ANDHRA LOYOLA COLLEGE

AUTONOMOUS :: VIJAYAWADA - 520 008

Established : 1954

A CHRISTIAN MINORITY COLLEGE WITH CONSTITUTIONALLY PROVIDED RIGHT OF ADMISSION
(AN ISO 14001 : 2015 INSTITUTION)
THE ONLY COLLEGE IN BOTH THE TELUGU STATES TO HAVE BEEN RANKED AMONG
THE TOP 150 COLLEGES BY NIRF SINCE THE INCEPTION OF THE RANKING IN 2017
SELECTED UNDER THE STAR COLLEGE SCHEME OF DBT AND FIST PROGRAMME OF DST, GOVT.OF INDIA
SELECTED FOR ENHANCEMENT OF QUALITY AND EXCELLENCE UNDER RUSA BY MHRD, GOVT.OF INDIA

A College Dedicated to All-Round Development of its Students

Andhra Loyola College
(Autonomous)
VIJAYAWADA-520 008.
Accredited in III Cycle at A+ Grade with a CGPA of 3.66 / 4.00
Web: www. andhraloyolacollege.ac.in e-mail: contactalc@gmail.com

STD	: 0866
Main Off.	: 2476082
Inter	: 2476965
Degree	: 2481907
P.G.	: 2474902
CoE	: 2473251
Fax (Principal)	: 2474531
Fax (Correspondent)	: 2486084

1.3.1: Institution integrates cross-cutting issues relevant to Professional Ethics, Gender, Human Values, Environment and Sustainability and other value framework enshrined in Sustainable Development Goals and National Education Policy – 2020 into the Curriculum

ENVIRONMENTAL SUSTAINABILITY

HUMAN VALUES

PROFESSIONAL ETHICS

GENDER EQUITY

ENVIRONMENTAL SUSTAINABILITY

ANDHRA LOYOLA COLLEGE (AUTONOMOUS) VIJAYAWADA
(An Autonomous College in the jurisdiction of Krishna University)
Accredited in III Cycle at 'A' Grade with a CGPA of 3.66/4.00
ALL India 36th Rank 2020 by NIRF Govt. of India

DEPARTMENT OF CHEMISTRY, PG
COURSE TITLE: GENERAL ELECTIVE-ENVIRONMENTAL CHEMISTRY
COURSE CODE: CHE111GE
SEMESTER: I **2020-2021**
NO. OF HOURS WEEK/ SEMESTER: 2/24
CREDITS: 2

UNIT-I

INTRODUCTION

A. Concept of Environmental Chemistry-Scope and importance of environment – Nomenclature of environmental chemistry – Segments of environment. Principles of weathering - effect of temperature, water, air, plants and animals on weathering.

B. Soil formation/development-factors affecting soil development- functions of soils-morphology-texture-physical properties of soil; soil colloids-ion exchange properties. Analysis of soil: Sampling, determination of moisture, total nitrogen, phosphorus, silicon, lime, humus, nitrogen, alkali salts.

UNIT-II

AIR POLLUTION

A. Definition – Sources of air pollution – Classification of air pollution – Atmospheric sources and emission of air pollutants -carbon monoxide-Sulphur oxides-oxides of nitrogen, organic pollutants and photochemical smog, acid rains.

B. Air pollution with reference to particulate and radioactive substances. Effect of air pollutants on animals, plants and materials. Controlling methods of air pollution.

UNIT-III

WATER POLLUTION

A. Water pollution-industrial, agricultural, solid waste, thermal, shipping water pollution and radioactive

REFERENCE BOOKS:

1. *Environmental Chemistry* by Samir k. Banerji
2. *Fundamentals of Ecology* by M.C. Dash
3. *A Text book of Environmental Chemistry* by W. Moore and F.A. Moore
4. Singh, J.S, Singh, S.P and Gupta, S. *Ecology, Environment and Resource Conservation.* Anamaya Publications. New Delhi

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DEPARTMENT OF CHEMISTRY, PG
COURSE TITLE: GENERAL ELECTIVE- ENVIRONMENTAL STUDIES
COURSE CODE: CHE121 GE(ES)
SEMESTER: I 2020-2021
NO. OF HOURS WEEK/ SEMESTER: 2/24
CREDITS: 2

UNIT 1

A. Natural resources: Water resources- Use and over-utilization of surface and groundwater, floods, drought, conflicts over water.

B. Forest resources- Use and over-exploitation, deforestation; mineral resources- Use and exploitation, environmental effects of extracting and using mineral resources.

UNIT 2

A. Natural resources: food resources- World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity.

B. Land resources- Land as a resource, land degradation, man induced landslides, soil erosion and desertification.

UNIT 3

A. Ecosystem: Concept of an ecosystem · Structure and function of an ecosystem, Producers, consumers and decomposers · Energy flow in the ecosystem · Ecological succession · Food chains, food webs and ecological pyramids ·

B. Introduction, types, characteristic features, structure and function of the following ecosystem: a. Forest ecosystem b. Grassland ecosystem c. Desert ecosystem d. Aquatic ecosystems (ponds, rivers, ocean)

UNIT 4

A. Biodiversity: Introduction – Definition: genetic, species and ecosystem diversity · Biogeographical classification of India · Value of biodiversity: consumptive use, productive use, social values ·

B. Threats to biodiversity: habitat loss, poaching of wildlife, man wildlife conflicts · Endangered and endemic species of India.

UNIT 5

A. Social Issues and the Environment: Water conservation, rain water harvesting, watershed management, Climate change, global warming, acid rain

B. Ozone layer depletion, nuclear accidents, Consumerism and waste products, Environmental Protection Act.

Reference Books

1. *Environmental Studies* by Dr M Satyanaryana, Dr M.V.R.K. Narsimhacharyulu, Dr G Rambabu and Dr V Vivek Vardhan, published by Telugu Academy, Hyderabad
2. *Environmental Studies* by R.C. Sharma, Gurbir Sanghapublished by Kalyani Publishers
3. *Environmental Studies* by Purnima Smarath, published by Kalyani Publishers
4. *Fundamentals of Ecology* by M.C. Dash
5. Krishnamurthy, K.V. *An Advanced Text Book of Biodiversity- Principles and Practices.* Oxford & IBH Publications Pvt. Ltd. New Delhi.

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DEPARTMENT OF CHEMISTRY, PG
COURSE TITLE: ORGANIC CHEMISTRY
COURSE CODE: CHE123OC
SEMESTER: II **2020-2021**
NO. OF HOURS WEEK/ SEMESTER: 4/60
CREDITS: 2

UNIT I

STEREOCHEMISTRY

. Concept of Chirality: Recognition of symmetry elements and chiral structures (one and more than one chiral centers); D-L and R–S nomenclature, diastereo-isomerism; Interconversion of Fischer, Newman and Sawhorse projections. Threo and Erythro isomers, - stereospecific and stereoselective synthesis. Asymmetric synthesis. Optical activity in the absence of chiral carbon (biphenyls, allenes and spiranes). Chirality due to helical shape

. Racemic Modifications – Nature and formation of racemic modifications – by mixing, by synthesis, by racemization, by chemical transformations Geometrical isomerism- methods of resolution – E, Z- nomenclature – physical and chemical methods of determining the configuration of geometrical isomers. Stereochemistry of compounds containing nitrogen, Sulphur and phosphorous

UNIT II

CONFORMATIONAL ANALYSIS

A. Conformation of acyclic molecules – alkanes and substituted alkanes –compounds having

intramolecular hydrogen bonding, conformations around C-C and carbon hetero atom bonds having C–O & C–N. Conformations of monocyclic compounds – cyclohexane- chair, boat and twist boat cyclohexanes, energy profile diagram –Mono and di- substituted cyclohexanes.

B. Effect of conformation on reactivity in mono and di- substituted cyclohexane derivatives. Elementary treatment of fused and bridged ring systems – Decalins and Bornanes

UNIT III

NAMED REACTIONS

A. Named reactions: Aldol (normal, crossed and directed), claisen, Perkin, Stobbe, Knovenagel, Darzen, Reformatsky and Benzoin condensations. Grignard, Cannizzaro

B. Mechanism and stereochemistry in addition to C=O systems. Mechanism of Dakin reaction

UNIT IV

C-C AND C=C BOND FORMING REACTIONS

A.

C-C and C=C bond forming reactions – Mannich, Reimer-Tiemann, Vilsmeier-Haack and Ullmann reactions. Stork-enamine reaction. Shapiro, Wittig–Horner, Peterson, Heck, Stille and McMurray reactions

B. Ring formation by Dieckmann, Thorpe and Acyloin condensations. Robinson ring annulation. Synthesis of small rings. Simon-Smith reaction

UNIT V

GREEN CHEMISTRY & PHASE TRANSFER CATALYSIS

A. Green Chemistry: Introduction, Principles & concepts of Green Chemistry, Green Catalysis, Bio catalysis, renewable resources, Green Reagents, examples of green reactions-synthesis of Ibuprofen, Clean Fischer-Indole synthesis comparison of the above with conventional methods

B. Introduction to Microwave organic synthesis, Applications: solvents (water and organic

solvents), solvent free reactions (solid state reactions), Phase transfer catalysis-Principle, Types, advantages and applications, Crown ethers

REFERENCE BOOKS:

Advanced Organic Chemistry, Reaction, Mechanism and Structure, Jerry March, John Wiley

1. *A Guidebook to Mechanism in Organic Chemistry,* Peter Sykes, Longman
2. *Organic Chemistry,* I.L Finar, Vol,I& II
3. *Stereochemistry of Carbon Compounds,* E L Eliel
4. *Modern Organic Reactions,* H.O. House, Benjamin
5. *Principles of Organic Synthesis,* R.O.C. Norman and J.M. Coxon, Blakie Academic & Professional
6. *Reaction Mechanism in Organic Chemistry,* S.M. Mukherjee and S.P. Singh, Macmillan
7. *Green Chemistry Theory and Practice,* Paul T Anastas and John C Warner, Oxford University Press
8. *Methods and Reagents for Green Chemistry,* Pietro Tundo, Alvise Perosa, Fulvio Zecchini, Wiley Interscience, John Wiley & Sons
9. *Protecting Groups in Organic Chemistry,* P.J. Kocienski, Georg Thieme Vers
10. *Protecting Groups in Organic Chemistry,* T.W. Greene, Wiley Interscience Publishers, New York

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DEPARTMENT OF CHEMISTRY, UG
COURSE TITLE: SKILL DEVELOPMENT COURSE-ENVIRONMENTAL AUDIT
2020-2021
NO. OF HOURS WEEK/ SEMESTER: 2/24
CREDITS: 2

UNIT I

INDUSTRIAL POLLUTION AND ITS EFFECTS

1. Climate- Weather and Air Pollution
2. Classification of Water and Water bodies
3. Water Quality Parameters
4. Water Pollution – Sources
5. Classification, Nature and Toxicology of Water Pollutants
6. Soil Parameters
7. Soil Pollution and Impacts
8. Soil Conservation

UNIT II

ENVIRONMENTAL LAW AND POLICY:

Highlights of the Acts, Institutional arrangements for:

1. The Water (Prevention & Control of Pollution) Act, 1974 amended in 1988;
2. The Air (Prevention and Control of Pollution) Act, 1981 amended in 1987

3. The Water (Prevention and Control of Pollution) Cess Act, 1977 amended in 1991
4. The Environment (Protection) Act, 1986;
5. The Public Liability Insurance Act, 1991- Indian Policy Statement for abatement of Pollution, 1992

UNIT III

ENVIRONMENTAL AUDIT- SCOPE & REQUISITES:

Environmental Audit: Definition; Objectives; Scope,

1. Coverage – GOI Notification on Environmental Audit- Benefits to Industry
2. Reporting Environmental Audit Findings
3. Importance of Environmental Audit Report to Industry, Public and the Governments

CO-CURRICULAR ACTIVITIES SUGGESTED:

1. Visit to understand Institutional arrangements and functioning of Pollution Control Boards
2. Visiting different Ecosystems
3. **Soil analysis**: Determination of Soil type and texture, pH, Soil Moisture, Nitrogen, Potassium and Phosphorous
4. **Water analysis**: Determination of pH, Dissolved solids and suspended solids, Dissolved Oxygen, COD, BOD
5. Assignments, Group Discussions, Quiz etc

REFERENCE BOOKS AND WEBSITES:

1. Environmental Education in India by K. R. Gupta
2. *Environmental Legislation in India* by K.R. Gupta
3. https://parivesh.nic.in/
4. https://www.cpcb.nic.in/
5. https://www.free-ebooks.net/environmental-studies-academic

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DEPARTMENT OF CHEMISTRY, UG
COURSE TITLE: ANALYTICAL METHODS OF CHEMISTRY AND GENERAL CHEMISTRY
COURSE CODE:CHE367 AMGC
SEMESTER: VI **2020-2021**
NO. OF HOURS WEEK/ SEMESTER: 4/60
CREDITS: 4

UNIT I

PHYSICO CHEMICAL METHODS OF ANALYSIS

Solvent Extraction- The Distribution Law, limitations, the processes of extraction - single step and multi step extraction, efficiency of extraction, types of extraction- Batch extraction and continuous extraction, Applications - Determination of Iron (III)

PART B

RADIOMETRIC METHODS OF ANALYSIS

Soddy- Fajan's group displacement law, Radioactivity - Units of radioactivity and rate law, balancing of nuclear reactions, Applications of radioisotopes - Carbon dating, direct Isotopic dilution analysis, as tracer and in medicine

UNIT II

PART-A

CHROMATOGRAPHY

Classification of Chromatographic methods:

Paper Chromatography - Principle, development of Chromatogram - Ascending and descending, Rt values and factors affecting it, Applications of Paper Chromatography in the separation and identification of Amino acids

