insurers – Role of Insurance in Economic Development and Social Security –Constituents of Insurance Market – Operations of Insurance Companies – Operations of Intermediaries – Specialist Insurance Companies – Insurance Specialists – Role of Regulators and Other Bodies Connected with Insurance—CommonTerms and specific terms in Insurance: Life and Non Life – Usage of Insurance Terms – Understanding Insurance Customers and their needs and behavior in purchase and claims– Importance of Customers – Customer Mindsets – Customer Satisfaction — Importance of Ethical Behavior

UNIT II: Insurance Customer, Insurance Products and Insurance Contracts

Life Insurance and General Insurance Products: Risk of Dying Early – Risk of Living too Long – Products offered – Term Plans – Pure Endowment Plans – Combinations of Plans – Traditional Products – Linked Policies – Features of Annuities and Group Policies. General Insurance Products: Risks faced by Owner of Assets – Exposure to Perils – Features of Products Covering Fire and Allied Perils – Products covering Marine and Transit Risks – Products covering Financial Losses due to Accidents – Products covering Financial Losses due to Hospitalization – Products Covering Miscellaneous Risks. Insurance Contract Terms – Principles of Insurance: Principle of Insurable Interest, Principle of Indemnity, Principle of Subrogation, Principle of Contribution, Relevant Information Disclosure, Principle of utmost Good Faith, Relevance of Proximate Cause

Suggested Readings

1. Principles of Insurance : Insurance Institute of India

2. Risk Management : Insurance Institute of India

3. Role of Insurance in Financial inclusion : Brinda Publishing House, Hyderabad

BC 601: REGULATIONS OF INSURANCE BUSINESS

Paper: BC601   Max. Marks: 40+10
PPW: 2 Hrs   Exam Duration: 1½ Hrs

Objective: To equip the students with the knowledge regarding Insurance Business Regulations

UNIT I: INSURANCE LEGISLATION IN INDIA:

History of life and non-life insurance legislation—nationalization—insurance reforms—insurance business Act, 1972—IRDA and its functions including licensing functions—Web aggregators—regulation for intermediaries—CCS-SPV-PoS-insurance repositories-TPAs—Role and duties of surveyors—Origin and development of micro-insurance—regulation of ULIPs—pension schemes—money laundering—KYC—methods of receipt of premium—Exchange control regulations relating to General and Life Insurance—IRDA Health Insurance Regulations, 2016—Health plus life combi products.

UNIT II: POLICY HOLDERS RIGHTS OF ASSAINGMENT, NOMINATION AND TRANSFER:

Assignment and transfer of insurance policies—provisions related to nomination—repudiation—Fraud—protection of policyholder interest—stages in insurance policy-presale stage-post sale stage-free look period—grievance redressal—claim settlement—key feature document—dispute resolution mechanism—insurance ombudsman—solvency margin and investments—international trends in insurance regulation.

SUGGESTED READINGS :

1. Regulation of Insurance Business – Insurance Institute of India
2. Regulation of Insurance Business – D.S. Vittal, HPH
3. Regulation of Insurance Business: Dr. V. Padmavathi, PBP
4. Risk Management : A Publication of the Insurance Institute of India
5. Insurance Theory and Practice: Tripathi PHI
6. Life and Health Insurance: Black, JR KENNETH & Harold Skipper, Pearson
7. Risk Management and Insurance : Trieschman, Gustavson and Hoyt
8. South Western College Publishing Cincinnati, Ohio
9. Insurance Management – S.C. Sahoo & S.C. Das-HPH.

Rural Development

2 Credits

Unit – I: Introduction of Rural Development:

Rural Development: - Meaning – Importance and objectives of Rural Development- Rural Economy of India: size and structure of Rural Economy - The characteristics of the Rural Sector - Role of Agricultural and Allied Sector- Role of the Non-Agricultural sub-sector-Education, Health, Sanitation, Rural Artisan– Nature of changes since Independence - Challenges and opportunities.

Unit – II: Determinants & Approaches to Rural Development:

Determinants of Rural Development: Change in Output - Changes in the Utilization of Natural Resources – Employment, Capital, Technology and Industrial framework Approaches to Rural Development: C.D. Program - Intensive Agricultural Districts Program - S.F.D.A. and M F.A.L.A.- D.P.A.P. - D.D.P. - I.R.D.P., D.W.C.R.A. - S.G.S.Y., Self help groups in Rural Development, other programmes for Rural Development.

Suggested Readings:

1. Katar Singh (1999), "Rural Development - principles policies and Management" Sage Publications, New   Delhi.

2. I. Satyasundaram (1999) "Rural Development" Himalaya Publishing House, New Delhi.

3. Bhalla. G. S. (1994) "Economic Liberalization and Indian Agriculture" (Ed)

4. John Mellor and Gunvant Desai (1986) "Agricultural Change and Rural Poverty", Oxford University Press, Bombay.

5. NABARD (1999) "Review of working of Regional Rural Banks", Mumbai.

6. Ministry of Rural area and Employment "Programs for Change" GoI, New Delhi.

7. Plan Documents, GoI, New Delhi.

Sci Lab

2 Credits

Unit – I

Introduction to Scilab – what is scilab, downloading & installing scilab, a quick taste of scilab.

The Scilab Environment – manipulating the command line, working directory, comments, variables in memory, recording sessions, the scilab menu bar, demos.

Scalars & Vectors – introduction, initializing vectors in scilab, mathematical operations on vectors, relational operations on vectors, logical operations on vectors, built-in logical functions.

Unit – II

Scalars & Vectors – elementary mathematical functions, mathematical functions on scalars, complex numbers, trigonometric functions, inverse trigonometric functions, hyperbolic functions.

Matrices – introduction, arithmetic operators for matrices, basic matrix processing.

Polynomials – introduction, creating polynomials, basic polynomial commands, finding roots of polynomial, polynomial arithmetic, miscellaneous polynomial handling.

Text	Er. Hema Ramachandran, Dr. Achuthsankar S. Nair, *Computer SCILAB–A Free Software to MATLAB*
References	Digite, *Introduction to Scilab*
	Digite, *Optimization in Scilab*
	Scilab Enterprises, *Scilab for Very Beginners*
	Digite, *Introduction to Discrete Probabilities with Scilab*

BC 602: SECTORS OF INDIAN ECONOMY

Paper: BC602   Max. Marks: 40+10
PPW: 2 Hrs   Exam Duration: 1½ Hrs

Objective: To equipment the students with the knowledge regarding Basics of Indian Economy

UNIT I: AGRICULTURE IN INDIA:

Place of agriculture: Progress-Green revolution-Present state-New thrust areas-Food security: Legislation-Schemes-Public distribution system-Agricultural Marketing: Types-warehousing-Agricultural Labour-Minimum wages-Rural credit-RRBs-NABARD.

UNIT II: INDUSTRIES AND TERTIARY SECTOR IN INDIA:

Role and pattern of industrialization-Large-scale industry- Small-scale industry-Information Technology Industry-Labour problems-Labour Policy-Social Security-Trade Union Movement-Industrial Disputes-Unorganized Sector-Foreign Trade - Balance of Payments - SEZs- Foreign Exchange- Convertibility-Banking Sector-Money Market- Public Finance-Financial relations between Centre and States;.