Thin Layer Chromatography- Principle, experimental procedure - preparation of plates, development of the chromatogram, detection of spots and applications of TLC, superiority of TLC over Paper Chromatography

PART- B

Column Chromatography - Principle, experimental procedure, Stationary and mobile phases, separation technique, applications

Gas Chromatography - Principle and applications

High Performance Liquid Chromatography (HPLC): Principle and Applications

UNIT III

CHEMISTRY OF MACROMOLECULES

PART A

Polymers- Introduction, types of polymerisations - Addition and Condensation polymerisation, Mechanism of cationic and anionic polymerization, number average and weight average molecular weights, determination of molecular weight of polymers by Osmometry

PART - B

Mechanism of free radical polymerisation, Kinetics of free radical polymerization and derivation of rate law, preparation and uses of polythene, PVC, Teflon, Terylene, Nylon-6 and Nylon-66

UNIT IV

CATALYSIS

PART A

Catalysis- Introduction, types of catalysis- Homogenous and heterogenous catalysis, Kinetics of specific acid catalyzed and base catalyzed reactions, examples- hydrolysis of esters and mutarotation of glucose, Langmuir-Hinshelwood mechanism of heterogeneous catalysis

PART-B

Enzyme Catalysis- Characteristics of enzyme catalysis; influence of temperature, pH, concentration and inhibitor on enzyme catalysis; kinetics of enzyme catalyzed reactions - Michaelis- Menten Law; significance of Michaelis constant (K_m)

UNIT V

GREEN CHEMISTRY

PART-A

What is Green Chemistry? Need for Green Chemistry, Goals of Green Chemistry, Principles of Green Chemistry- Twelve principles of Green Chemistry; Ionic liquids- characteristics; Examples of green synthesis- Green Synthesis of Adipic acid and Catechol; Microwave assisted reactions in water- Hofmann Elimination, oxidation of Toluene; Diels- Alder reaction and Decarboxylation reaction

PART - B

ADSORPTION

Adsorption- Thermodynamic interpretation of adsorption; types of adsorption-physical and chemical adsorption and their differences; factors affecting adsorption, Freundlich adsorption isotherm, a detailed study of Langmuir adsorption isotherm; applications of Adsorption

REFERENCE BOOKS:

Analytical Chemistry, Seamus P.J. Higson

Analytical Chemistry, Nathan Miguel

General Chemistry, Principles and Modern Applications, Petrucci, Herring, Madura, Bissonnette

Chemistry, Chang

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DEPARTMENT OF CHEMISTRY, UG
COURSE TITLE: SYNTHESIS OF ORGANIC COMPOUNDS
COURSE CODE: CHE 368 C1SOP (P)
SEMESTER: VI **2020-2021**
NO. OF HOURS WEEK/ SEMESTER: 2/30
CREDITS: 2

1. Green procedures for Organic Qualitative Analysis- Detection of N, S, Cl, Br, I
2. Acetylation of primary Amine (Preparation of acetanilide)
3. Rearrangement reaction (Benzil-Benzilic acid rearrangement)
4. Electrophilic Aromatic Substitution Reaction (Nitration of Phenol)
5. Radical Coupling Reaction (Preparation of 1, 1-bis-2-naphthol)
6. Green Oxidation Reaction (Synthesis of adipic acid)
7. Diels- Alder Reaction between Furan and Maleic Acid

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DEPARTMENT OF AGRICULTURE AND RURAL DEVELOPMENT
COURSE TITLE: INTRODUCTORY AGROMETEOROLOGY AND CLIMATE
COURSE CODE: AGRO-103
SEMESTER: II **2020-2021**
NO. OF HOURS WEEK/ SEMESTER: 4/60
CREDITS: 3

UNIT-I

INTRODUCTION:

1. Terminology and definitions: Meteorology, Climatology, Agrometeorology, Agroclimatology, climate and weather. Scope and importance of agrometeorology.
2. Argo-climatic regions of India and Agroclimatic zones of Andhra Pradesh.
3. Atmosphere -Composition of the atmosphere-Weather elements- Extent and structure of the atmosphere.

UNIT-II

1. Solar Radiation: Nature and properties of solar radiation - Conduction – Convection. Radiation - Solar spectrum, Definitions of solar constant, net radiation, albedo - Solar radiation and crops
2. Temperature: Temperature and heat, definitions- Temperature inversion- Adiabatic lapse rate - Daily and seasonal variations of temperature
3. Low air temperature and plant injury and high air temperature and plant injury-Soil temperature

UNIT-III

1. Humidity: Concept of saturation- Vapor pressure Types of humidity- Humidity and crops-

Atmospheric Pressure: Definitions of pressure, atmospheric pressure, standard atmospheric pressure- Atmospheric humidity

2. Wind: Types of wind; Planetary winds (trade winds, westerlies, polar easterlies, cyclones and anti-cyclones) periodic winds and local winds (sea and land breezes, mountain and valley winds) - Effect of wind on crops

3. Precipitation: Process of precipitation, types of rainfall (orographic, convectional and cyclonic)- Definition of cloud – WMO classification of clouds.

4. Forms of precipitation (solid, liquid and mixed) and condensation (dew, fog, mist, frost, cloud) - Artificial rain making- Monsoon: Indian monsoons, SW monsoon & NE monsoon

UNIT-IV

1. Importance of monsoon in Indian agriculture- date of onset, significant features of Indian monsoon; length of growing season.

2. Weather hazards: Drought-Floods-Cyclones-and their management.

3. Weather Forecasting: Importance-Types of weather forecast and their uses-Synoptic charts - Remote Sensing-Applications of remote sensing in agriculture

UNIT-V

1. Climate change- variability-Global processes and effects- Greenhouse effect- Temperature changes on the earth- Precipitation changes on the earth- Changes in extreme events- Sea level raising- Impacts of climate change on agriculture

2. Basic models for evaluating climate change Impacts -Specific weather-related effects due to climate change.

PRACTICAL

1. Exposure to agrometeorological instruments and weather data recording.

2. Measurement of albedo and sunshine duration.

3. Computation of radiation Intensity using bright sun shine hours.

4. Tabulation of maximum and minimum air temperatures, trend and variation analysis for climate change of the region.

5. Measurement of soil temperature and computation of soil heat flux.

6. Determination of atmospheric pressure and vapor pressure.
7. Determination of relative humidity.
8. Determination of dew point temperature- Measurement of atmospheric pressure and analysis of atmospheric conditions

REFERENCES

1. Radha Krishna Murthy, V.2016. *Principles and Practices of Agricultural Disaster Management*. B.S Publications, Koti, Hyderabad.
2. Reddy, S.R.2014. *Introduction to Agriculture and Agrometeorology*. Kalyani Publishers, Ludhiana, Punjab.
3. Radha Krishna Murthy, V. 2002. *Basic Principles of Agricultural Meteorology*. B.S Publications, Koti, Hyderabad

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DEPARTMENT OF AGRICULTURE AND RURAL DEVELOPMENT
COURSE TITLE: SOIL AND WATER CONSERVATION ENGINEERING
COURSE CODE: AENG151
SEMESTER: II **2020-2021**
NO. OF HOURS WEEK/ SEMESTER: 3/36
CREDITS: 2

UNIT-I

1. Introduction to soil and water conservation and causes of soil erosion.
2. Definition and agents of soil erosion, water erosion - Forms of water erosion - Gully classification and control measures.
3. Soil loss estimation by universal soil loss equation - Soil loss measurement techniques

UNIT-II

1. Principles of erosion control - Introduction to contouring, strip cropping.
2. Contour bund - Graded bund and bench terracing.
3. Grassed water ways and their design.
4. Wind erosion - Mechanics of wind erosion, types of soil movement - Principles of wind erosion control and its control measures.

UNIT-III

1. Introduction to irrigation - Classification of irrigation projects.

2. Importance of irrigation water measurements - Volumetric, area velocity, discharge methods - Weirs, orifice, flumes.
3. Open channel hydraulics - Discharge calculations.

UNIT-IV

1. Types of wells - Water lifting devices - Classification of pumps, their capacity, power requirement and discharge calculations.
2. Functional components and working principle of underground pipeline systems.

UNIT-V

1. Functional components of micro irrigation systems and its design like drip, sprinkler irrigation systems etc.
2. Water harvesting techniques - Lining of ponds, tanks and canal systems.

PRACTICAL (15HRS)

1. Practicing survey - Principles and educating to use pacing technique for measurement.
2. Area calculations through chain survey - GPS demo for tracking and area measurement.
3. Estimation of soil loss and calculation of erosion index
4. Leveling concepts and practical utility in agriculture.
5. Preparation of contour maps.
6. Concept of vegetative waterways and design of grassed waterways.
7. Construction of contour and graded bunds.
8. Wind erosion and estimation process.
9. Water discharge measurements lab exercises for computing discharge.
10. Different irrigation pumps and their constructional differences.
11. Farm pond construction and its design aspects.
12. Farm pond and canal lining and its procedures.
13. Visit a nearby farm pond.

REFERENCE BOOKS

1. **Ghanshyam Das.,** 2012. ***Hydrology and Soil Conservation Engineering****, including Watershed Management.* Second edition, PHI Learning Private Limited, New Delhi - 110001

2. Murthy, V. V.N., 2004. *Land and Water Management Engineering*. Kalyani Publishers, New Delhi

3. **Michael A.M., 2007.*Irrigation Theory and Practice*.** Second edition. Vikas Publishing House Pvt. Ltd.

4. **Suresh, R. 2008**. *Land and Water Management*. Standard Publishers Distributors, Delhi

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DEPARTMENT OF AGRICULTURE AND RURAL DEVELOPMENT
COURSE TITLE: IRRIGATION WATER MANAGEMENT, FARMING SYSTEMS AND SUSTAINABLE AGRICULTURE
COURSE CODE: AGRO-203
SEMESTER: I **2020-2021**
NO. OF HOURS WEEK/ SEMESTER: 3/36
CREDITS: 3

THEORY

UNIT -1

1. Farming System – introduction – scope of farming system – importance – concept – principles of farming system.
2. Types of farming systems – advantages and limitations - suitability – factors affecting the farming system
3. Farming systems – system and systems approach - determinants of farming system – cropping systems (navadhanya concept) and related terminology
4. Allied enterprises – significance of integrating crop and livestock enterprises – components and maintenance- dairying and sheep and goat rearing – breeds – housing– feed and fodder requirements – biogas plant
5. Allied enterprises – poultry farming – breeds – housing –feed and fodder requirements – apiculture – species and management
6. Allied enterprises – sericulture – mariculture and silkworm rearing – agro-forestry systems suitable for dryland farming

7. Tools for determining production and efficiencies in different farming and cropping systems.

UNIT-2

1. Adverse effects of modern agriculture - sustainable agriculture –definition –concept – goals – elements.
2. Problems related to soil, water and environment - adaptation and mitigation strategies - indicators of sustainability.
3. Conservation agriculture – concept – need - management of natural resources land, water and vegetation.
4. Techniques for sustainability - Low External Input Agriculture (LEIA) and Low External Inputs for Sustainable Agriculture (LEISA) and HEIA (High External Input Agriculture).
5. Integrated farming system-historical background, objectives and characteristics advantages
6. Site specific development of IFS models for different agro climatic zones of India and A.P.

UNIT -3

1. Resource use efficiency – optimization of resource use by different methods in an IFS (Annapurna model)
2. Resource cycling - flow of energy in different farming systems. 16. Visit of IFS model in different agro-climatic zones of nearby states University/ institutes and farmers' field
3. Introduction – importance – definition and objectives - water resources of world.
4. Surface and ground water resources in India and Andhra Pradesh–important major irrigation projects in India and Andhra Pradesh.
5. Soil-water relations – physical properties of soil viz., depth, soil texture, soil structure, particle density, bulk density and porosity influencing water retention, movement and availability.
6. Water retention in soil – adhesion and cohesion – soil moisture tension – pF – soil moisture characteristic curves- Water movement in soils – infiltration – percolation – seepage – permeability – hydraulic conductivity – saturated and unsaturated water flow.

UNIT -4

1. Kinds of water in soil – gravitational water – capillary water – hygroscopic water – their importance in crop production - Soil moisture constants – saturation – Field capacity (FC) – Permanent Wilting Point (PWP) – Available Soil Moisture (ASM) – hygroscopic coefficient – theories of soil water availability.

2. Plant-water relationships – rooting characteristics – effective root zone depth – moisture extraction pattern – moisture sensitive periods of crops – Soil Plant Atmospheric Continuum (SPAC).

3. Evapotranspiration – evaporation – transpiration – factors influencing evapotranspiration – Reference crop evapotranspiration (ETo) – Crop coefficient – Crop Evapotranspiration (ETc) - daily, seasonal and peak period consumptive use.

4. Crop water requirement – irrigation requirement – net and gross irrigation requirement – irrigation interval – irrigation period – seasonal water requirement of important crops – duty of water – base period – relation between duty and base period – conjunctive use of water – advantages of conjunctive use.

5. Scheduling of irrigation – different criteria – soil moisture regime approach – feel and appearance method – soil moisture tension and depletion of available soil moisture method - climatological approach – Irrigation Water (IW) / Cumulative Pan Evaporation (CPE) ratio method.

6. Scheduling of irrigation – plant indices approach – visual symptoms – soil chums and mini plot technique – growth rate – relative water content – plant water potential – canopy temperature – indicator plants and critical growth stages.

UNIT – 5

1. Methods of irrigation - surface methods – wild flooding check basin, ring basin, border strip, furrow and corrugations – advantages and disadvantages- Sub surface irrigation.

2. Micro irrigation systems - sprinkler irrigation – merits and demerits – system components and layout – suitable crops – rain guns.

3. Drip irrigation (surface and subsurface) – merits and demerits – system components and layout – suitable crops - fertigation and maintenance of micro irrigation systems.

4. Water Use Efficiency (WUE) – crop and field water use efficiency – factors influencing WUE – climatic, genetic and management (agronomic) factors - Irrigation efficiencies – water conveyance efficiency, water application efficiency, water storage efficiency, water distribution efficiency and project efficiency.

5. Quality of irrigation water – salinity hazard, sodium hazard, residual sodium carbonate and boron toxicity – criteria and threshold limits – management practices for using poor quality water.

6. Water logging – causes for waterlogging – drainage- surface and sub-surface drainage systems – relative merits.

PRACTICAL

1. Determination of bulk density
2. Determination of soil moisture content by gravimetric and volumetric method
3. Determination of infiltration rate
4. Determination of field capacity by field method
5. Measurement of irrigation water through flumes, weirs and V notches
6. Scheduling of irrigation by IW / CPE ratio method
7. Calculation of irrigation water requirements
8. Lay out of surface irrigation methods
9. Visit to micro irrigation systems in farmers' fields.
10. Water management practices in rice, wheat and maize.
11. Water management practices in groundnut, sunflower and sugarcane.

REFERENCES

1. Michael, A.M. 2006. *Irrigation – Theory and Practice*. Vikas Publishing House Pvt. Ltd., New Delhi.
2. Arun K. Sharma. 2006. *A Hand Book of Organic Farming* - Agrobios (India) Jodhpur
3. Jayanthi C, Devasenapathy P and Vinnila, C. 2008. *Farming Systems Principles and Practice*. Satish serial publishing house, Delhi
4. Panda. S.C. 2011. *Cropping and Farming Systems*. Agrobios (India) Jodhpur.
5. Ruthenburg, H. 1980. *Farming Systems in the Tropics*. Oxford university press.

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DEPARTMENT OF BIOTECHNOLOGY AND MICROBIOLOGY
COURSE TITLE: MICROBIOLOGY
COURSE CODE: MIB111IMM
SEMESTER: I **2020-2021**
NO. OF HOURS WEEK/ SEMESTER: 4/60
CREDITS: 3

UNIT - I

HISTORY, DEVELOPMENT & MICROSCOPY

1. History & Development of Microbiology: Contributions of Louis Pasteur, Robert Koch and Edward Jenner
2. Principles and applications of Compound Microscopy
3. Principles and applications of Dark field, Phase contrast and fluorescent microscopy

UNIT – II

BACTERIA

1. Bacterial Morphology, Gram +ve and Gram -ve bacteria
2. Bacterial Growth Curve
3. Nutrition in bacteria- Basal Selective, Differential media and Enriched media

UNIT – III

VIRUSES

1. General characteristic of viruses, different shapes & symmetries with one example of each type
2. Classification of viruses on the basis of nucleic acids. Short notes on animal viruses phages
3. Brief idea of lytic and Lysogenic cycles

UNIT – IV

ENVIRONMENTAL MICROBIOLOGY

1. Biogeochemical cycles-carbon, Nitrogen, Oxygen & water cycles
2. Pollution- Organic & Inorganic pollutants
3. Aerobic & Anaerobic treatment of water
4. Bioremediation

UNIT – V

INDUSTRIAL MICROBIOLOGY

1. Basic principles of a bioreactor
2. Production of ethanol
3. Production of SCP

REFERENCE BOOKS:

1. *Microbiology, A Systems Approach* by Marjorie Kelly
2. *Introduction to Environmental Microbiology* by R. Mitchell
3. *Microbial Ecology* by Atlas, R.M and Bartha, R.

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ALL India 36th Rank 2020 by NIRF Govt. of India

DEPARTMENT OF BIOTECHNOLOGY AND MICROBIOLOGY
COURSE TITLE: MICROBIAL BIOTECHNOLOGY
COURSE CODE: MIB367MBT
SEMESTER: VI **2020-2021**
NO. OF HOURS WEEK/ SEMESTER: 4/60
CREDITS: 3

UNIT - I

1. Bioreactor-structure and design
2. Types of Bioreactors (Continuous stirred tanks, Bubble column, Air lift, Fluidized and PhotoBioreactors)
3. Analysis of batch, continuous, fed batch fermentations

UNIT – II

1. Downstream processing various steps and processes (Separation, Cell disruption, Extraction, Isolation, Purification, Drying)
2. Recovery of intracellular products (by various cell disruption methods) physical, chemical and enzymatic methods
3. Extracellular product recovery: Solid-Liquid separation methods-Flotation, flocculation, filtration and centrifugation

4. Purification of recombinant proteins by different chromatography methods (Gel filtration, Ion exchange and Affinity chromatography methods)

UNIT – III

1. Ethanol Production by Fermentation using Molasses, Starchy Substances
2. Production of Citric Acid by submerged and Solid-State Fermentations
3. Production of Single Cell Protein

UNIT – IV

1. Waste water treatment and various stages involved in it
2. Bioremediation-In situ, Ex situ methods along with advantages and disadvantages
3. Biofuels, types and applications

UNIT – V

1. Industrially used enzymes, methods of immobilizing enzymes
2. Biosensors-principle and types of biosensors
3. Introduction to Nanotechnology and its applications

REFERENCE BOOKS:

1. *Microbial Biotechnology, Energy and Environment* by Rajesh Arora
2. *Microbial Biotechnology, Methods and Applications* by H.N. Thatoi
3. *Microbial Biotechnology, Progress and Trends* by Farshad Darvishi Harzeveli, Hong Zhang Chen

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ALL India 36th Rank 2020 by NIRF Govt. of India

DEPARTMENT OF BIOTECHNOLOGY AND MICROBIOLOGY
COURSE TITLE: ENVIRONMENTAL AND AGRICULTURAL MICROBIOLOGY
COURSE CODE: MIB355EAM
SEMESTER: V **2020-2021**
NO. OF HOURS WEEK/ SEMESTER: 3/36
CREDITS: 3

UNIT - I

MICROORGANISMS AND THEIR HABITATS 8HRS

1. Terrestrial Environment: Soil profile and soil Microflora
2. Aquatic Environment: Microflora of fresh water and marine habitats
3. Atmosphere: Aero microflora and dispersal of microbes
4. Extreme Habitats: Extremophiles: Microbes thriving at high & low temperatures, pH, high hydrostatic &osmotic pressures, salinity, & low nutrient levels.

UNIT – II

WATER ANALYSIS & MICROBIAL INTERACTIONS 8HRS

1. Treatment and safety of drinking (potable) water
2. Methods to detect potability of water samples:
    (a) Standard qualitative procedure: presumptive test/MPN test, confirmed and completed tests for faecal coliforms
    (b) Membrane filter technique. Microbial interactions – mutualism, commensalism, antagonism, competition, parasitism, predation.
    (c) Role of microorganisms in nutrient cycling (Carbon, phosphorus)

UNIT – III

WASTE MANAGEMENT **6 HRS**

1. Outlines of Solid Waste management: Sources and types of solid waste, Methods of solid waste disposal (composting and sanitary landfill).
2. Liquid waste management: Composition and strength of sewage (BOD and COD), Primary, secondary (oxidation ponds, trickling filter, activated sludge process and septic tank) and tertiary sewage treatment.

UNIT – IV

PGPR **7 HRS**

1. Plant Growth Promoting Microorganisms - Mycorrhizae, Rhizobia, *Azospirillum, Azotobacter, Frankia,* phosphate-solubilizers and Cyanobacteria.
2. Outlines of biological nitrogen fixation (symbiotic, non-symbiotic).
3. Biofertilizers - *Rhizobium*.

UNIT – V

PLANT DISEASES 7HRS

1. Concept of disease in plants. Symptoms of plant diseases caused by fungi, bacteria, and viruses. Plant diseases - groundnut rust, Citrus canker.
2. Principles of plant disease control.
3. Biological control of plant diseases.
4. Biopesticides – *Bacillus thuringiensis*
5. Nuclear polyhedrosis virus (NPV)
6. *Trichoderma*

REFERENCE BOOKS:

1. *Introduction to Soil Microbiology* by Martin Alexander
2. *Introduction to Environmental Microbiology* by R. Mitchell
3. *Soil Microbiology and Biochemistry* by Paul & Clark
4. *Aquatic Microbiology* by G Rhenheiner
5. *Agricultural Microbiology* by Rangaswami, G and Bhagyaraj
6. *Microbial Ecology* by Atlas, R.M and Bartha, R.

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DEPARTMENT OF BOTANY, PG
COURSE TITLE: PLANT RESOURCE UTILIZATION AND CONSERVATION
COURSE CODE: BOT114UC
SEMESTER: I **2020-2021**
NO. OF HOURS WEEK/ SEMESTER: 4/60
CREDITS: 4

UNIT-I: **(12 Lectures)**

1. Biodiversity-Current concept, Status in India,
2. Biodiversity utilization concepts.
3. Relationships between biodiversity and Biotechnology.
4. Biodiversity of microbes. Role of remote sensing in resource identification.

UNIT-II: **(10 Lectures)**

1. Botany, cultivation and uses of:
2. Food crops: Rice, Wheat, Sorghum.
3. Vegetable crops: Potato, tomato, chillies.

UNIT-III: **(15 Lectures)**

1. Distribution, description and uses of:
2. Timber yielding plants: *Tectona, Dalbergia,* Rosewood.

3. Medicinal plants: *Rawolfia, Withania, Emblica, Andrographis, Aloe,* Neem,. Conservation of biology

UNIT-IV: (12 Lectures)

1. Current practices in conservation in India and abroad.
2. Organizations involved in resource conservation IUCN, WWF, UNEP, UNESCO. Phytogeography- hot spots of India and world.
3. General account on activities of DBT, BSI and NGPGR.

UNIT-V: (11 Lectures)

1. Strategies for in *situ* conservation-Protected areas, Sanctuaries, National parks,
2. Biosphere reserves and Mangroves.
3. Strategies, for *ex situ* conservation- Botanical Gardens, Seed banks, Field banks.
4. Gene banks, *in vitro* preservation.

REFERENCE BOOKS:

1. Swaminathan M.N. & Jam, R.S. *Biodiversity: Implications for Global Security*, Macmillan, 1982.
2. CS1R 1986. *The Useful Plants in India.*
3. Kothari, 1987. *Understanding Biodiversity, Life Sustainability and Equity*, Orient Longman.
4. Sharma, O.P. 1996. *Hills Economic Botany.*
5. Thakur. R.S. *et al., Major Medicinal Plants.*
6. Kocchar, S.L. 1998. *Economic Botany of Tropics.*
7. Richard B. Primack. 1993. *Essentials of Conservation Biology.*
8. Heywood, V.H. & Watson, R.T. 1995. *Global Biodiversity Assessment.*
9. Peter B. Kaufman *et al.,* 1999. *Natural Products from Plants.*

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DEPARTMENT OF BOTANY, PG
COURSE TITLE: PLANT ECOLOGY
COURSE CODE: BOT123PE
SEMESTER: II **2020-2021**
NO. OF HOURS WEEK/ SEMESTER: 4/60
CREDITS: 4

UNIT-I:

STRUCTURE AND FUNCTION OF ECOSYSTEM: (12Lectures)

1. Biotic and abiotic components,
2. Energy flow, energy pyramids, food chains and food webs, homeostasis.
3. Ecological life cycle, ecotype differentiation, population characteristics, and population dynamics.
4. Community ecology, analysis of communities and ecological succession (types, mechanism, climax concept, facilitation model, initial floristic composition and inhibition models).

UNIT-II: (12Lectures)

1. Global biogeochemical cycles of carbon, nitrogen, phosphorous, Sulphur.
2. Climate, soil and vegetation patterns of the world;

3. Origin, structure and properties of atmosphere, horizontal and vertical movements of atmosphere;
4. Types of soils, major biomes of the world.

UNIT-III: (12Lectures)

AIR POLLUTION:

1. Classification and properties of air pollutants and their effects on plants;
2. Ozone layer and Ozone hole; climate change.
3. Water pollution: Domestic and industrial water pollution; oil pollution;
4. Soil pollution; acidification, agrochemical pollution; contamination by metalliferous wastes.

UNIT-IV: (12Lectures)

1. Ecological Management: Concept of sustainable development; forest conservation and soil conservation. Biological diversity: Concept and levels, role of biodiversity in ecosystem function and stability;
2. Speciation and extinction;
3. IUCN categories of threat; causes of biodiversity loss; conservation; keystone species.

UNIT-V: (12Lectures)

1. Conventional and Non-conventional energy sources.
2. Bioremediation and environmental cleanup: Phytoremediation of heavy metal pollutant sites;
3. Bio conservation and biological degradation of hazardous wastes.

REFERENCE BOOKS:

1. Brady, N.C 1990. *The Nature and Properties of Soil*, MacMillan Press.
2. Begon, M. Harper, J.L. and Townsend, C.R. 1996. *Ecology*.*l3lackwell Science*,Cambridge, USA.
3. Campman, J.L. and Reiss, M.J. 1988. *Ecology*. *Principles and Applications*, Cambridge University Press, U.K.
4. Kormondy, E.J. 1996. *Concepts of Ecology*. Prentice-Hall of India Pvt. Ltd., New Delhi.
5. Mitra, R. 1968. *Ecology Work Book*. Oxford and TBH, New Delhi.
6. Odum, E.P. 1983. *Basic Ecology*. Saunders, Philadelphia.
7. Ambasht, R.S. and Ambasht, N.K. 1999. *A text book of Ecology*. CBS Publication & Distr. New Delhi.
8. Ludwing, J. and Reynolds, J.F. 1998. *Statistical Ecology*. John Wiley & Sons.
9. Sharma, P.D. 2001. *Ecology and Environment*, Rastogi Publications, Meerut.