SUGGESTED READINGS:

1) Meera Naidu " Sectors of Indian Economy" HPH
2) Ruddar Datt and K.P.M. Sundharam "Indian Economy", S. Chand & Company Ltd., New Delhi, 2010.
3) S.K.Misra & V.K.Puri "Indian Economy-Its Development Experience"Himalaya Himalya Publishing Company, New Delhi, 2010.
4) Vivek Mittal "Business Environment" Excel Publications, New Delhi, 2007.
5) Sectors of India Economy: Dr. P. Venugopal Rao, PBP
6) Anjaneyulu, "Introduction to Indian Economy" Himalaya Himalya Publishing Company, New Delhi, 2011.
7) Economic Survey—Government of India, Ministry of Finance, Oxford University Press, New Delhi,
8) Sectors of Indian Economy: Satya Sudha, Himalaya
9) The Economic Times, News paper

B.Sc. Chemistry II Year Semester IV
Skill Enhancement Course- IV (SEC - IV) (2 Credits)
Chemistry of Cosmetics and Food Processing

Unit-I: Chemistry of Cosmetics and Perfumes

A general study including preparation and uses of the following: Hair dye, hair spray, shampoo, sunscreen lotions, lipsticks, talcum powder, nail enamel, creams (cold, vanishing and shaving creams), antiperspirants and artificial flavours. Essential oils and their importance in cosmetic industries with reference to eugenol, geraniol, sandalwood oil, eucalyptus, 2-phenyl ethyl alcohol. Demonstration experiments or illustration of experimental procedures through charts for the preparation of talcum powder, shampoo and vanishing cream. Analysis of deodorants and antiperspirant - Aluminum, Zinc, Boric acid, Chloride and Sulphide.

Unit-II: Food Processing and Food Adulteration

Food processing: Introduction, methods for food processing, additives and preservatives. Food processing- impact on nutrition, analysis of calcium in milk by complexometric titration, spectrophotometric analysis of iron in foods, Spectrophotometric identification and determination of caffeine and benzoic acid in soft drinks. Field Work -Visit to Food Industries. Food adulteration: Adulterants in some common food items and their identification: Pulses, chilli powder, turmeric powder, milk, honey, spices, food grains and wheat flour, coffee powder, tea leaves, vegetable oil, ghee, ice creams, tomato sauce. Field Work-Collection of adulterated food samples, demonstration of a minimum of five experiments for testing adulterants in food items.

References

1. E. Stocchi: Industrial Chemistry, Vol -I, Ellis Horwood Ltd. UK.
2. P.C. Jain, M. Jain: Engineering Chemistry, Dhanpat Rai & Sons, Delhi
3. Sharma, B.K. & Gaur, H. Industrial Chemistry, Goel Publishing House, Meerut (1996).
4. Rameen Devi, Food Processing and Impact on Nutrition, Sc J Agric Vet Sci., AugSep 2015; 2(4A):304-311.
5. W.A. Poucher, Perfumes, Cosmetics and Soaps (1993).
6. Srilakshmi, Food Science. Edition: 3rd (2004). 7. Lillian Hoagland Meyer, Food chemistry (2008).
8. Handbook of Analysis and Quality Control for Fruit and Vegetable Products,S. Ranganna, Tata McGraw-Hill Education, 1986 – Food.
9. Fundamental concepts of applied chemistry J.C Ghosh, S. Chand and Co, Ltd, New Delhi.
10. Applied Chemistry K .Bhagavathi Sundhar, MJP publishers.

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B.Sc. Chemistry II Year
Semester III
Skill Enhancement Course- II (SEC –II) (2 Credits)
REMEDIAL METHODS FOR POLLUTION, DRINKING WATER AND SOIL
FERTILITY STANDARDS

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UNIT I: Remedial Methods for Pollution Prevention and control of air pollution   15 h (1 hr/week)

Ozone hole-causes and harm due to ozone depletion. The effect of CFC's in Ozone depletion and their replacements. Global Warming and Greenhouse Effect Precautions to control global warming. Deleterious effect of pollutants - Endangered Monuments- acid rain. Precautions to protect monuments. Sources of Radiation pollution - Chernobyl accident and its Consequences. Radiation effect by the usage of cell phones and protection tips. Deleterious effects of cell phone towers and health hazards.
Sources of water pollution-(i). Pollution due to pesticides and inorganic chemicals, (ii). Thermal pollution (iii). Ground water pollution (iv). Eutrophication.
Methods for control of water pollution and water recycling. Dumping of plastics in rivers & oceans and their effect on aquatic life. Determination of (i) Dissolved Oxygen and (ii) Chemical Oxygen Demand in polluted water - Illustration through charts (or) demonstration of experiments. Sources of soil pollution (i). Plastic bags, (ii). Industrial and (iii). Agricultural sources. Control of soil pollution. Environmental laws in India. Environmental benefits of planting trees.

UNIT II: Drinking Water and Soil Fertility Standards and Analysis   15 h (1 hr/week)

Water Quality and Common Treatments for Private Drinking Water Systems: Drinking Water Standards-Primary Drinking Water Standards : Inorganics, Organics and Volatile Organic Chemicals. Secondary Drinking Water Standards-Inorganics and Physical Problems. Water Testing, Mineral Analysis, Microbiological Tests, Pesticide and Other Organic Chemical Tests. Principle involved in Water Treatment Techniques. (i) Reverse osmosis (ii) Disinfection methods such as chlorination, ultraviolet light, ozonation etc (iii) Chemical oxidation and (iv) Ion exchange (water softeners). Visit to nearby drinking water plants and interaction at sites.

Introduction to Soil Chemistry- Basic Concepts. Effect of pH on nutrient availability. Macronutrients and their effect on plants -Carbon, Hydrogen, Oxygen, Nitrogen and Phosphorus other macronutrients-Calcium, Magnesium and Sulfur. Micronutrients and their effect on plants. Boron ($B_4O_7^{2-}$), Copper (Cu^{2+}), Iron (Fe^{2+}, Fe^{3+}) Manganese (Mn^{2+}) Molybdenum (MoO_4^{2-}) Zinc (Zn^{2+}) Cobalt (Co^{2+}) Chlorine (Cl^-) and Others. Determination of soil nitrogen by Kjeldahl method- Illustration through charts (Or) demonstration of experiment. Visit to nearby agricultural forms and interaction with farmers. Discussion with farmers on the use of Soil Analysis Kits.

Course 3: Leadership and Management Skills

Context with Justification :

Leaders are foundations of the society, who face and win against adversities and odds of life. Through their words and deeds, they show path to others and transform into inspirational role models, affecting social life vividly. In the current times of cut-throat competitions, disbelief in values, techno-centric complex lifestyles, there is a dire need to emphasise the 'human' agency in community living. This can be done by cultivating and nurturing the innate leadership skills of the youth so that they may transform these challenges into opportunities and become torch bearers of the future by developing creative solutions.

Objectives :

The Module is designed to:

> Help students to develop essential skills to influence and motivate others
> Inculcate emotional and social intelligence and integrative thinking for effective leadership
> Create and maintain an effective and motivated team to work for the society
> Nurture a creative and entrepreneurial mindset
> Make students understand the personal values and apply ethical principles in professional and social contexts.

Expected Outcomes :

Upon completion of the course students will be able to:

1. Examine various leadership models and understand/assess their skills, strengths and abilities that affect their own leadership style and can create their leadership vision
2. Learn and demonstrate a set of practical skills such as time management, self management, handling conflicts, team leadership, etc.
3. Understand the basics of entrepreneurship and develop business plans
4. Apply the design thinking approach for leadership
5. Appreciate the importance of ethics and moral values for making of a balanced personality.

Credit: 02

Duration: 30 Hours

Number & Titles of Modules:

Module 1	Leadership Skills	6 Hours
Module 2	Managerial Skills	6 Hours
Module 3	Entrepreneurial Skills	6 Hours
Module 4	Innovative Leadership and Design Thinking	6 Hours
Module 5	Ethics and Integrity	6 Hours

1.11   Number Theory

(w.e.f. academic year 2020-21)

SEC-III

Theory: 2 credits
Theory: 2 hours /week

Objective: Students will be exposed to some of the jewels like Fermat's theorem, Euler's theorem in the number theory.
Outcome: Student uses the knowledge acquired solving some divisor problems.

Unit- I
The Goldbach conjecture - Basic properties of congruences- Binary and Decimal Representation Integers - Number Theoretic Functions; The Sum and Number of divisors- The Mobius Inversion Formula- The Greatest integer function.

Unit- II
Euler's generalization of Fermat's Theorem: Euler's Phi function- Euler's theorem Some Properties of the Euler's Phi function.

Text:

- David M Burton, *Elementary Number Theory* (7e)

References:

- Thomas Koshy, *Elementary Number Theory and its Applications*
- Kenneth H Rosen, *Elementary Number Theory*

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SYLLABUS

Paper : (BC 501) : PRACTICE OF GENERAL INSURANCE

Paper: BC501
PPW: 2 Hrs

Max. Marks: 40+10
Exam Duration: 1½ hrs

Unit I: GENERAL INSURANCE POLICIES:

Introduction to General Insurance-Origin of general insurance—Classification of General Insurance Companies—Indian and International Insurance Market—various roles in Insurance industry—Policy Documents and forms—insurance proposals and forms—General Insurance Products-Fire, Marine, Motor, Liability, Personal Accident and Specialty Insurance, Engineering and other insurance.

Unit II: UNDERWRITING, PREMIUMS, CLAIMS AND INSURANCE RESERVES AND ACCOUNTING:

Concept of Underwriting—Underwriting Process—Risk sharing and its methods—risk management and steps involved in it—Rating and Premiums—concept of soft and hard markets—Concept of Claim-understanding the process of claim management—claims fraud and fraud prevention—Insurance reserves and accounting—different types of reserves of insurance companies—reserving process followed by insurance companies—Insurance accounting.

SUGGESTED READINGS :

1. Practice of General Insurance – Insurance Institute of India.
2. Practice of General Insurance – D.S. Vittal-HPH.
3. Principles & Practice of Insurance- Dr. P. Periasamy – HPH.
4. Risk Management : A Publication of the Insurance Institute of India.,
5. Practice of General Insurance: Dr. V. Padmavathi, Dr. V. Jayalakshmi, PBP.
6. Insurance Theory and Practice: Tripathi PHI
7. Life and Health Insurance: Black, JR KENNETH & Harold Skipper, Pearson
8. Risk Management and Insurance : Trieschman ,Gustavson and Hoyt
9. South Western College Publishing Cincinnati, Ohio.

SECOND YEAR SYLLABUS

Paper : (BC 301): PRINCIPLE OF INSURANCE

Paper: BC 301   Max. Marks: 100
PPW: 2 Hrs   Exam Duration: 3Hrs
Credits : 2

Objectives: The objectives of the course are : 1) to provide a basic understanding of the Insurance Mechanism. 2) identify the relationship between Insurers and their Customers and the importance of Insurance Contacts. 3) give an overview of major Life Insurance and General Insurance Products

UNIT I: RISK MANAGEMENT AND INSURANCE : Understanding of Risk Management – Different Types of Risks – Actual and Consequential Losses – Management of Risks – Loss Minimization Techniques – Basics, Evolution and Nature of Insurance – Concept of Pooling in Insurance – Different Classes of Insurance – Importance of Insurance – Unexpected Eventualities

UNIT II: INSURANCE BUSINESS AND MARKET : Management of Risk by Individuals – Management of Risk by Insurers – Fixing of Premiums – Reinsurance and its Importance for Insurers – Role of Insurance in Economic Development and Social Security – Contribution of Insurance to the Society – Constituents of Insurance Market – Operations of Insurance Companies – Operations of Intermediaries – Specialist Insurance Companies – Insurance Specialists – Role of Regulators – Other Bodies Connected with Insurance

UNIT III: INSURANCE TERMINOLOGY AND INSURANCE CUSTOMERS : Common Terms in Insurance: Life and Non Life – Specific Terms in Insurance: Life and Non Life – Usage of Insurance Terms – Understanding Insurance Customers – Different Customer Needs – Importance of Customers – Customer Mindsets – Customer Satisfaction – Customer Behavior at Purchase Point – Customer Behavior when Claim Occurs – Importance of Ethical Behavior

UNIT IV: INSURANCE CONTRACT : Insurance Contract Terms – Principles of Insurance: Principle of Insurable Interest, Principle of Indemnity, Principle of Subrogation, Principle of Contribution, Relevant Information Disclosure, Principle of utmost Good Faith, Relevance of Proximate Cause

UNIT V: INSURANCE PRODUCTS : a) *Life Insurance Products*: Risk of Dying Early – Risk of Living too Long –Products offered – Term Plans – Pure Endowment Plans – Combinations of Plans – Traditional Products – Linked Policies – Features of Annuities and Group Policies.   **b)** General Insurance Products: Risks faced by Owner of Assets – Exposure to Perils – Features of Products Covering Fire and Allied Perils – Products covering Marine and Transit Risks – Products covering Financial Losses due to Accidents – Products covering Financial Losses due to Hospitalization – Products Covering Miscellaneous Risks

SUGGESTED READINGS

1. Risk Management and Insurance   : Vaughan and Vaughan
2. Risk Management   : A Publication of the Insurance Institute of India
3. Role of Insurance in Financial inclusion : Brinda Publishing House, Hyderabad
3. Guide to Risk Management   : Sagar Sanyal
4. Insurance and Risk Management   : P.K. Gupta
5. Insurance Theory and Practice   : Tripathi PHI
6. Principles of Insurance Management   : Neelam C Gulati, Excel Books
7. Life and Health Insurance   : Black, JR KENNETH & Harold Skipper, Pearson
8. Principles of Risk Management and Insurance : (13th Edition), George E Rejda
9. Risk Management and Insurance   : Trieschman ,Gustavson and Hoyt . South Western College Publishing Cincinnati, Ohio

Suggested Websites : 1) www.irda.gov.in **2)** www.polocyholder.gov.in **3)** www.irdaindia.org.in

1.9   Theory of Equations

(w.e.f. academic year 2020-21)

SEC-I

Theory: 2 credits
Theory: 2 hours /week

Objective: Students learn the relation between roots and coefficients of a polynomial equation, Descartes's rule of signs in finding the number of positive and negative roots if any of a polynomial equation bsides some other concepts.

Outcome: By using the concepts learnt the students are expected to solve some of the polynomial equations.

Unit- I

Graphic representation of a polynomial-Maxima and minima values of polynomials-Theorems relating to the real roots of equations-Existence of a root in the general equation -Imaginary roots-Theorem determining the number of roots of an equation-Equal roots-Imaginary roots enter equations in pairs-Descartes' rule of signs for positive roots- Descartes' rule of signs for negative roots.

Unit- II

Relations between the roots and coefficients-Theorem-Applications of the theorem-Depression of an equation when a relation exists between two of its roots-The cube roots of unity Symmetric functions of the roots-examples.

Text:

- W.S. Burnside and A.W. Panton,*The Theory of Equations*

References:

- C. C. Mac Duffee, *Theory of Equations*
- Hall and Knight , *Higher Algebra*

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B.Sc. ZOOLOGY II YEAR
SEMESTER- IV
PAPER-IV(SEC-3): VERMICULTURE

Instructions: 2hr per week
No. of period: 30
No. of credits: 2

UNIT-I:
(15 Periods)

1.1 Scope of vermi technology- Vermiculture and vermi composting – difference between vermiculture and vermi composting –

1.2 Earthworm diversity – Ecological groups of earthworms, biology of composting earthworms – Eoisena foeitida, Eudrilus lugeniae.

1.3 Soil – Physical, chemical and biological features

1.4 Organic waste sources – problems in traditional composting, vermi compositing

1.5 Types small and large scale pit method, heap method.

UNIT-II:
(15 Periods)

2.1. Vermiculture techniques – vermi culture process – site selection - Selection and collection of species mono and poly culture

2.2. Essential parameters for vermi culture – bedding. Methods of harvesting worms general manual methods, self harvesting method, mechanical method

2.3. Nutritive value of vermi compost, storing and packing of compost

2.4. Applications of vermi composting in agricultural and horticultural practices

2.5. Economic of vermi culture, nationalized bank, NABARD support for vermi culture.

References:
1. Earthworm ecology by LEE
2. Biology of earthworm by Steven son
3. Vermi composting tech – soil health to human health by Ranganathan L.S.