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DEPARTMENT OF BOTANY, PG
COURSE TITLE: PLANT PHYSIOLOGY
COURSE CODE: BOT124PP
SEMESTER: II **2020-2021**
NO. OF HOURS WEEK/ SEMESTER: 4/60
CREDITS: 4

UNIT-I: **(12Lectures)**

MEMBRANE TRANSPORT AND TRANSLOCATION OF WATER AND SOLUTES:

1. The structure and Properties of water, water potential, components of water potential);
2. Mechanism of water transport through xylem;
3. Water loss by transpiration; Essential nutrients, deficiencies and plant disorders;
4. Solute transport by passive and active mechanisms and membrane transport proteins

UNIT-II: **(11Lectures)**

SENSORY PHOTOBIOLOGY:

1. History of discovery of phytochromes,
2. Structure and function of phytochrome,

3. Photochemical and biochemical properties of phytochrome,
4. Phytochrome induced plant responses,
5. Molecular mechanism of action of phytochrome in gene expression,
6. Crypto chrome and its role in photo morphogenesis.

UNIT-III: **(13Lectures)**

1. **THE FLOWERING PROCESS:** Photoperiodism and its significance, initiation of flower primordia, flowering stimulus, Vernalization, endogenous clock and its regulation.
2. **PLANT GROWTH REGULATORS:** Physiological effects and mode of action of auxins, Gibberellins, cytokinins, ethylene, abscisic acid, brassinosteroids, jasmonic acid and salicylic acid

UNIT-IV: **(12Lectures)**

SIGNAL TRANSDUCTION:

1. Over view,
2. Receptors and G proteins,
3. Second messengers,
4. Two component sensor regulator system in bacteria and plant

UNIT-V: **(12Lectures)**

STRESS PHYSIOLOGY:

1. Water deficit and physiological consequences,
2. Drought tolerance mechanisms,
3. Salinity stress and plant responses,
4. Heat stress and heat shock proteins,

5. Metal toxicity,
6. Biotic stress.

REFERENCE BOOKS

1. Devline and Witham, 1986. *Plant Physiology*. CBS Publications and Distributors. New Delhi.

2. Hopkins, W.G. 1995. *Introduction to Plant Physiology*, John Wiley & Sons. Inc., New York, USA.

3. Moore, T.C. 1989. *Biochemistry and Physiology of Plant Hormones*. Springer Verlag, New York, USA.

4. Singhal et al. 1999. *Concepts in Photobiology*. *Photosynthesis and Photomorphogenesis*, Narosa Pub. House. New Delhi.

5. Taiz and Zeiger, 1998. *Plant Physiology*. Sinauer Associates Inc., Publishers, Sunderland.

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DEPARTMENT OF BOTANY, PG
COURSE TITLE: CYTOGENETICS OF CROP PLANTS AND PLANT BREEDING
COURSE CODE: BOT234CC
SEMESTER: III 2020-2021
NO. OF HOURS WEEK/ SEMESTER: 3/36
CREDITS: 3

UNIT-I **(Lectures: 6)**

CONCEPT AND SCOPE OF PLANT BREEDING:

1. Principles of plant breeding in self,
2. cross and asexually propagated plants.
3. Methods of plant breeding in self
4. Cross and asexually propagated plants.

UNIT-II **(Lectures: 6)**

BREEDING OBJECTIVES FOR CROP IMPROVEMENT:

1. Genetics of heterosis and its applications.
2. Polyploidy breeding, mutation breeding and achievements.
3. Hardy- Weinberg law & its applications

UNIT-III **(Lectures: 8)**

APPLICATIONS OF MOLECULAR MARKERS IN CROP IMPROVEMENT:

1. Construction of genetic maps in plants.
2. Molecular markers–Restriction Fragment Length Polymorphisms (RFLPs),
3. Random Amplified Polymorphic DNAs (RAPDs).
4. Molecular maps and their utility in Plant Genomics.

UNIT-IV **(Lectures: 8)**

APPLICATIONS OF PLANT BIOTECHNOLOGY IN CROP IMPROVEMENT:

1. GM crops for Food quality,
2. Improved crop productivity and other agronomical traits;
3. Molecular farming.
4. Plant organizations and their role in crop improvement programs

UNIT-V **(Lectures: 8)**

1. Plant breeding for resistance to diseases and pests,
2. genetics of male sterility and its applications,
3. Transgenic crops-Genetic Engineering of crops for useful agronomic traits.

REFERENCE BOOKS:

1. Russel, P.J. 1998. ***Genetics.*** The Benjamin/Cunnings Publishing Co., Inc., USA.

2. Khush, G.S. 1973. ***Cytogenetics of Aneuploids,*** Academic Press, London.

3. Gupta, P.K. 2005. ***Molecular Biology and Genetics Engineering***

4. Snustad, D.P. and Simmons, M.J. 2000. ***Principles of Genetics*.**

5. Chahal, G.S. and Gosal, S.S. ***Principles and Procedures of Plant Breeding – Biotechnological and Conventional Approaches,*** Narosa Publishing House, New Delhi.

6. Darbeshwar Roy, 2000. ***Plant Breeding: Analysis and Exploitation of Variation,*** Narosa Publishing House, New Delhi.

7. Singh, P. 2001. ***Essentials of Plant Breeding,*** Kalyani Publishers, Hyderabad.

8. Primrose, S.B. 1994. ***Molecular Biotechnology***(2nd ed) Blackwell Sci. Publ.

9. Oxford.

10. Balasubramanian, D. 2005. ***Concepts of Biotechnology***

11. Old, A. and Primrose, S.B. 2002. ***Principles of Gene Manipulation***. Blackwell Publ. Oxford.

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DEPARTMENT OF BOTANY, PG
COURSE TITLE: PLANT METABOLISM
COURSE CODE: BOT241PM
SEMESTER: IV **2020-2021**
NO. OF HOURS WEEK/ SEMESTER: 4/60
CREDITS: 4

UNIT I

1. **Energy and Enzymes: Energy flow through living systems, free energy of oxidation reduction reactions, redox potential, types of phosphorylations, structure and functions of ATP.**
2. Enzymes: General aspects, nomenclature and classification of enzymes, mode of enzyme action, Michaelis-Menton equation and its significance, regulation of enzymes, enzyme inhibition and isoenzymes.

UNIT II

Photochemistry and Photosynthesis: General concepts of photosynthesis, photosynthetic pigments, structure of photosynthetic apparatus, photosynthetic electron transport (Non-cyclic, cyclic), proton transport and ATP synthesis.

UNIT III

Carbon assimilation: The C3 carbon cycle, photorespiration and its significance, C4 and CAM pathways and their physiological and ecological significance, Biosynthesis of starch and sucrose, translocation by phloem loading and unloading.

UNIT IV

Respiration: Overview of plant respiration, glycolysis, pentose phosphate pathway, TCA cycle, electron transport, chemiosmotic hypothesis of ATP synthesis, alternative oxidase system, and Alcohol and Lactic acid fermentations.

UNIT V

1. Nitrogen metabolism: Sources of nitrogen to plants, biological nitrogen fixation.Nodule formation and nod-factors, mechanism of nitrate uptake and reduction,ammonium assimilation (reductive amination, transamination and GS-GOGAT).

2. Lipid metabolism: Structure and function of lipids, classification of lipids, fatty acids and their biosynthesis. Synthesis of phospholipids and storage lipids, catabolism of lipids and glyoxylate cycle.

REFERENCE BOOKS

1. Dennis et al., 1997. *Plant Metabolism* (2nd ed), Longman, Essex, England.

2. Hopkins, W.G. 1995. *Introduction to Plant Physiology*, John Wiley &Sons.Inc.,New York, USA.

3. Nobel, P.S. 1999. *Physicochemical and Environmental Plant Physiology*, Academic Press, San Diego, USA.

4. Taiz and Zeiger, 1998. *Plant Physiology* (2nd ed.)

5. Voet and Voet, 1992. *Biochemistry*, John Wiley & Sons, Inc., New York, USA.

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DEPARTMENT OF BOTANY, PG
COURSE TITLE: PLANT CELL, TISSUE AND ORGAN CULTURE
COURSE CODE: BOT242PT
SEMESTER: IV **2020-2021**
NO. OF HOURS WEEK/ SEMESTER: 4/60
CREDITS: 4

UNIT I

GENERAL INTRODUCTION: History and scope; contributions of G. Haberlandt, F. Laibach, P.R. White, E.C, Cocking, I.K.Vasil, S.Guha and S.C. Maheswari.

TISSUE CULTURE MEDIA: Composition and preparation; Laboratory requirements and sterilization techniques.

ANTHER CULTURE AND ANDROGENIC HAPLOIDS: Factors affecting the androgenesis; ontogeny of androgenic haploids; Isolated microspore and pollen culture; Diploidization of haploids; applications of androgenic haploids

UNIT II

MERISTEM CULTURE AND PRODUCTION OF PATHOGEN-FREE PLANTS- Methods for virus elimination; Virus Indexing; media composition and regeneration of Plantlets; Applications and limitations

CELL CULTURES-Isolation of single cells by enzymatic and non-enzymatic methods; Batch cultures and continuous cultures; synchronization of cell culture; viability of cell cultures;cultures of isolated single cells; plating efficiency; Production of secondary metabolites and other applications.

EMBRYO CULTURE-Embryo-nurse endosperm transplant technique; Microscopic experiments with embryo; Applications

UNIT III

Callus culture, Somatic embryogenesis and production of synthetic seeds. Endosperm culture; Histology and Cytology of endosperm callus; Production of seedless fruits; applications

SOMATIC HYBRIDIZATION: Protoplast isolation and purification; protoplast culture and fusion; selection of fused protoplasts; regeneration of somatic hybrids; Cytoplasmic hybridization; practical applications

UNIT IV

Protoplast culture and fusion. Development of somatic hybrids to overcome the incompatibility barriers; Somaclonal variations and crop improvement;

Anther and pollen culture and production of haploids; Technology of freeze preservations and crop improvement

UNIT V

CLONAL PROPAGATION: Multiplication by axillary buds, apical shoots, adventitious shoots and callus cultures; culture media; acclimatization of plants transferred to soil conditions; practical applications.

SOMACLONAL AND GAMETOCLONAL VARIATION: Source material and culture conditions; isolation of variants; nature of gametoclonal variation; applications in Plant Breeding. Cryopreservation, germplasm storage and gene banks

REFERENCE BOOKS:

1. Bhojwani, S.S. and Razdan, M.K. 1996. ***Plant Tissue Culture: Theory andPractice***(revised edition). Elsevier Science Publishers, New York, USA.

2. Bojwani, S.S. 1990. ***Plant Tissue Culture: Applications and Limitations***, Elsevier Science Publisher, New York, USA.

3. Khasim, S.M. 2002. ***Botanical Microtechnique: Principles and Practice***, Capital Publishing Company, New Delhi.

4. Vasil, I.K. and Thorpe, T.A. 1994. ***Plant Cell and Tissue Culture***, Kluwer Academic Press, The Netherlands.

5.

6. Razdan, M.K. 1994. ***An Introduction to Plant Tissue Culture***: Oxford & IBH Publishing Company Private Limited, New Delhi.

7.

8. Chawla, H.S. 2003. ***Introduction to Plant Biotechnology***. Oxford & IBH, New Delhi

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DEPARTMENT OF BOTANY, PG
COURSE TITLE: GENETIC ENGINEERING OF PLANTS AND MICROBES
COURSE CODE: BOT243GE
SEMESTER: IV **2020-2021**
NO. OF HOURS WEEK/ SEMESTER: 4/60
CREDITS: 4

UNIT I

RECOMBINANT DNA TECHNOLOGY: Methods involved in generating r-DNA molecules, gene cloning-techniques, identification of clones by screening procedures, construction of genomic/c DNA libraries, PCR and its applications, Blotting techniques

UNIT II

GENETIC ENGINEERING OF PLANTS: Plant transformation with Ti-plasmid of *Agrobacterium tumefaciens,* physical methods of transferring genes to plants, reporter genes, use of different promoters, transgenic plants. Genetically modified (GM) crops

UNIT III

NITROGEN FIXATION: Mechanism and genetics of nitrogen fixation, nitrogen fixing bacteria, genetics of free living and symbiotic Diazotrophs, regulation of *nif*and *nod* gene expression, and Biofertilizers

UNIT IV

MICROBIAL BIOTECHNOLOGY: Microbes in the production of alcohol, beer, wine Commercial production of antibiotics, therapeutic vaccines, biopesticides

UNIT V

Genetically engineered microorganisms in environmental health, Genetically engineered plants and microorganisms in agriculture and productivity, Genetically, engineered bacteria in bioremediation of organic pesticides, insecticides oil spills, Hazards of genetically engineered microorganisms, plants and animals

REFERENCE BOOKS:

1. Lewin, B. 2000. *Gene VII*, Oxford University Press, New York, USA.
2. Sunstad, D.P. and Simmons, M.J. 2000. *Principles of Genetics*.

1. Purohit, S.S. 2000. Biotechnology; *Fundamentals and Applications*, Agrobios, New Delhi.
2. Alberts, B., Bray, D., Lewis, J., Raff, M., Roberts, K. and Waston, J.D. 1989. *Molecular Biology of the Cell*, Garland Publishing Inc., New York.
3.
4. Satyesh Chandra Roy and Kalyan Kumar, D.C. 1997.*Cell Biology*, NewCentral Book Agency, Calcutta.
5. Gupta, R.K. *Molecular Biology & Genetic Engineering*, Rastogi Publication.