Unit-I (Inorganic Chemistry)   15 Hrs
S6-O-I-1: Inorganic Reaction Mechanisms   4h
Labile and inert complexes, Thermodynamic and kinetic stability, ligand substitution reactions – S_N^1 and S_N^2 in Octahedral complexes; substitution reactions of square planar complexes – Trans effect and applications of trans effect. Reactions of tetrahedral complexes - Hydrolysis of silicon halides ($SiCl_4$) and phosphorous oxides (P_2O_5).

S6-O-I-2: Boranes and Carboranes: 2 h
Definition of clusters. Structures of boranes and carboranes- Wade's rules, Closo ($B_6H_6^{2-}$), Nido (B_5H_9), Arachno Boranes (B_4H_{10}) and Carboranes ($C_2B_{10}H_{12}$).

S6-O-I-3: Symmetry of molecules   5 h
Introduction, Symmetry operations and symmetry elements in molecules. Definition of Axis of symmetry types of C_n, Plane of symmetry (σ_h, σ_v, σ_d), Centre of symmetry and Improper or Rotation-reflection axis of symmetry (S_n). Explanation with examples.

S6-O-I-4: Non – aqueous solvents   4 h
Classification and characteristics of a solvent. Reactions in liquid ammonia – physical properties, auto-ionisation, examples of ammono acids and ammono bases. Reactions in liquid ammonia – precipitation, neutralization, solvolysis, solvation - solutions of metals in ammonia, complex formation, redox reactions. Reactions in HF – auto-ionisation, reactions in HF – precipitation, acid – base reactions, protonation.

Unit-II (Organic Chemistry)   15 Hrs
S6-O-O-1: Pericyclic Reactions   5 h
Concerted reactions, Molecular orbitals of ethene,1,3-butadiene and allyl radical. Symmetry properties, HOMO, LUMO, Thermal and photochemical pericyclic reactions. Types of pericyclic reactions – electrocyclic, cycloaddition and sigmatropic reactions – one example each and their explanation by FMO theory.

S6-O-O-2: Synthetic Strategies   5 h
Terminology – Target molecule (TM), Disconnection approach – Retrosynthesis, Symbol, Synthon, Synthetic equivalent (SE), Functional group interconversion (FGI), Linear and Convergent synthesis. Retrosynthetic analysis of the following molecules: 1) acetophenone 2) cyclohexene and 3) 2-phenylethanol.

S6-O-O-3: Asymmetric synthesis   5 h
Definition and classification of stereoslective reactions: substrate, product stereoselective reactions, enantio and diastereo selective reactions. Stereospecific reaction – definition –example – dehalogenation of 1,2-dibromides induced by iodide ion. Enantoselective reactions – definition – example –Reduction of Ethylacetoacetate by Yeast. Diastereoselective reaction- definition-

example: Acid catalysed dehydration of 1-phenylproponal and Grignard addition to 2-phenyl propanal. Definition and explanation of enantiomeric excess and diastereomeric excess.

Unit III (Physical Chemistry)   15 Hrs
S6-O-P--1: Polymers   15 h
Definition of polymers – natural polymers and synthetic polymers examples classification as plastics, fibers, elastomers.
Thermosetting, thermoplastic polymers. Branched, cross-linked and co-polymers.
Definition of polymerization - addition and condensation polymerization with examples. Explanation: chain polymerization, step polymerization, co-polymerization and co-ordination polymerization. Kinetics of free radical polymerization. Tacticity, atacticity, stereo specific synthesis- Zeigler- Natta catalyst.
Molecular weight definitions - number average and weight average molecular weight, Problems. Determination of molecular weight of polymers using viscosity method, Osmometric method.
Preparation and industrial applications of polyethylene, poly vinyl chloride (PVC), nylon –66, teflon, polyacrylonitrile and terelene.
Introduction to biodegradability and examples of biodegradable polymers.

Unit IV: (General Chemistry)   15 Hrs

S6-O-G--1: Electroanalytical Methods   15 h
Types of Electroanalytical Methods.
I) Interfacial methods – a) Potentiometry: Principle, Electrochemical cell, Electrodes- (i) Indicator and (ii) Reference electrodes – Normal Hydrogen Electrode, Quinhydrone Electrode, Saturated Calomel Electrode. Numerical Problems. Application of Potentiometry – Assay of Sulphanilamide
b) Voltammetry – three electrode assembly; Introduction to types of voltametric techniques, micro electrodes, Over potential and Polarization.

II) Bulk methods – Conductometry, Conductivity Cell, Specific Conductivity, Equivalent

TELANGANA STATE
B.A. (HISTORY) SYLLABUS
Semester - VI
Ancient Civilizations
Optional
(2019-2020)

Unit-I: Beginnings of Ancient Civilizations – Features - Mesopotamian Civilization - Beginning and Expansion - Contacts with Other Civilizations - Nature of Polity – Socio-Economic and Religious Conditions - Evolution of Script - Art & Architecture.

Unit-II Egyptian Civilization - Origin and Spread – Polity - Society – Economy - Art and Architecture.

Unit-III Indus Valley Civilization – Salient Features – Decline - China - Nature and Extent of Civilization – Polity – Society - Economy – Religious Beliefs - Philosophy and Culture.

Unit-IV Greek Civilization - Nature of Polity and Society - Agrarian Economy - Trade and Urbanization - Distinctive Features of Greek Civilization – Philosophy – Education - Art and Architecture - Roman Civilization - Origin and Spread of Roman Empire – Features - Polity and Roman Republic – Slavery - Social Structure - Economic Organization - Religious System and Cultural Contribution – Decline.

Recommended Books:

A.L. Basham, *The Wonder that was India*, Rupa & Co., New Delhi, 2001.
Breasted, J.H., *Ancient Times: A History of the Early World*, Ginn, 1916, Vol. 2-5, 10
Bury, J., *History of Greece*.
Durant, W., *The History of Civilizations & Our Oriental Heritage*.
Gordon Childe, *What Happened in History*.
Joseph Needham, *Science and Civilization in China*.
Schneider, H., *The History of World Civilizations from Pre-Historic Times to the Middle Ages*.
B.V. Rao, *World History*.

Paper GE: BUSINESS ECONOMICS

Objective: *to acquire knowledge for application of economic principles and tools in business practices.*

UNIT-I: INTRODUCTION:
Business Economics: Meaning - Nature – Characteristics - Importance and Role - Micro & Macro Economics - Scope - Objectives - Law of Diminishing marginal utility - Law of Equi-marginal utility.

UNIT- II: DEMAND ANALYSIS:
Meaning – Function - Factors influencing Demand -Types of Demand -Demand Curve - Law of Demand –Exceptions to the law of demand-Elasticity of Demand: Concept - Types of elasticity of demand-price, income and cross Elasticity of Demand –measurement of elasticity—arc and point methods—Importance of various Elasticity of Demand

UNIT-III: SUPPLY ANALYSIS:
Law of Supply - Factors influencing Supply - Market Equilibrium- Consumer Surplus - Theory of Consumer behavior - Utility and indifference curve analysis.

UNIT–IV: PRODUCTION ANALYSIS:
Concept of Production –production function-Total Production - Marginal Production - Average Production –returns to a factor- Law of Variable Proportions - Law of Returns to Scale – Isocost – Isoquants - Economies and Dis-economies of Scale.

UNIT-V: COST AND REVENUEANALYSIS:
Theory of Cost - Concepts of Cost - Short run and Long run cost curves - Traditional and Modern Approaches -Revenue Curves–relationship between total marginal and average revenues- --Break Even Analysis—Meaning – Assumptions – Uses and Limitations.