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DEPARTMENT OF BOTANY, PG
COURSE TITLE: MICROBIAL TECHNOLOGY
COURSE CODE: BOT245MT
SEMESTER: IV **2020-2021**
NO. OF HOURS WEEK/ SEMESTER: 4/60
CREDITS: 4

UNIT I

INTRODUCTION TO MICROBIAL TECHNOLOGY: Procedures of microbial culture • Theory and practice of sterilization • Isolation and improvement of microbial strains of industrial importance

UNIT II

MICROBIAL PHYSIOLOGY AND METABOLIC DIVERSITY:

- Nutritional requirements of major groups of microbes
- Growth curve and growth parameters
- Batch and Continuous culture,
- Measurement of growth,
- Environmental factors affecting microbial growth

UNIT III

FERMENTATION PROCESS:

Inoculum development, Storage of cultures for repeated fermentations, fed-batch fermentation with example, scaling up of process form shake flask to industrial fermentation

APPLICATION OF MICROBIAL TECHNOLOGY IN AGRICULTURE:

Improvement of N2- fixing strain, Biocontrol by hyperparasites & hyperparasites, nutritionally improved plants; Slow ripening fruits

UNIT IV

IN HEALTH:

Development of therapeutic drugs by microbial fermentation, production of steroids, application of monoclonal antibodies

FOOD AND DAIRY SCIENCE:

Bacteriocins and their application in food preservatives -Nisin, food additives. Microbial biomass production: baker's yeast, SCP production

UNIT V

BIO-MINING: Extraction of Cu, U from ore by microbes; Bio-recovery of petroleum

BIODEGRADATION OF ENVIRONMENTAL CONTAMINANTS AND WASTE:

- Bioremediation of heavy metals
- Microbial degradation of xenobiotics

- Biodeterioration: microbial deterioration of paper, textile

REFERENCE BOOKS:

1. *Biotechnology*: Rehm and Reid, Vol. 3; VCH, 1991 ISBN 3-527-28313-7(Weinheim), ISBN :1560811536
2. *Industrial Microbiplogy* – A.H.Patel, 3rd edition, Laxmi Publication, New Delhi, ISBN 9789350590089
3. *Brock Biology of Microorganisms* by Madigan, Martinko, Jackparker, Publisher : Prentice Hall Fr2006, ISBN 9780131766600
4. *Food Microbiology* by Frazier, W. C. Tata McGraw-Hill, 1978, ISBN 0070993173

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DEPARTMENT OF ZOOLOGY
COURSE TITLE: EMBRYOLOGY, PHYSIOLOGY AND ECOLOGY
COURSE CODE: ZOO244
SEMESTER: IV **2020-2021**
NO. OF HOURS WEEK/ SEMESTER: 4/60
CREDITS: 3

UNIT I

1. DEVELOPMENTAL BIOLOGY AND EMBRYOLOGY

. Gametogenesis

A. Fertilization

B. Types of eggs

C. Types of cleavages

1. Development of Frog up to formation of primary germ layers

2. Formation and functions of Fetal membrane in chick embryo

3. Development, types and functions of Placenta in mammals

UNIT II

PHYSIOLOGY-I

1. Respiration-Pulmonary ventilation, transport of oxygen and carbon dioxide
2. Circulation-Structure and functioning of heart, Cardiac cycle

3. Excretion- Structure of nephron, urine formation, counter current mechanism

UNIT III

PHYSIOLOGY-II

1. Nerve impulse transmission -Resting membrane potential, origin and propagation of action potentials along myelinated and unmyelinated nerve fibers
2. Muscle contraction -Ultra structure of muscle fiber, molecular and chemical basis of muscle contraction
3. Endocrine glands- Structure, secretions and the functions (of hormones) of pituitary, thyroid, parathyroid, adrenal glands and pancreas
4. Hormonal control of reproduction in a mammal- Menstrual cycle and Oestrous cycle

UNIT IV

ECOLOGY-I

1. Meaning and scope of Ecology
2. Important abiotic factors of Ecosystem- Temperature, light
3. Nutrient Cycles- Nitrogen, Carbon and Phosphorous
4. Components of Ecosystem (Example: lake) food chains and food web, energy flow in ecosystem

UNIT V

ECOLOGY-II

1. Habitat and ecological niche
2. community interactions- Mutualism, commensalism, parasitism, competition, predation
3. Population Ecology- Natality, Mortality, Dispersal, Density, Growth and Growth curves
4. Zoogeography
5. Zoogeographical regions

6. Study of physical and faunal peculiarities of Oriental, Australian and Ethiopian regions

REFERENCE BOOKS

1. *Human Embryology and Developmental Biology*, Bruce M. Carlson
2. *Animal Physiology and Biochemistry*, Dr R.A. Agarwal, Dr Anil K. Srivastava, Dr Kaushal Kumar
3. *Fundamentals of Ecology*, Eugene P Odum, Gary W Barrett

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DEPARTMENT OF ELECTRONICS
COURSE TITLE: CONSUMER ELECTRONICS
COURSE CODE: ELT111CE
SEMESTER: I 2020-2021
NO. OF HOURS WEEK/ SEMESTER: 4/60
CREDITS: 3

UNIT I

MICROWAVE OVEN

Microwaves (Range used in Microwave Ovens)- Microwave oven block diagram- LCD timer with alarm- Single-chip Controllers- Types of Microwave Oven- Wiring and Safety instructions- Care and Cleaning

UNIT II

WASHING MACHINES

Electronic controller for washing machines - Washing machine hardware and software- Types of washing machines - Fuzzy logic washing machines features of washing machines

UNIT III

AIR CONDITIONERS

Air Conditioning- Components of air conditioning systems- All water air conditioning systems- All air conditioning systems-Unitary and central air conditioning systems- Split air conditioners

UNIT IV

HOME/OFFICE DIGITAL DEVICES

Facsimile machine-Xerographic copier- Calculators- Structure of a calculator- Internal Organization of a calculator- Servicing electronic calculators- Digital clocks- block diagram of a digital clock

UNIT V

DIGITAL ACCESS DEVICES

Digital computer- Internet access- Online ticket reservation - Functions and networks- Barcode Scanner and decoder- Electronics Fund Transfer- automated Teller Machines (ATMs)-Set-Top boxes-Digital cable TV- video on channel

REFERENCE BOOKS & TEXT BOOKS:

1. *Consumer Electronics.* B.R. Gupta and V.Singhal. S.K. Kataria & Sons, 2013.
2. *Color Television.* A.Dhake, Mc Graw Hill Education, 2004
3. *Consumer Electronics.* S.P.Bali. Pearson Education, New Delhi, 2005.
4. *Audio and Video Systems.* R.G.Gupta. Tata Mc Graw Hill, 2004.

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DEPARTMENT OF ELECTRONICS
COURSE TITLE: LED LIGHTING DESIGN FUNDAMENTALS & TESTING
COURSE CODE: ELE236LDF
SEMESTER: IV 2020-2021
NO. OF HOURS WEEK/ SEMESTER: 4/60
CREDITS: 3

UNIT I

BASICS OF LIGHT SOURCE AND LUMINARIES

A. Basics of LED technology, Classification of LED's, Optical Characteristics of LED's, Electrical Characteristics of LED's, Thermal Characteristics of LED's.

B. Understanding the LED Data Sheet, LED Luminaire Characteristics, Different parts of an LED, Luminaire and their functions, Different types of LED Luminaires

UNIT II

OPTICAL DESIGN OF AN LED LUMINAIRE

A. Modelling a light source based on the Luminaire Characteristics, Selecting the LED, Selection of the secondary optics, Selection of the diffusers.

B. Optical Testing-Determination of Luminous flux, viewing angle, distribution patterns, optical Efficiencies, color temperature and CRI, Efficacy

UNIT III

DRIVER DESIGN OF LED LUMINAIRE

A. Driver types –CC/CV, Estimation of the power requirement, protections required, performance requirements, reliability parameters.

B. Electrical testing-Determination of Driver Power, Efficiency, Surge immunity, transient immunity, THD & power factor, Operating range

UNIT IV

THERMAL DESIGN OF LED LUMINAIRE

A. Heat propagation modes in Luminaire, Thermal interfaces in Luminaire.

B. Estimation of LED Junction temperature, Estimation of thermal performance.

UNIT V

MECHANICAL DESIGN OF LED LUMINAIRE

A. Functional requirements, material selections, ingress protections, environmental requirements, protective coatings and their functions.

B. Environmental Testing-Temperature rise test, Ingress Protections, Corrosion tests. Performance & Reliability Testing-Burn in tests, Life tests, Endurance Switching tests, Safety tests

TEXT BOOKS & REFERENCES:

1. *Fundamentals of Solid State Lighting*, Vinod Kumar Khanna, CRC Press
2. *LEDLightingTechnology and Perception* T.Q. Khan, P. Bodrogi, Q.T.Vinh, H. Winkler, Wiley VCH
3. *Understanding LED Illumination*, M. Nisa Khan, CRC Press
4. *Lighting Design Basics*, Mark Karlen, James Benya & Christina Spangler, Wiley
5. *LED Packaging for Lighting Applications: Design, Manufacturing, and Testing*, Sheng Liu, Xiaobing Luo, Wiley, CIP
6. *IES Lighting Handbook*
7. NPTEL, IIT Kharagpur Illumination Engineering Course –Module 4

8. *Philips Lighting Technical* Literature

9. *Sylvania Lighting Technical* Literature

10. Lumileds, Osram Opto, Nichia LEDs, Cree LED's Application notes and Technical Literature

11. BEE Code –Lighting7.

12. US Department of Energy Solid State Lighting Technical Notes

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DEPARTMENT OF ELECTRONICS
COURSE TITLE: SOLID STATE LIGHTING APPLICATIONS
COURSE CODE: ELE248SLA
SEMESTER: IV 2020-2021
NO. OF HOURS WEEK/ SEMESTER: 4/60
CREDITS: 3

UNIT I

RESIDENTIAL LIGHTING

A. Photometric quantities, functional requirement of residential lighting, general lighting design considerations, types of lighting and different types of luminaires used for residential lighting

B. Inverse square law of light, Multiple source shadow effect, Lighting calculation (lumen method), Room index factor, Recommended lux levels for residential areas, Lighting design procedure for a typical house

UNIT II

RETAIL LIGHTING APPLICATIONS

A. Functional Requirements of Retail Lighting, Retail lighting design considerations, Layers of retail lighting, importance of color temperature and color rendering index in retail lighting

B. Color, reflection and contrast ratio, different types of Solid-state luminaries for retail lighting, Retail lighting design procedure, a typical retail lighting design work out

UNIT III

STREET, YARD & CANOPY LIGHTING

A. Functional Requirements of Street Lighting, Street lighting design considerations, Different types of Street Lighting patterns, a typical Street Lighting design

B. Benefits of LED Road lighting, Road junction lighting and tunnel lighting. Functional requirements of yard & canopy lighting

UNIT IV

SIGNAL LIGHTING

A. Functional Requirements of Road Signals, considerations of road signal lighting design. A typical road Signal Aspect Design and evaluation.

B. Functional Requirements Rail Signals, considerations of Rail signal lighting design, a typical Railway Signal Aspect design and evaluation

UNIT V

SMART LIGHTING

A. Smart lighting systems, block diagram of modular intelligent control systems (MIC). Different lighting control standards-DMX, KNX, DALI Interfaces, Dimming applications.

B. Smart lighting systems- Automatic lighting control through remote, mobile and web. Sensor based controls- Occupancy, light and timer sensors

TEXT BOOKS AND REFERENCE BOOKS

1. *Fundamentals of Solid-State Lighting*, Vinod Kumar Khanna, CRC Press
2. *LED Lighting Technology and Perception* T.Q. Khan, P. Bodrogi, Q.T. Vinh, H. Winkler, Wiley VCH
3. *Understanding LED Illumination*, M. Nisa Khan, CRC Press
4. *Lighting Design Basics*, Mark Karlen, James Benya & Christina Spangler, Wiley
5. *LED Packaging for Lighting Applications: Design, Manufacturing, and Testing*, Sheng Liu, Xiaoping Luo, Wiley, CIP
6. *IES Lighting Handbook*
7. NPTEL, IIT Kharagpur Illumination Engineering Course –Module 4

8. *Philips Lighting Technical* Literature

9. *Sylvania Lighting Technical* Literature

10. Lumileds, OsramOpto, Nichia LEDs, Cree LED's Application notes and Technical Literature

11. BEE Code –Lighting7. US Department of Energy Solid State Lighting Technical Notes

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DEPARTMENT OF ELECTRONICS
COURSE TITLE: CLUSTER ELECTIVE PAPER: RENEWABLE ENERGY SOURCES
COURSE CODE: ELE35XIIIRES/ELE35XIIC2RES
SEMESTER: V/VI **2020-2021**
NO. OF HOURS WEEK/ SEMESTER: 4/60
CREDITS: 3

UNIT I

INTRODUCTION TO RENEWABLE ENERGY SOURCES

Non-renewable energy sources – coal, hydel, nuclear, renewable energy sources – solar, wind, ocean thermal, advantages and disadvantages of non-renewable energy sources, environmental impacts on non-renewable energy sources, need for renewable energy sources, advantages and disadvantages of renewable energy sources.

UNIT II

SOLAR ENERGY

Introduction to solar energy, concentrating collectors, flat plate collectors, compound parabolic collectors, central receiver collectors. Applications of solar energy - Solar cookers, solar ponds, solar dryers, solar pumping, solar distillation, solar cooling and heating

UNIT III

WIND ENERGY

Fundamentals of wind energy, wind power generation, advantages and disadvantages of wind energy, environmental impacts on wind energy, blade throw, shadow flickers, mitigation of safety hazards.

Batteries-types of batteries-lithium ion, lithium iron phosphate batteries, working, assembling and testing, applications.

UNIT IV

HYDEL POWER

Site selection, fore bay tank, penstocks, types of hydro power generation technologies, environmental impacts, Ocean power - Origin of tidal energy, tidal energy technologies, advantages and disadvantages of tidal energy, ocean thermal power generation, types of ocean power generation

UNIT V

GEOTHERMAL POWER

Fossil fuels, geothermal power generation, magma resources, advantages and disadvantages of geothermal, applications of geothermal, Hybrid systems - Hybrid system models, Wind –solar hybrid system, solar-diesel-wind hybrid system, wind-diesel hybrid system.

TEXT BOOKS & REFERENCES:

1. *Renewable Energy Sources* by Tasneem Abbasi& SA Abbasi, PHI publications.
2. *Wind Power Technology* by Joshua Earnest, PHI publications.
3. *Non-conventional Energy Sources*, B.H. Khan, McGraw Hill
4. *Solar Energy*, Suhas P Sukhative, Tata McGraw - Hill Publishing Company Ltd.
5. *Renewable Energy, Power for a Sustainable Future*, Godfrey Boyle, Oxford University Press.
6. http://en.wikipedia.org/wiki/Renewable_energy

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DEPARTMENT OF ELECTRONICS
COURSE TITLE: CLUSTER ELECTIVE PAPER: RENEWABLE ENERGY SOURCES
COURSE CODE: ELE35XIIIRES/ELE35XIIC2RES (P)
SEMESTER: V/VI **20202021**
NO. OF HOURS WEEK/ SEMESTER: 4/60
CREDITS: 3

LIST OF EXPERIMENTS:

1. Demonstration of Training modules on Solar energy, wind energy.
2. Solar energy testing in series connection
3. Solar energy testing in parallel connection
4. Wind power testing
5. Hydro power testing with resistive load
6. Hydro power testing with motor load
7. Solar energy power generation.

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DEPARTMENT OF PHYSICS
COURSE TITLE: SKILL DEVELOPMENT COURSE-SOLAR ENERGY
COURSE CODE: SDC121SE
SEMESTER: II **2020-2021**
NO. OF HOURS WEEK/ SEMESTER:2/30
CREDITS: 2

UNIT-I

Sun as a source of energy, Solar radiation, Solar radiation at the Earth's surface, Measurement of Solar radiation- Pyrheliometer, Pyranometer, Sunshine recorder, Prediction of available solar radiation,

UNIT-II

Principle of conversion of solar radiation into heat, Collectors used for solar thermal conversion: Flat plate collectors and Concentrating collectors, Solar Thermal Power Plant

UNIT-III

Conversion of Solar energy into Electricity - Photovoltaic Effect, Solar photovoltaic cell and its working principle, Different types of Solar cells, Series and parallel connections

UNIT IV

Photovoltaic applications: Battery chargers, domestic lighting, street lighting and water pumping

UNIT V

Solar energy-Importance, Storage of solar energy, Solar Pond, Solar cookers, Solar hot water systems, Solar dryers, Solar Distillation, Solar greenhouses.

REFERENCE BOOKS:

1. *Solar Energy Utilization,* G. D. Rai, Khanna Publishers
2. *Solar Energy- Fundamentals, Design, Modelling Applications*, G.N. Tiwari, Narosa Pub., 2005.
3. Solar Energy-Principles of Thermal Energy Collection & Storage, S.P. Sukhatme, Tata Mc- Graw Hill Publishers, 1999.
4. *Solar Photovoltaics- Fundamentals, Technologies and Applications*, Chetan Singh Solanki, PHI Learning Pvt. Ltd.,
5. *Science and Technology of Photovoltaics,* P. Jayarama Reddy, BS Publications

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HUMAN VALUES
PROFESSIONAL ETHICS

ANDHRA LOYOLA COLLEGE (AUTONOMOUS) VIJAYAWADA
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ALL India 36th Rank 2020 by NIRF Govt. of India

DEPARTMENT OF VALUE EDUCATION
COURSE TITLE: LIFE SKILL COURSE- HUMAN VALUES AND PROFESSIONAL ETHICS
COURSE CODE: LSC 111HVPE/ LSC 121HVPE
SEMESTER: I/II 2020-2021
NO. OF HOURS WEEK/ SEMESTER: 2/24
CREDITS: 2

UNIT: 1

INTRODUCTION - DEFINITION, IMPORTANCE, PROCESS & CLASSIFICATIONS OF VALUE EDUCATION

1. Understanding the need, basic guidelines, content and process for Value Education
2. Understanding the thought provoking issues; need for Values in our daily life
3. Choices making – Choosing, Cherishing & Acting
4. Classification of Value Education: understanding Personal Values, Social Values, Moral Values & Spiritual Values.

UNIT: 2

HARMONY IN THE FAMILY

1. Understanding harmony in the Family- the basic unit of human interaction
2. Understanding the set of proposals to verify the Harmony in the Family

UNIT: 3

VALUES IN HUMAN RELATIONSHIPS

1. Trust (Vishwas) and Respect (Samman) as the foundational values of relationship
2. Present Scenario: Differentiation (Disrespect) in relationships on the basis of body, physical facilities, or beliefs.
3. Understanding the Problems faced due to differentiation in Relationships

UNIT: 4

VALUES IN THE SOCIETY

1. Understanding the harmony in the society (society being an extension offamily): Samadhan, Samridhi, Abhay, Sah-Astitva as comprehensive Human Goals
2. Visualizing a universal harmonious order in society- Undivided Society (AkhandSamaj), Universal Order (SarvabhaumVyawastha)- from family to world family

UNIT: 5

PROFESSIONAL ETHICS IN EDUCATION

1. Understanding about Professional Integrity, Respect & Equality, Privacy, Building
2. Trusting Relationships.
3. Understanding the concepts; Positive co-operation, Respecting the competence of other professions.
4. Understanding about Taking initiative and promoting the culture of openness.
5. Depicting Loyalty towards Goals and objectives.

TEXT BOOKS:

1. RR Gaur, R Sangal, G P Bagaria, 2009, *A Foundation Course in Human Values and Professional Ethics.*
2. Bhatia, R. & Bhatia, A (2015) *Role of Ethical Values in Indian Higher Education*.

REFERENCES:

1. Ivan Illich, 1974, *Energy & Equity*, The Trinity Press, Worcester, and Harper Collins,

2. E.F. Schumacher, 1973, *Small is Beautiful: A Study of Economics as if People Mattered*, Blond & Briggs, Britain.
3. Sussan George, 1976, *How the Other Half Dies*, Penguin Press. Reprinted 1986, 1991
4. Donella H. Meadows, Dennis L. Meadows, Jorgen Randers, William W. Behrens III, 1972, *Limits to Growth – Club of Rome's Report*, Universe Books.
5. A Nagraj, 1998, Jeevan Vidya Ek Parichay, Divya Path Sansthan, Amarkantak, PL Dhar, RR Gaur, 1990, *Science and Humanism*, Commonwealth Publishers.
6. A N Tripathy, 2003, *Human Values*, New Age International Publishers.

MODE OF EVALUATION:

Assignment/ Seminar/Continuous Assessment Test/Semester End Exam.

CO CURRICULAR ACTIVITIES:

1. Visit to an Old Age Home and spending with the inmates for a day.

2. Conduct of Group Discussions on the topics related to the syllabus.

3. Participation in community service activities.

4. Working with a NGO like Rotary Club or Lions International, etc.

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DEPARTMENT OF HISTORY
COURSE TITLE: AGE OF RATIONALISM AND HUMANISM: THE WORLD BETWEEN 15th& 18th CENTURIES
COURSE CODE: HIS355ARH
SEMESTER: V 2020-2021
NO. OF HOURS WEEK/ SEMESTER: 4/60
CREDITS: 4

UNIT I

Feudalism -Geographical Discoveries: Causes – Compass & Maps – Portugal Leads and Western World Follows – Consequences;

UNIT II

The Renaissance Movement: Factors for the Growth of Renaissance Characteristic Features - Transformation from Medieval to Modern World; Reformation & Counter Reformation Movements: The Background – Protestantism – Spread of the Movement– Counter Reformation– Effects of Reformation

UNIT III

Emergence of Nation States: Contributory Factors - England and other Nation States – Impact due to the Emergence of Nation States. Age of Revolutions: The Glorious Revolution (1688) – Origin of Parliament – Constitutional Settlement – Bill of Rights – Results

UNIT IV

Age of Revolutions: The American Revolution (1776) – Opening of New World – Causes – Course – Declaration of Independence, 1776 – Bill of Rights, 1791 – Significance

UNIT V

Age of Revolutions: The French Revolution (1789) – Causes - Teachings of Philosophers - Course of the Revolution – Results.

REFERENCES:

1. Burke, Peter. *The Renaissance*
2. C.J.H. Hayes, *Modern Europe up to 1870*
3. C.D. Hazen, *Modern Europe up to 1945*
4. Christopher Hill, *From Reformation to Industrial Revolution*
5. Elton, G.R., *Reformation Europe, 1517-1559*
6. Ferguson, *The Renaissance*
7. Gilmore, M.P., *The World of Humanism, 1453-1517*
8. Hilton, Rodney, *Transition from Feudalism to Capitalism*
9. J. H. Parry, *The Age of Renaissance*
10. J.N.L. Baker, *History of Geographical Discoveries and Explorations*
11. The New Cambridge *Economic History of Europe*, Vol. I, VII.

PROJECT WORK:

Individual or group projects may be presented by the students regarding preparation of bibliography on various topics. Students should also be asked to construct glossaries to help those study and review lessons while helping them to understand a large array of vocabulary words.

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ALL India 36th Rank 2020 by NIRF Govt. of India

COURSE TITLE: SKILL DEVELOPMENT COURSE- SOCIAL WORK METHODS
COURSE CODE: SDC122SWM
SEMESTER: II **2020-2021**
NO. OF HOURS WEEK/ SEMESTER: 2/24
CREDITS: 2

CHAPTER – I:

INTRODUCTION TO SOCIAL WORK AND CONCEPTS RELATED TO SOCIAL WORK

a) Introduction to Social Work – Definition and Scope

b) Social Work – Objectives and Functions

c) Social work Philosophy, Objectives and Principles

d) Methods & Fields of Social Work

CHAPTER – II:

METHODS OF WORKING WITH INDIVIDUALS AND GROUPS

a) Social Case Work – Definition and Importance

b) Process of Case Work and Counseling skills

c) Social Group Work – Definition & Need for Social Group Work

d) Group Work Process, Principles, Stages and Facilitation of skills & Techniques.

CHAPTER – III:

WORKING WITH COMMUNITIES

a) Definition, Characteristics and Types of Communities

b) Community Development – Concept

c) Community Participation Work – Objectives and Types of Field Work.

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DEPARTMENT OF BBA
COURSE TITLE: ETHICS AND CORPORATE SOCIAL RESPONSIBILITY
COURSE CODE: BBA121ECS
SEMESTER: II **2020-2021**
NO. OF HOURS WEEK/ SEMESTER: 4/60
CREDITS: 4

UNIT I:

INTRODUCTION

1. Ethics: Meaning, Definition, Nature of ethics, sources of ethics, types of ethics,
2. Evolution of ethics- Business ethics: Meaning, Definition, Need and significance of business ethics,
3. Nature of Business ethics, Factors influencing business ethics,
4. Characteristics of business ethics-Values and ethics in business,
5. Difference between values and ethics.

UNIT II:

THEORIES AND PRINCIPLES OF BUSINESS ETHICS

1. Normative theories: kantism and other normative theories-why ethical problems occur in business-weighing social cost and benefits,
2. rights and duties, Justice and fairness, ethics of care, integrating utility, - virtue ethics-Worker's and employees' rights and responsibilities.

UNIT III:

CORPORATE GOVERNANCE

1. Corporate governance: Meaning of corporation, meaning of governance, concept of corporate governance, features of good governance, need to improve corporate governance standards, Role played by regulators to improve corporate governance, accounting standards and corporate governance, corporate disclosure, insider trading.

UNIT IV:

BOARD OF DIRECTORS

1. Director: Qualities of a Director, composition and role of board of directors, types of directors- Auditor: Role of auditor in enhancing corporate governance, duties and responsibilities of auditors-Whistle Blowing: types of whistle blowing, need for whistle blowing.

UNIT V:

CORPORATE SOCIAL RESPONSIBILITY

Meaning, Evolution of corporate social responsibility, Common indicators for measuring business social performance, reporting social responsibility, measures in annual report, Profit maximization vs. social responsibility.

REFERENCE BOOKS:

1. Manuel G Velasquez: *Business Ethics- Concepts and Cases* Pearson.
2. Luthans Hodgetts and Thompson: *Social Issues in Business*, Macmillan USA
3. A.C. Fernando: *Business Ethics* Pearson Education.
4. A.C. Fernando: *Corporate Governance* Pearson Education.
5. Adrian Davies: *Strategic Approach to Corporate Governance* Gower Pub Co.
6. N. Gopalswamy: *Corporate Governance a New Paradigm* A H Wheeler Publishing Co Ltd.
7. Marianne M Jennings: *Cases in Business Ethics* Indian South-Western College Publishing
8. Kevin Gibson: *Ethics and Business, An Introduction*, Cambridge Applied Ethics Cambridge University Press
9. Bhanumurthy K V: *Ethics and Social Responsibility of Business*, Pearson Education India.

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DEPARTMENT: VISUAL COMMUNICATIONS
COURSE TITLE: MEDIA LAWS AND ETHICS
COURSE CODE: VIST03T1
SEMESTER: III **2020-2021**
NO. OF HOURS WEEK/ SEMESTER: 4/60
CREDITS: 3

UNIT-I:

Ethics and Moral development – The study of Ethics – The value of Ethics Education – The first Principles of Moral values and attitudes – The ethical dilemma: Conflict of values – The need for a System of Ethics. Brief history of media laws in India. Constitution of India. Indian legal system. Legal aspects. Fundamental rights.