SUGGESTED READINGS:

1. Business Economics: V. G. Mankar, Himalaya Publishing House
2. Managerial Economics: Vanith Agrawal, Pearson Education
3. Business Economics: H. L. Ahuja, S. Chand & Co. Ltd.
4. Business Economics : R. K. Lekhi, Kalyani Publishers
5. Business Economics: D. M. Mithani, Himalaya Publishing House
6. Business Economics: P. N. Chopra, Kalyani Publishers
7. Essential of Business Economics: D. N. Dwivedi, Vikas Publishers
8. Managerial Economics: Varshney and Maheswari, Sultan Chand
9. Business Economics: P. K. Mehta, Tax Mann Publication.

III y

B.SC. APPLIED NUTRITION AND PUBLIC HEALTH III YEAR

V - SEMESTER

BS 503, GENERIC ELECTIVE -1 (GE 1)
FUNDAMENTALS OF FOOD AND NUTRITION

NO. OF HOURS: 60   **CREDITS: 4**

CREDITI: FUNDAMENTALS OF FOOD   15 Hours
1.1 Definition of food, Types of foods- Nano foods, Convenience foods,
1.2 Texturized Foods, space Foods, Novel foods, Organic foods

CREDIT II: FUNDAMENTALS OF NUTRITION   15 Hours
2.1 Definition of Nutrition
2.2 Digestion, absorption & assimilation of nutrients in the human gut
2.3 Benefits of intestinal microflora- Pre & probiotics.

CREDIT IIL FOOD SAFETY AND QUALITY CONTROL   15 Hours
3.1 Selecting and purchasing food
3.2 Understanding food labels
3.3 Storing raw foods and cooked foods
3.4 Definition of food adulteration and common adulterants present in food

CREDIT IV. HYGIENE AND SANITATION   15 Hours

4.1   Definition of hygiene and sanitation
4.2   Personal hygiene of food Handler
4.3   Techniques of washing hands
4.4   Pest control and garbage disposal

REFERENCE BOOKS:
1. Sri Lakshmi. B, Nutrition Science, New age international Pvt. Ltd. publishers.
2. Srilakshmi B., Food Science, New Age International Pvt. Ltd publishers
3. Biochemistry- U Satyanarayana, U chakrapani, Books and Allied (Pvt . Ltd.)
4. The pink book –food smart by FSSAI
5. Catering Management – An Integrated Approach – MohiniSethi, Surjeet Malhan,3rd edition, New Age International Publishers.

Dr. Bhandon Manjula, Ph.D.
Chairman
Board of Studies, Nutrition
Osmania University
Hyderabad.

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Proposed scheme for B.ScMicrobiology program under choice based credit system (CBCS)

With effect from 2020-21

Syllabus for B.Sc Microbiology   Code: DSE-2A

B.Sc III year: VI Semester

Title: INDUSTRIAL MICROBIOLOGY   4 HPW-Credits-4

UNIT-1: MICROORGANISMS AND SELECTION

Introduction to Industrial Microbiology, Microorganisms of industrial importance -Yeast, Molds, Bacteria, Actinomycetes. Screening and selection of industrially useful microbes. Steps to maintain seed culture and inoculation strategies for enhanced product yield. Strain improvement strategies. Immobilization methods – adsorption and entrapment.

UNIT-2: FERMENTATION

Design of bioreactor. Physico-chemical standards used in bioreactors. Limitations of bioreactor, Fermentation equipment and its use. Design of fermentor, type of fermenter, agitation, aeration, antifoam, pH and temperature control. Stages of fermentation process. Inoculation media and fermentation media ; Raw materials used in fermentation industry and their processing, Downstream processing.

Unit-3: TYPES OF FERMENTATON

Types of fermentations: Batch, Fed batch, continuous types and kinetics. Submerged, surface, solid state, dual and multiple fermentations. Advantages and disadvantages of solid substrate and liquid fermentations. Fermentation. Common Microbial fermentation, alcohol and lactic acid fermentation.

UNIT-4: MICROBIAL PRODUCTS

Industrial products derived from microbes: vitamins: B12; Vaccines: recombinant vaccines, production of beverages (beer and wine), biofuels (biogas and methane), enzymes (amylase), antibiotics (penicillin), aminoacids (glutamic acid), organic acid (citric acid). Disposal of industrial waste.

References:

1. Patel, A.H. (1984). Industrial Microbiology, Mac Milan India Ltd., Hyderabad.
2. Cassida, L.E. (1968). Industrial Microbilogy, Wiley Eastern Ltd. & New Age International Ltd., New Delhi.
3. Crueger, W. and Crueger, A. (2000). Biotechnology – A Text Book of Industrial Microbiology, Panima Publishing Corporation, New Delhi
4. Reedy, G. (Ed.) (1987). Prescott & Dunn's Industrial Microbiology, 4th Edition, CBS Publishers & Distributors, New Delhi.
5. Reddy, S.R. and SingaraCharya, M.A. (2007). A Text Book of Microbiology - Applied Microbiology.Himalaya Publishing House, Mumbai.
6. Singh, R.P. (2007). Applied Microbiology. Kalyani Publishers, New Delhi.
7. Demain, A.L. and Davies, J.E. (1999). Manual of Industrial Microbiology and Biotechnology, ASM Press, Washington, D.C., USA

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Dr.B.Bhima
Chairman BoS
Dept. of Microbiology

INDUSTRIAL MICROBIOLOGY

PRACTICALS

2HPW-Credits-1

1. Screening for amylase producing microorganisms
2. Screening for organic acid producing microorganisms
3. Estimation of Ethanol by potassium dichromate method.
4. Production of citric acid by submerged fermentation
5. Estimation of Citric acid by titrimetry method.
6. Estimation of penicillin.
7. Bacterial slides- Bacillus, Lactobacillus, Yeast, Aspergillus, Pencillium

References:

1. Patel, A.H. (1984). Industrial Microbiology, Mac Milan India Ltd., Hyderabad.
2. Cassida, L.E. (1968). Industrial Microbilogy, Wiley Eastern Ltd. & New Age International Ltd., New Delhi.
3. Crueger, W. and Crueger, A. (2000). Biotechnology – A Text Book of Industrial Microbiology, Panima Publishing Corporation, New Delhi
4. Reedy, G. (Ed.) (1987). Prescott & Dunn's Industrial Microbiology, 4th Edition, CBS Publishers & Distributors, New Delhi.
5. Reddy, S.R. and SingaraCharya, M.A. (2007). A Text Book of Microbiology - Applied Microbiology.Himalaya Publishing House, Mumbai.
6. Singh, R.P. (2007). Applied Microbiology. Kalyani Publishers, New Delhi.
7. Demain, A.L. and Davies, J.E. (1999). Manual of Industrial Microbiology and Biotechnology, ASM Press, Washington, D.C., USA.

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1.15   Mathematical Modeling

Project/ Optional - VI   **BS:602**

Theory: 4 credits and Tutorials: 0 credits
Theory: 4 hours /week and Tutorials: 1 hours /week

Objective: This topic is aims to provide the student with some basic modelling skills that will have application to a wide variety of problems.

Outcome: The focus is on those mathematical techniques that are applicable to models involving differential equations, and which describe rates of change. Student realizes some beautiful problems can be modeled by using differential equations. The students also learn how to use the mathematical technique in solving differential equations.

Unit- I
Introduction to Mathematical Modelling: Mathematical Models-Modelling for decision making. **Compartmental Models:**-Exponential decay and radioactivity – Case Study: Detecting art forgeries – Lake Pollution Models - First order Linear Differential Equations – Equilibrium points and stability.

Unit- II
Models of Single Populations: Exponential growth – Density-dependent growth – Limited growth with harvesting. **Interacting Population Models:** Model for an influenza outbreak – **Case Study:** Cholera – Predators and prey – Competing Species.

Unit- III
Formulating Heat and Mass Transporot Models: Some basic physical laws -Model for a hot water heater- Heat conduction and Fourier's Law - Heat conduction through a wall – Radiative heat conoduction - Diffusion.

Unit- IV
Boundary Value Problems – Heat loss through a wall – Insulating a water pipe – **Introduction to Partial Differential Equations:** The heat conduction equation – Oscillating soil temperatures – **Case study:** Detecting Land Mines – Lake Pollution.

Text:

- 1. B.Barnes and G.R.Fulford, *Mathematical Modelling with Case Studies* 3rd Edition, 2009, CRC press.

References:

- 1. Shepley L. Ross, *"Differential Equations"*.

- 2. I. Sneddon , *Elements of Partial Differential Equations*

- 3.Zafar Ahsan, *"Differential Equations and their Applications"*

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Project/Optional   PHP with MySQL   BS606

Theory	3 Hours/Week	3credits
Practical	3 Hours/Week	1credit

Unit – I

Introducing PHP – What is PHP? Why use PHP? Evolution of PHP, Installing PHP, Other ways to run PHP, Creating your first script. PHP Language Basics – Using variables, Understanding Data Types, Operators and Expressions, Constants. Decisions and Loops – Making Decisions, Doing Repetitive Tasks with Looping, Mixing Decisions and Looping withHTML.

Strings – Creating and Accessing Strings, Searching Strings, Replacing Text with Strings, Dealing with Upper and Lowercase, Formatting Strings. Arrays – Creating Arrays, Accessing Array Elements, Looping Through Arrays with for-each, Working with Multidimensional Arrays, Manipulating Arrays.

Unit – II

Functions – What is a Function? Why Functions are useful? Calling Functions, Working with Variable Functions, Writing your own Functions, Working with References, Writing Recursive Functions.

Objects – Introduction OOP Concepts, Creating Classes and Objects in PHP, Creating and using Properties, Working with Methods, Object Overloading with _get(), _set() and _call(), Using Inheritance to Extend Power of Objects, Constructors and Destructors, Automatically Loading Class Files, Storing as Strings.

Handling HTML Forms with PHP – How HTML form works, Capturing Form Data with PHP, Dealing with Multi-Value Fields, Generating Web Forms with PHP, Storing PHP Variables in Forms, Creating File Upload Forms, Redirecting After a Form Submission.

Unit – III

Working with Files and Directories - Getting Information on Files, Opening and Closing Files, Reading and Writing to Files, Copying, Renaming, and Deleting Files, Working with Directories.
Introducing Databases and SQL – Deciding How to Store Data, Understanding Relational Databases, Setting Up MySQL, A Quick Play with MySQL, Connecting MySQL fromPHP.

Retrieving Data from MySQL with PHP – Setting Up the Book Club Database, Retrieving Data with SELECT, Creating a Member Record Viewer. Manipulating MySQL Data with PHP – Inserting, Updating, and Deleting Records, Building a Member Registration Application.

Text Book   Matt Doyle, *Beginning PHP 5.3* (Wrox – WileyPublishing)
References   Ellie Quigley, *PHP and MySQL by Example*
                 Joel Murach, Ray Harris, *Murach's PHP and MySQL*
                 Brett McLaughlin, *PHP & MySQL: The Missing Manual*
                 Luke Welling, Laura Thomson, *PHP and MySQL Web Development*

                 W. Jason Gilmore, *Beginning PHP and MySQL From Novice to
                 Professional* Andrew Curioso, Ronald Bradford, Patrick Galbraith,
                 Expert PHP and MySQL

PAPER – VI: TOOLS AND TECHNIQUES IN BIOLOGY

Instructions: 4hr per week
No. of period: 60
No. of credits: 4

UNIT- I: Microscopy Centrifugation (15 Periods)
1.1 Microscopy – Basic principle of microscopy, types of microscopes and their application
1.2 Histopathological techniques – principle and its applications
1.3 Centrifugation –Basic principle of centrifugation; Preparatory and analytical centrifugation techniques and its applications

UNIT- II: Separation techniques (15 Periods)
2.1 Colorimetery and Spectrophotometry – Basic principle of colorimetry and its applications, Basic principle of spectrophotometry, and applications.
2.2 Chromatography – Basic principle of chromatography; Types of chromatography techniques and their applications
2.3 Electrophoresis – Basic principle of electrophoresis and their applications

UNIT- III: Advanced techniques (15 Periods)
3.1 Immuno assay-Principle and applications of ELISA
3.2 PCR Techniques – DNA extraction and isolation; Principles and applications of PCR techniques
3.3 RIA and its applications

UNIT- IV: Statistical tools (15 Periods)
4.1 Data – Definition and types of data, Concept of variables; Summarising data: averages (mean, median, mode), dispersion (range, standard deviation, confidence limits);
4.2 Representing data – Arraying data, tabulation; graphical representation of data (histogram, bar graph, line graph, scatter plot, pie diagram)
4.3 Non-parametric tests –Chi Square test and Parametric tests –Correlation; Student's t-Test; Regression analysis

Reference Books
1. Gurumani, N. An Introduction to Biostatistics. MJP Publisher, Chennai
2. Gurumani, N. Research Methodology. MJP Publishers, Chennai
3. Tembhare, D.B. Techniques In Life Sciences, Himalaya Publishing House, Delhi

U.G. I year Semester-II - (B.Sc/B.A./B.Com)

Gender Sensitization

AECC-2 – Total 2 Credits

UNIT – I (Theory) – 1 Credit– 1 Hour of Instruction per Week

1. Gender : Definition, Nature and Evolution, Culture, Tradition, Historicity.
2. Gender Spectrum: Biological, Sociological, Psychological Conditioning.
3. Gender based division of labour-domestic work and use value.
4. Gender, Human Rights and Parity (parallel progress of both genders).

UNIT – II (Practical Activity) 1 Credit – 2 Hours of Activity per Week

Group discussion, Presentation, Role play, Survey, Case studies, Group project based on following issues:

- Respect and Co-existence
- Social, Biological, Psychological, Political, Economic, Cultural, Health Issues.
- Domestic Violence, Eve-Teasing, Sexual Harassment.
- Real Life Experience of Gender Interaction.
- Print and Electronic Media and Gender Inequalities.
- Contemporary Challenges.

Book: "Towards a World of Equals: A Bilingual Textbook on Gender" published by Telugu Akademi

TELANGANA STATE
B.A. (HISTORY) SYLLABUS
Semester - IV
Archives and Museums
(SEC - Skill Enhancement Course – II)
(2019-2020)

This course introduces students to the institutions that house and maintain documentary, visual and material remains of the past. Students will be encouraged to undertake collection, documentation and exhibition of such materials in their localities and colleges. Visit to National Archives and National Museum are an integral part of the course.

Module-I: Definition of Archives – Scope – Types of Archives – Development of Archives – National and State Archives in India - Archives – Understanding the Traditions of Preservation – Collection - Purchase –Documentation: Accessioning – Indexing – Cataloguing – Digital Documentation and De-accessioning - Chemical Preservation and Restoration.

Module-II: Definition of Museum - Introduction – Scope - Types of Museums - Significance of Museums - Museums in India - Museums – Collection – Field Exploration – Excavation – Purchase – Gift and Exchanges – Treasure Trove – Documentation - Indexing – Museum Presentation and Exhibition – Outreach Activities of Museums and Archives.

Recommended Books:

Saloni Mathur, *India by Design: Colonial History and Cultural Display*, University of California, 2007.

Sengupta, S., *Experiencing History through Archives*, Munshiram Manoharlal, Delhi, 2004.

Guha Thakurta, Tapati, *Monuments, Objects, Histories: Institution of Art in Colonial and Post-Colonial India*, New York, 2004.

Kathpalia, Y.P., *Conservation and Restoration of Archive Materials*, UNESCO, 1973.