UNIT-II:

Requirement of System of Ethics. Moral reasoning and Ethical Decision making. The Philosophical foundations of Moral theory. Ethical theories in Moral Reasoning – Critical thinking in Moral Reasoning – A model of moral Reasoning – Case study. Newspaper registration. The Press Council. Copy Right.

UNIT-III:

Truth and Honesty in Media Communications – a world of Limited Truth – Truth as a Fundamental value – The Importance of Truth – Media Practitioners and the Truth-falsehood dichotomy – Intellectual dishonesty – Truth telling and approaches to moral reasoning – Truth and Deception: Hypothetical case study. Laws related to the Press

UNIT-IV:

The media and privacy – Ethics and Privacy: The value of privacy. The need for an Ethics of Privacy – Privacy and the journalist: Journalistic guidelines – Advertising and Privacy – Confidentiality and the public interest – The principle of Confidentiality – Confidentiality in Journalism: Some special concerns. Right to Information, Official Secrets Act. Cyber Laws

UNIT-V:

Morality offensive content: Freedom and Responsibility – Society's surveillance of offensive material – Pornography, indecency, and moral responsibility – Offensive speech – A matter of Taste: Shocking and disturbing visuals – The case of moral limits – Media practitioners and Social Justice: Two views – Social Justice and Ethical decision making and Case Studies. Restrictions. Freedom of the Press.

REFERENCE BOOKS:

1. *Media, Law, Ethics and Policy in the Digital Age,* Nhamo A, Mhiripiri, Tendai Chari
2. *Media Ethics and Global Justice in the Digital Age,* Clifford G. Christians
3. *Media Law and Ethics,* Dr. Dilip Kumar, Dr Rakesh Kumar, Dr. Amitabh Srivastava

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DEPARTMENT OF VISUAL COMMUNICATIONS
COURSE TITLE: MEDIA AND CULTURE
COURSE CODE: VIST03T2
SEMESTER: III **2020-2021**
NO. OF HOURS WEEK/ SEMESTER: 4/60
CREDITS: 3

UNIT I

Mass Communication: A Critical approach – Culture and the evolution of mass communication – Mass media and the process of communication – Surveying the cultural landscape and Critiquing media and culture

UNIT II

Information and new technology: Media at the crossroads – Origins of the information highway – Information access on the information highway – Ownership issues on the internet – Citizens, cyberspace, and democracy

UNIT III

Television and the power of visual culture – Early technology and the development of television – Key programming trends in the TV age – The decline of the network era – The economics of television – Television and democracy – Tracking technology – Case Study: Anatomy of a TV "Failure" – Examining Ethics: TV erodes a sense of community

UNIT IV

Advertising and Commercial culture – Early development in American advertising – the shape of American advertising today – Persuasive techniques in contemporary advertising – Commercial speech and regulating advertising – Media Economics and the global marketplace – Analyzing the media economy – The transition to an information economy – Social issues in Media economics – The media marketplace and democracy

UNIT V

The culture of Journalism: Values, Ethics, and Democracy – Modern Journalism in the information age – Ethics and the news media – Reporting rituals and the legacy of Print journalism – Journalism in the age of Television – Conventional news, public journalism, and democracy - Media effects and cultural approaches to research: Early developments in media research – Research on media effects – Cultural approaches to media

REFERENCE BOOKS:

1. *Media and Cultural Studies,* Douglas Kellner, Meenakshi Gigi Durham
2. *Media Culture: Cultural Studies, Identity and Politics in the Contemporary Moment,* Douglas Kellner
3. *Media, Culture and Society,* Paul Hodkinson
4. *Exploring Media Culture,* Michael R. Real

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DEPARTMENT OF BBA
COURSE TITLE: SKILL DEVELOPMENT COURSE- PUBLIC RELATIONS
COURSE CODE: SDC111PR
SEMESTER: I **2020-2021**
NO. OF HOURS WEEK/ SEMESTER: 2/24
CREDITS: 2

SYLLABUS:

UNIT I **06 Hours**

1. Public Relations-Meaning,
2. Definition, Nature and Scope,
3. Historical Background,
4. Technological and Media Revolution and Role in Business,
5. Government, Politics,
6. NGOs and Industry.

UNIT II **10 Hours**

1. Concepts of Public Relations-Press, Publicity, Lobbying, Propaganda, Advertising,

2. Sales Promotion and Corporate Marketing Services,
3. Tools of Public Relations- Press Conferences, Meets, Press Releases, Announcements, Webcasts

UNIT III **10Hrs**

1. Public Relations and Mass Media, Present and future of Public Relations in India,
2. Ethics of Public Relations and Social Responsibility,
3. Public Relations and Writing-
4. Printed Literature, Newsletters, Opinion papers and Blogs

CO-CURRICULAR ACTIVITIES SUGGESTED: **(04 Hrs)**

1. Invited lecture by local field expert/eminent personality on Public Relations
2. Visit to Press
3. Opinion Survey, Media Survey and Feedback
4. Case Studies
5. Organizing mock press conferences, exhibitions
6. Assignments, Group discussion, Quiz etc.

REFERENCE BOOKS:

1. Brown, Rob, *Public Relations and the Social Web*, Kogan Page India, New Delhi, 2010.
2. CutlipsCottetal, *Effective Public Relations*, London, 1995.
3. Black Sam, *Practical Public Relations*, Universal Publishers, 1994.
4. S. M. Sardana, *Public Relations: Theory and Practice*.
5. J.V. Vilanilam, *Public Relations in India: New Tasks and Responsibilities*, SAGE Publications India Pvt Ltd, New Delhi2011.
6. Websites on Public relations.

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DEPARTMENT OF AGRICULTURE AND RURAL DEVELOPMENT
COURSE TITLE: RURAL SOCIOLOGY, EDUCATIONAL, PSYCHOLOGY & HUMAN VALUES
COURSE CODE: AEXT 191
SEMESTER: I **2020-2021**
NO. OF HOURS WEEK/ SEMESTER: 3/36
CREDITS: 3

COURSE SYLLABUS

5hrs

UNIT-1

1. Sociology and rural sociology, extension education, agricultural extension - meaning and definitions
2. Importance of rural sociology in agricultural extension and their interrelationship
3. Characteristics of Indian, rural society - differences and relationships between rural and urban societies
4. Social group(s) - classification - formation and organization of groups role of social groups in agricultural extension
5. Social stratification - meaning - forms - class system and caste system

7hrs

UNIT-2

1. Culture and different cultural concepts and. their role in agricultural extension
2. Social values, social control and attitudes types and their role in agricultural extension
3. Leadership - meaning - classification of leaders - roles of a leader and different methods in selection of a leader
4. Training of leaders - lay and professional leaders - advantages and limitations in using local leaders in agricultural extension
5. Psychology and educational psychology - meaning - scope and importance

7hrs

UNIT-3

1. Intelligence - meaning - types - factors and importance in agricultural extension
2. Personality - meaning - types - factors and importance in agricultural extension
3. Perception, emotions, and frustration - meaning - types - factors and importance in agricultural extension,
4. Motivation - meaning - types of motives - theories of motivation importance of motivation in agricultural extension
5. Teaching, learning, learning experience and learning situation - meaning and definition - elements of learning situation and its characteristics

7hrs

UNIT-4

1. Principles of learning and their implications in teaching - steps in extension teaching
2. Variety of moral issues (part-1): - Understanding the harmony in the society (society being an extension of the family), Integrity, work ethic, Courage, Empathy,
3. Variety of moral issues (part-2): - Self-confidence, Moral Autonomy, Conciseness and Controversy, Professional and Professionalism, Professional idea, and virtues.
4. Principals of Ethics and Morality (part-1): - Ethics as a Subset of Morality, Ethics and Organization, Employee, Duties and Rights.
5. Principals of Ethics and Morality (part 2): Discriminatory and Pre-judicial employee practices, Understanding harmony in nature, Natural acceptance of human values.

6. Risk benefit analysis (part-1): - Reducing risk, the government regulators, approach to risk, handling ethical dilemmas at work.

8hrs

UNIT-5

1. Risk benefit analysis (part-2): - Market strategy and ethics, ethical practice in marketplace, ethics in finance, ethics in business and environment.
2. Collegiality and loyalty (part-1): - Respect of authority, collective bargaining, confidentiality, professional rights.
3. Collegiality and loyalty (part-2): - Intellectual property rights, multinational corporation and ethical investing, computer and ethics, management patterns
4. Competence and professional ethics: -
    I. Ability to utilize the professional competence and augmenting universal human order
    II. Ability to identify the scope and characteristic people friendly and eco-friendly production
    III. Ability to identify and develop appropriate technologies and management and pattern for above production system
5. Strategy for transition from the present state to universal human order
    I. At the level of individual- as socially and ecologically responsible technologies and managers
    II. At the level of society- as mutually enriching institutions and organizations
6. Case studies of typical holistic technologies and management patterns.

REFERENCE BOOKS

1. Adivi Reddy, A. 2001. *Extension Education*. Sri Lakshmi Press, Bapatla.
2. Chitamber, J.B. 1997. *Introductory Rural Sociology*. Wiley Eastern Limited, New Delhi.
3. Daivadeenam, P. 2002. *Educational Psychology in Agriculture*. Agrotech Publishing Academy, Udaipur.

4. Mangal, S.K. 2000. *Educational Psychology*. Prakash Brothers, Ludhiana.

5. Ray, G.L. 2006. *Extension Communication and Management*. Naya Prakashan, Kolkata.

6. Vidyabhushan and Sach Dev, D.R. 1998. *An Introduction to Sociology*. Kitab Mahal Agencies, Allahabad.

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ALL India 36th Rank 2020 by NIRF Govt. of India

DEPARTMENT OF ENGLISH
COURSE TITLE: ENGLISH PRAXIS COURSE- A COURSE IN READING AND WRITING SKILLS
COURSE CODE: ENG122CWR
SEMESTER: II 2020-2021
NO. OF HOURS WEEK/ SEMESTER: 4/60
CREDITS: 4

UNIT-I

PROSE SKILLS:

1. How to avoid Foolish Opinions - **Bertrand Russell**
2. Vocabulary: Conversion of Words
3. One Word Substitutes
4. Collocations

UNIT-II

PROSE, POETRY & NON-DETAILED SKILLS

1. The Doll's House – **Katherine Mansfield**
2. Ode to the West Wind- **P.B. Shelley**
3. Florence Nightingale- **Abrar Moshin**
4. Skimming and Scanning

UNIT-III

PROSE & POETRY SKILLS

1. The Night Train at Deoli - **Ruskin Bond**
2. Upagupta- **Rabindranath Tagore**
3. Reading Comprehension
4. Note Making/ Note Taking

UNIT IV

POETRY SKILLS

1. Coromandel Fishers – **Sarojini Naidu**
2. Expansion of Ideas
3. Notices, Agendas and Minutes

UNIT V

NON-DETAILED SKILLS

1. An Astrologer's Day- **R.K. Narayan**
2. Curriculum Vitae/Resume
3. Letters
4. E-Correspondence

REFERENCE BOOKS:

1. *A Text Book for English Classes of First Year Undergraduates,* (For II Semester only), Prepared by Department of English, Andhra Loyola College (Autonomous) Vijayawada
2. Kumar, Sanjay &Pushplatha. *Communication Skills.* Oxford University Press, New Delhi, 2011

3. *Developing Communication Skills*. New Delhi: Macmillan India, 1990.

4. John Seely. *The Oxford Guide to Effective Writing and Speaking*. Oxford University Press, New York, 2005.

5. Kemper, Meyer, Vanryset.

6. Al. *Write 1*. Wadsworth Publication, USA, 2014.

7. Anne. *Writing Skills, Successful Writing at Work Laws*. Summertown Publishing, Oxford – U.K., 1999.

8. A.W. Heffernan. *Writing: A College Workbook*. W.W. Norton & Company, New York, 2001

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DEPARTMENT OF ENGLISH
COURSE TITLE: ENGLISH PRAXIS COURSE- A COURSE IN COMMUNICATION AND SOFT SKILLS
COURSE CODE: ENG111ACS
SEMESTER: I 2020-2021
NO. OF HOURS WEEK/ SEMESTER: 4/60
CREDITS: 3

UNIT I: LISTENING SKILLS **12 HOURS**

1. The Importance of Listening
2. Types of Listening
3. Barriers to Listening
4. Effective Listening

UNIT II: SPEAKING SKILLS **12 HOURS**

1. Sounds of English
2. Vowels and Consonants
3. Word Accent
4. Intonation

UNIT III GRAMMAR **12 HOURS**

1. Concord
2. Modals
3. Tenses [Present/Past/Future]
4. Articles
5. Prepositions
6. Question Tags
7. Sentence Transformation [Voice, Reported Speech & Degrees of Comparison]
8. Error Correction

UNIT IV WRITING **12 HOURS**

1. Punctuation
2. Spelling
3. Paragraph Writing

UNIT V SOFT SKILLS **12 HOURS**

1. SWOC
2. Attitude
3. Emotional Intelligence
4. Telephone
5. Etiquette
6. Interpersonal-Skills

REFERENCE BOOKS:

1. *Soft Skills,* Dr. Alex (New Delhi: S. Chand &Company Ltd) 2009.
2. *Interpersonal Skills Training,* Philip Burnard (New Delhi: Viva Books Private Ltd)
3. *Soft Skills for Everyone,* Jeff Butterfield (New Delhi: Cengage Learning India Pvt Ltd) 2012

4. *Emotional Intelligence*, Daniel Goleman (London: Bloomsbury Publishing) 1996
5. *A Textbook of English Phonetics for Indian Students*, Balasubramanian
6. *A Handbook for English Language Labor*, E. Suresh Kumar, P. Sreehari