Choudhary, R.D., *Museums of India and Their Maladies*, Agam Kala, Calcutta, 1988.

Nair, S.M., *Bio-Deterioration of Museum Materials*, Agam Kala Prakashan, 2011.

Agrawal, O.P., *Essentials of Conservation and Museology*, Sundeep Prakashan, New Delhi, 2007.

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Paper AEC1 (a): BASIC COMPUTER SKILLS

Hours Per Week: 2   **Credits:** 2
Exam Hours: 1 ½   **Marks:** 40U+10I

Objective: to impart a basic level understanding of working of a computer and its usage.

UNIT I: UNDERSTANDING OF COMPUTER AND WORD PROCESSING:

Knowing computer: What is Computer, Basic Applications of Computer; Components of Computer System, Central Processing Unit (CPU), VDU, Keyboard and Mouse, Other input/output Devices, Computer Memory, Concepts of Hardware and Software; Concept of Computing, Data and Information; Applications of IECT; Connecting keyboard, mouse, monitor and printer to CPU and checking power supply.

Operating Computer using GUI Based Operating System: What is an Operating System; Basics of Popular Operating Systems; The User Interface, Using Mouse; Using right Button of the Mouse and Moving Icons on the screen, Use of Common Icons, Status Bar, Using Menu and Menu-selection, Running an Application, Viewing of File, Folders and Directories, Creating and Renaming of files and folders, Opening and closing of different Windows; Using help; Creating Short cuts, Basics of O.S Setup; Common utilities.

Understanding Word Processing: Word Processing Basics; Opening and Closing of documents; Text creation and Manipulation; Formatting of text; Table handling; Spell check, language setting and thesaurus; Printing of word document.

UNIT II: SPREAD SHEET, PRESENTATION SOFTWARE & INTRODUCTION TO INTERNET, WWW AND WEB BROWSERS:

Using Spread Sheet: Basics of Spreadsheet; Manipulation of cells; Formulas and Functions; Editing of Spread Sheet, printing of Spread Sheet.

Basics of presentation software: Creating Presentation; Preparation and Presentation of Slides; Slide Show; Taking printouts of presentation / handouts.

Introduction to Internet, WWW and Web Browsers:

Introduction to Internet: Basic of Computer networks; LAN, WAN; Concept of Internet; Applications of Internet; connecting to internet; What is ISP; Knowing the Internet; Basics of internet connectivity related troubleshooting.

World Wide Web: Search Engines; Understanding URL; Domain name; IP Address; Using e-governance website.

Web Browsing: Software, Communications and collaboration: Basics of electronic mail; Getting an email account; Sending and receiving emails; Accessing sent emails; Using Emails; Document collaboration; Instant Messaging; Netiquettes.

SUGGESTED READINGS:

1. Introduction to Computers, Peter Norton, McGrawHill , 2012.
2. Using Information Technology, Brian K williams, StaceyC.Sawyer, Tata McGrawHill.
Web Resources:
1. https://online.stanford.edu/courses/soe-ycscs101-sp-computer-science-101
2. https://www.extension.harvard.edu/open-learning-initiative/intensive-introduction- computer-science.

(Credits - 2)

SEC-2

Biofertilizers and Organic Farming

(30h)

(15h)

UNIT - I:

1. Manures and Biofertilizers: Types of fertilizers, manures. Manure composition. Manures for crop productivity.
2. Differences between fertilizers and biofertilizers: pH changes and water contamination
3. Bacterial Biofertilizers: General account on the microbes used as biofertilizer.
4. Algal Biofertilizers: Associative effect of different microorganism. *Azolla* and *Anabaena-azollae* association, nitrogen fixation, factors affecting growth, *Azolla* in rice cultivation

(15h)

UNIT - II:

5. Fungal Biofertilizers: Mycorrhizal association, types of mycorrhizal association, occurrence and distribution, phosphorus nutrition, growth and yield, colonization of VAM – isolation and inoculum production of VAM, and its influence on growth and yield of crop plants.
6. Organic Farming: Green manuring and organic fertilizers, Recycling of bio-degradable municipal, agricultural and industrial wastes, Biocompost making- types, method of vermicomposting, Panchakavya. Biological pest control (neem).

Suggested Readings

1. Dubey R.C. 2005. A Text book of Biotechnology. S.Chand & Co. New Delhi.
2. Kumaresan V. 2005. Biotechnology. Saras Publications. New Delhi.
3. John Jothi Prakash E. 2004. Outlines of Plant Biotechnology. Emkay Publication. New Delhi.
4. Sathe T.V. 2004. Vermiculture and Organic Farming. Daya Publishers. New Delhi.
5. Subha Rao N.S. 2000. Soil Microbiology. Oxford & IBH Publishers. New Delhi.
6. Vayas S.C, Vayas S. and Modi H.A. 1998.Bio-fertilizers and organic Farming Akta Prakashan. Nadiad.

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Bio-fertilizers

2 Credits

Unit-I

1. General account about the microbes used as biofertilizers, Rhizobium, Azotabacter importance in cultivation.
2. Cyanobacteria as biofertilizer, Nitrogen fixation BGA and Azolla in rice cultivation

Unit-II

1. Mycorrhizal association and types of mycorrhizal association; Isolation and inoculums production of VAM and its influence on crop plants.
2. Organic farming- Green manuring and organic fertilizers, recycling of biodegradable municipal , agricultural and industrial wastes.

Suggested Readings:

1. Vayas, S.C, Vayas , S. and Modi, H.A 1998 Bio-fertilizers and organic farming, Akta Prakasham, Nadiad
2. Subha Rao, N.S.2000, Soil microbiology, Oxford & IBH publishers, New Delhi
3. Sathe, T.V. 2004 vermiculture and organic farming. Daya publishers
4. Dubey, R.C., 2005 A text book of biotechnology S.Chand & Co., New Delhi

SYLLABUS

DIFFERENT UNIVERSITIES OF TELANGANA STATE

COURSE 1: COMMUNICATION SKILLS

CONTEXT AND JUSTIFICATION:

Communication plays an important role in shaping an individual's life, personal as well as professional. Also it is the backbone of any organization/institution. Sources of life to a considerable extent depends on effective communication skills. In today's world of computers and digital media, a strong communication skill base is essential for learners and for smooth functioning of an organization.

Objectives:

This course has been developed with the following objectives:

1. Identify common communication problems that may be holding learners back
2. Identify what their non-verbal messages are communicating to others
3. Understand role of communication in teaching-learning process
4. Learning to communicate through the digital media
5. Understand the importance of empathic listening
6. Explore communication beyond language

Expected Outcome:

By the end of this program participants should have a clear understanding of what good communication skills are and what they can do to improve their abilities.

Credit: 02

Duration: 30 Hours

Number & Titles of Modules:

Total of 7 Modules

Module 1	Listening	4 Hours
Module 2	Speaking	6 Hours
Module 3	Reading	3 Hours
Module 4	Writing and different modes of writing	4 Hours
Module 5	Digital Literacy	4 Hours
Module 6	Effective use of Social Media	4 Hours
Module 7	Non-verbal communication	5 Hours

Module 1	Listening	4 Hours
	• Techniques of effective listening	

	• Listening and comprehension • Probing questions • Barriers to listening	
Module 2	**Speaking**	6 Hours
	• Pronunciation • Enunciation • Vocabulary • Fluency • Common errors	
Module 3	**Reading**	3 Hours

	• Techniques of effective reading
	• Gathering ideas and information from a given text
	    (i) Identify the main claim of the text
	    (ii) Identify purpose of the text
	    (iii) Identify the context of the next
	    (iv) Identify the concepts mentioned
	• Evaluating these ideas and information
	    (i) Identify the arguments employed in the text
	    (ii) Identify the theories employed or assumed in the text
	• Interpret the text
	    (i) To understand what a text says
	    (ii) To understand what a text does
	    (iii) To understand what a text means	

Module 4	**Writing and different modes of writing**	4 Hours

	• Clearly state the claims
	• Avoid ambiguity, vagueness, unwanted generalizations and oversimplification of issues
	• Provide background information
	• Effectively argue the claim
	• Provide evidence for the claims
	• Use examples to explain concepts
	• Follow convention
	• Be properly sequenced
	• Use proper signposting techniques
	• Be well structured
	    (i) Well-knit logical sequence
	    (ii) Narrative sequence
	    (iii) Category groupings	

	• Different modes of writing
	   (i) E-mails
	   (ii) Proposal writing for Higher Studies
	   (iii) Recording the proceedings of meetings
	   (iv) Any other mode of writing relevant for learners	

Module 5	Digital Literacy	4 Hours

	• Role of Digital literacy in professional life
	• Trends and opportunities in using digital technology in workplace
	• Internet Basics
	• Introduction to MS Office tools
	   (i) Paints
	   (ii) Office
	   (iii) Excel
	   (iv) Powerpoint	

Module 6	Effective use of Social Media	4 Hours
	• Introduction to social media websites • Advantages of social media • Ethics and etiquettes of social media • How to use Google search better • Introduction to Digital Marketing	
Module 7	Non-verbal communication	5 Hours
	• Meaning of non-verbal communication • Introduction to modes of non-verbal communication • Breaking the misbeliefs • Open and Closed Body language • Eye contact and Facial Expression • Hand Gestures • Do's and Don'ts • Learning from experts • Activities-Based Learning	

Pedagogy: Instructor-Led Training, Supplemented by Online Platform (SWAYAM)

Materials: Teaching & Learning

Assessment: Paper-Based or Online Assessment

Hours Per Week: 2   **Credits**: 2
Exam Hours: 1 ½   **Marks:** 40U+10I

Objective: to understand the importance of Environment, biodiversity, Environmental pollution.

UNIT - I : ECOSYSTEM, BIODIVERSITY & NATURAL RESOURCES :

1. Definition, Scope & Importance of Environmental Studies.
2. Structure of Ecosystem – Abiotic & Biotic components Producers, Consumers, Decomposers, Food chains, Food webs, Ecological pyramids)
3. Function of an Ecosystem :Energy flow in the Ecosystem (Single channel energy flow model)
4. Definition of Biodiversity , Genetic, Species & Ecosystem diversity , Hot-spots of Biodiversity, Threats to Biodiversity , Conservation of Biodiversity (Insitu & Exsitu)
5. Renewable & Non – renewable resources, Brief account of Forest , Mineral & Energy (Solar Energy & Geothermal Energy) resources
6. Water Conservation, Rain water harvesting & Watershed management.

UNIT – II : ENVIRONMENTAL POLLUTION , GLOBAL ISSUES & LEGISLATION :
                                                      (15 hrs.)

1. Causes, Effects & Control measures of Air Pollution, Water Pollution
2. Solid Waste Management
3. Global Warming & Ozone layer depletion.
4. Ill – effects of Fire- works
5. Disaster management – floods, earthquakes & cyclones
6. Environmental legislation :-
   (a) Wild life Protection Act   (b) Forest Act   (c) Water Act (d) Air Act
7. Human Rights
8. Women and Child welfare
9. Role of Information technology in environment and human health

FIELD STUDY: **(5 hrs.)**
   Pond Ecosystem
   Forest Ecosystem

SUGGESTED BOOKS :
1. Environmental Studies - from crisis to cure – by R. Rajagopalan (Third edition) Oxford University Press.
2. Text book of Environmental Studies for undergraduate courses (second edition) by Erach Bharucha
3. A text book of Environmental Studies by Dr.D.K.Asthana and Dr. Meera Asthana
4. Environmental Studies (2019), R Venkateswara Rao, HPH

TELANGANA STATE
B.A. (HISTORY) SYLLABUS
Semester - III
Historical and Cultural Tourism
(SEC - Skill Enhancement Course – I)
(2019-2020)

The main objective of this course is to make student understand the relevance of Tourism as history and its relationship with culture. This course not only deals with the various aspects of tourism industry but also deals with the impact of tourism. This course also brings out the growing trends in tourism and the demand it is generating in the present times.

Module-I: Tourism – Concept and Meaning – Nature – Scope - Tourism as an Industry - Socio-Economic Impact of Tourism - History of Tourism Development in India - Promotional Strategies of Tourism - Tools of Publicity, Role of Films, Television, Press, Poster-display, Brochures, Role of Guides - Historical Tourism - Monuments, Religious and Secular - Historical Sites - Historical Events - Impact of Tourism Development on Protection and Conservation of Historical Monuments and Sites and Vice-Versa - Socio-Cultural Tourism: Fairs and Festivals of India - Performing Arts (Dance, Drama and Music) - Museums, Art - Galleries, Yoga and Health Centers - Indian Cuisine.

Module-II: Eco-Tourism - Beaches, Hill-Resorts, Surf-Riding. Ballooning, Rafting. Gliding - Wild-life Sanctuaries - National Parks, Safaris, Mountaineering –Trekking – Skiing - Sports Tourism - Tourism in Telangana – Tourist Places - Tourism Handicrafts: Textiles – Metal Work, Stone and Wood Carvings, Furniture, Jewellery, Toys, Musical Instruments – Terracotta - Display and Sale of Handicrafts - Shops at Heritage Centers – Organizing Exhibitions – Duty Free Shops.

Recommended Books:

Dallen. J. Timothy, *Cultural Heritage and Tourism: An Introduction (Aspects of Tourism Texts)*, Channel View Publications, 2011.

INTACH, *Heritage and Development: Recent Perspectives*, Aryan Books International, 2012.

K.R. Gupta, *Concise Encyclopedia of India: (Places of Historical and Tourist Interest)*, 2010.

Melanie, K. Smith, *Issues in Cultural Tourism Studies*, Psychology Press, 2003.

P.N. Girija Prasad, *Eco-Tourism and Its Development*, Adhyayan Publishers, 2012.

S.P. Gupta & Lal Krishna (eds.), *Cultural Tourism in India: Museums, Monuments and Arts*, 2003.

V.K. Singh, *Historical and Cultural Tourism in India*, Aadi Publications, 2008.

Vaibhav Chauhan. *Heritage Tourism. Territory Unexplored.*

Vanaja Uday, *Cultural Tourism and Performing Arts of Andhra Pradesh: Prospects and Perspectives*, Research India Press, 2012.

A.K. Bhatia, *Tourism Development – Principles & Practices*, Sterling Publishers, 2016.

Sampad Kumar, Swain & Jitendra Mohan Mishra, *Principles and Practices in Tourism*, OUP, 2011.

Indira, *Tourism in Andhra Pradesh: Growth and Developments, 1956-2007*, Research India Press, New Delhi, 2014.

D. Satyanarayana, *Kotha Paryataka Sthalalu* (Telugu).

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B.Sc. ZOOLOGY II YEAR
SEMESTER- III
PAPER-III (SEC – I): APICULTURE

Instructions: 2hr per week
No. of period: 30
No. of credits: 2

UNIT-I: (15 Periods)

1.1	History, classification and present status of apiculture industry in India
1.2	Biology of honey bees and bee economy
1.3	Social organization of bee colony
1.4	Selection of bee species for apiculture
1.5	Bee rearing method: artificial Bee rearing (Apiary), Bee hives

UNIT-II: (15 Periods)

2.1	Products of apiculture industry and its use – honey; Bees wax; propalic
2.2	Methods of extraction of honey – indigenous and modern
2.3	Bee keeping equipment
2.4	Colony inspection and maintenance of the equipment
2.5	Bee diseases and enemies; control and preventive method

Suggested Reading:
1. Textbook of Applied Zoology, Telugu Academy.
2. Apiculture by Prost P.J. Oxford aro IBH, New Delhi
3. Apiculture by Bisht, ICAR publication