WEB SOURCES

- **https://www.thebalancecareers.com/types-of-listening-skills-with-examples-2063759**
- **https://scholar.harvard.edu/files/adam/files/phonetics.ppt.pdf**
- **https://pestleanalysis.com/what-is-swoc-analysis/**
- **https://www.thebalancecareers.com/interpersonal-skills-list-2063724**
- **https://www.insperity.com/blog/soft-skills/**

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DEPARTMENT OF ENGLISH
COURSE TITLE: ENGLISH FOR EMPOWERMENT-IV [CSS-III]
COURSE CODE: ENG244EE
SEMESTER: IV **2020-2021**
NO. OF HOURS WEEK/ SEMESTER: 4/60
CREDITS: 3

UNIT I- LISTENING AND SPEAKING SKILLS

1. Conversational skills – Introducing oneself & others, asking questions and giving polite replies
2. Conversational skills - Complaining and Apologizing, persuading people to do something, Taking the Initiative, Seeking Permission
3. Conversational skills – Inviting Friends and Colleagues, Praising and complimenting people, Expressing Sympathy, Using the Telephone
4. Listening to lectures, Making Presentation
5. Listening to Group discussions, Interview skills
6. Talk Shows
7. Ted talks, Podcasts
8. Watching videos on interesting events on You tube

UNIT II - READING AND WRITING SKILLS

1. Reading skills

2. Reading Newspapers/ Journals/ Magazines
3. Analyzing and interpreting the news articles
4. Writing Job Applications, cover letters, Resume
5. Letter writing – Formal and Informal
6. E-mail writing & Blogs
7. Memorandum & Report Writing
8. Writing for Publications

UNIT III ENGLISH FOR NATIONAL AND INTERNATIONAL EXAMINATIONS AND PLACEMENTS

1. Synonyms
2. Antonyms
3. One-word substitutes
4. Idioms and phrases
5. Verbal analogy
6. Reading comprehension
7. Sentence fillers
8. Restructuring sentences

UNIT IV- SOFT SKILLS -I

1. Motivation
2. Self- Image
3. Goal setting
4. Managing Changes
5. Time Management

6. Stress Management
7. Leadership Traits
8. Teamwork
9. Life and Career Planning

UNIT V- SOFT SKILLS-II

1. Multiple Intelligence
2. Emotional Intelligence
3. Intercultural Communication
4. Creative Thinking & Critical Thinking
5. Learning Styles & Strategies

REFERENCE BOOKS:

1. *Communication and Soft Skills,* G.M. Sundaravalli, A.S. Kamalakar, Kusuma Harinath
2. *Soft Skills,* Dr Alex. New Delhi: S. Chand & Company Ltd, 2009
3. *Interpersonal Skills Training,* Philip Burnard. New Delhi: Viva Books, 2009
4. *Soft Skills for Everyone,* Jeff Butterfield. New Delhi: Cengage Learning India Private Limited, 2012.
5. *Emotional Intelligence,* Daniel Goleman. London: Bloomsbury Publishing, 1996
6. *Effective Business Communication,* Heta A Murphy, MC Graw Hill, 2000.
7. *A Handbook for English Language Laboratories,* Hari Mohan Prasad, Uma Rani Sinha
8. *Objective General English,* Dr R S Aggarwal, Vikas Aggarwal
9. *Objective English,* Edgar Thorpe, Showick Thorpe
10. IELTS, GRE material

11. *Communication for Technical Students*, Farhathullah

12. Internet Sources

13. Newspapers and Magazines

14. Youtube Videos

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DEPARTMENT OF BBA
COURSE TITLE: FOUNDATION COURSE-ENTREPRENEURSHIP
COURSE CODE: FOU231ENT
SEMESTER: III/IV 2020-2021
NO. OF HOURS WEEK/ SEMESTER: 2/24
CREDITS: 2

UNIT I – ENTREPRENEURSHIP

Entrepreneurship: Entrepreneur Characteristics-Classification of Entrepreneurs- Role of Entrepreneurship in Economic Development

UNIT II- IDEA GENERATION AND OPPORTUNITY ASSESSMENT

Ideas in Entrepreneurships- Sources of new ideas- Techniques for generating ideas- Opportunity recognition- Steps in tapping opportunities

UNIT III -PROJECT FORMULATION AND REPORT

Preparation of Project Report – Content; Guidelines for Report Preparation

UNIT IV- INSTITUTIONS SUPPORTING SMALL BUSINESS ENTERPRISES

Central level institutions – NABARD, SIDBI, SISI- State level institutions. SFC and other financial assistance

UNIT V- WOMEN ENTREPRENEURSHIP

Women Entrepreneurship: Role and importance, Profile of Women Entrepreneur, problems and measures of women entrepreneurs

REFERENCE BOOKS:

1. Arya Kumar, *Entrepreneurship*, Pearson, Delhi
2. Poornima, M.CH. *Entrepreneur Development- Small Business Enterprises*, Pearson, Delhi, 2009
3. Michael Mc Morris, Et al. *Entrepreneurship and Innovation*, Cengage Learning, New Delhi, 2011
4. Kanishkabedi, *Management and Entrepreneurship*, Oxford University Press, Delhi, 2009.
5. Anil Kumar, S. Et al. *Entrepreneurship Development*, New Age International Publishers, New Delhi, 2011
6. Khanka, SS, *Entrepreneurship Development.* SChand, New Delhi
7. Peter F Drucker, *Innovation and Entrepreneurship*

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DEPARTMENT OF BBA
COURSE TITLE: FOUNDATION COURSE-LEADERSHIP EDUCATION
COURSE CODE: FOU231LSP
SEMESTER: III/IV **2020-2021**
NO. OF HOURS WEEK/ SEMESTER: 2/24
CREDITS: 2

UNIT 1 INTRODUCTION

1) Leadership, definition, meaning, importance & skill, functions of management
2) Trait theory of leadership
3) Blake and mouton theory

UNIT 2 MOTIVATIONAL THEORIES

1) Abraham Maslow's hierarchy needs theory
2) Fredrick Herzberg two factor theory
3) Douglas -McGregor's theory of x and theory of y

UNIT 3 LEADERSHIP IN TEAMS

1) Communication and leadership
2) Feedback and evaluation
3) Transactional analysis

UNIT 4 THEORIES OF LEADERSHIP

1) Charismatic leadership
2) Democratic and authoritarian leadership
3) Path goal theory of leadership

UNIT 5 ETHICS, DIVERSITY AND CULTURE

1) Ethics and leadership
2) Culture and leadership
3) Corporate social responsibility (CSR)

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DEPARTMENT OF BIOTECHNOLOGY AND MICROBIOLOGY
COURSE TITLE: PLANT AND ANIMAL BIOTECHNOLOGY
COURSE CODE: BTY368C2PAB
SEMESTER: VI 2020-2021
NO. OF HOURS WEEK/ SEMESTER: 4/60
CREDITS: 3

UNIT - I

CELL AND TISSUE CULTURE

1. Tissue culture media and its composition, a short note on Tissue culture laboratory facilities
2. Methods of various types of plant tissue culture- Callus culture, suspension culture, root culture etc
3. Somatic Hybridization- methods of protoplast isolation, fusion and establishment of protoplast cultures

UNIT – II

TISSUE AND MICROPROPAGATION

1. Stages of Micro propagation, production of haploid plants
2. Plant regeneration- Organogenesis-direct and indirect organogenesis methods
3. Production of Transgenic plants- Insect resistance (BT cotton) and Herbicide resistance (glyphosate) plants

UNIT – III

ANIMAL CELL AND TISSUE CULTURE

1. Types of Animal cell culture media- Natural & Synthetic media (Serum & Serum free media)
2. Physicochemical properties of media-pH, Co_2,O. Temperature, buffering, osmolality and viscosity
3. Establishment of cell lines-primary and secondary cell lines, maintenance of cell lines

UNIT – IV

rDNA PRODUCTS

1. Brief idea about recombinant DNA products in medicine (insulin, somatostatin vaccines)
2. Concept of Gene therapy
3. In vitro fertilization and embryo transfer in humans and farm animals (Dolly)

UNIT – V

1. Intellectual property rights, Protection of Copyrights
2. Patents and their significance
3. Social and ethical issues of patenting in Biotechnology

REFERENCE BOOKS:

Text Book *of Plant and Animal Biotechnology,* by Na Vikraman

Plant Biotechnology, Methods and Applications by Phudan Singh

Plant and Animal Biotechnology, Biological Understanding by Ashok K Rathoure, Kalpana Kathiyar, Kathiresh K Mani, Lavanya Venkatasamy

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GENDER EQUITY

DEPARTMENT OF ENGLISH
COURSE TITLE: FOUNDATION COURSE-ENTREPRENEURSHIP
COURSE CODE: ENG233EE
SEMESTER: III **2020-2021**
NO. OF HOURS WEEK/ SEMESTER: 4/60
CREDITS: 3

UNIT I- PROSE

1. *Sweets for Angels*, **R.K. Narayan**
2. *A Wrong Man in Workers' Paradise*, **Rabindranath Tagore**
3. *The Man Who saved Pumpelsdrop*, **W.J. Turner**
4. *Two Gentleman of Verona*, **A.J. Cronin**
5. *Refund*, **Fritz Karinthy**

UNIT II- POETRY

1. *Night of the Scorpion*, **Nissim Ezekiel**
2. *All the world's a Stage*, **William Shakespeare**
3. *My Last Duchess*, **Robert Browning**
4. *Mending Wall*, **Robert Frost**

UNIT III - SHORT STORIES

1. *The Imp and the Crust*, **Leo Tolstoy**

2. *My Uncle Jules,* **Guy De Maupassant**
3. *The Selfish Giant,* **Oscar Wilde**
4. *After Twenty Years,* **O. Henry**

UNIT IV- GRAMMAR & VOCABULARY

1. One-word Substitutes
2. Idioms and Phrases
3. Vocabulary of Science & Technology
4. Silent Letter Words
5. Prepositions
6. Phrasal Verbs
7. Conditional Sentences
8. Sentence Making

UNIT V- ADVANCED TRANSACTIONAL SKILLS

1. Negotiation Skills & Persuading
2. Ad Making & Poster Presentation
3. Narrative and Descriptive Writing
4. Skills for Career Development

REFERENCE BOOKS:

1. *Broaden Your Language Horizons,* Ed. By Department of English, Andhra Loyola College, Vijayawada
2. W.W.S. Bhasker & N.S Prabhu *English through Reading,* Macmillan Publishers India Limited

3. *Stories for All Times*, Ed. P. Ramanujam, Department of English, Andhra Loyola College, Vijayawada

4. T.M. Farhathullah, *Communication Skills for Technical Students*, Orient Blackswan, Hyderabad

A Spectrum of Language Skills, Ed. Prof. K. Venkata Reddy, Maruthi Publications, Guntur

WEB RESOURCES:

- https://www.vocabulary.com/lists/253392
- dictionary. cambridge.org
- www.spellingcity.com

www.merriamwebster.com

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DEPARTMENT OF ENGLISH
COURSE TITLE: LITERARY CROSS CURRENTS
COURSE CODE: ENG244LCC
SEMESTER: IV **2020-2021**
NO. OF HOURS WEEK/ SEMESTER: 4/60
CREDITS: 3

UNIT I- RENAISSANCE POETRY

1. *Whoso List to Hunt,* **Sir Thomas Wyatt**
2. *Amoretti LXXV,* **Edmund Spenser**
3. *Sonnet XVI: On His Blindness,* **John Milton**

UNIT II - 18th CENTURY AND ROMANTIC POETRY

1. *It is Beauteous Evening,* **William Wordsworth**
2. *Frost and Midnight,* **S.T. Coleridge**
3. *Ode to Autumn,* **John Keats**

UNIT III – VICTORIAN AND MODERN POETRY

1. *Neutral Tones,* **Thomas Hardy**
2. *Preludes,* **T.S. Eliot**

UNIT IV - VICTORIAN AND MODERN POETRY

1. *Love,* **Clarice Lisp Ector**
2. *Balthazar's Marvellous Afternoon,* **Gabriel Garcia Marquez**

3. *The Blue Bouquet,* **Octavio Paz**
4. *Tonight, I can Write,* **Pablo Neruda**

UNIT V- INDIAN WRITINGS IN ENGLISH

1. *The Hunt,* **Mahasweta Devi**
2. *The World-Renowned Nose,* **Vaikom Muhammad Basheer**

REFERENCE BOOKS

1. Vinay Sood (Ed.). *Selections from Living Literatures- An Anthology of Prose and Poet.* Orient Black swan
2. Raja Rao. *Forward to Kanthapura.* Oxford University Press, 1989
3. Salman Rushdie. *Commonwealth Literature does not exist, in Imaginary Homelands.* Granta Books, 1991.
4. Meenakshi Mukherjee. *Dividend by a Common Language in the Perishable Empire.* Oxford University Press, 2000
5. Bruce King. *Introduction in Modern Indian Poetry in English.* Oxford University Press, New Delhi, 2005

WEB SOURCES

- **https://www.youtube.com/watch?v=i7oAiz1Nqjw&ab_channel=MasulloEnglishUSN**
- **https://www.youtube.com/watch?v=AcGWKik6ZfI&ab_channel=dawido**
- **youtube.com/watch?v=cW6odiEFYro&ab_channel=MrBruff**
- **https://www.youtube.com/watch?v=_HO7LXmOvTw&ab_channel=SaintIgnatius%27CollegeEnglishFaculty**

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DEPARTMENT OF ENGLISH
COURSE TITLE: CULTURAL DIVERSITY, GENDER & HUMAN RIGHTS
COURSE CODE: ENG 355CD
SEMESTER: V **2020-2021**
NO. OF HOURS WEEK/ SEMESTER: 4/60
CREDITS: 3

UNIT I – PLAY

Mother of 1084, **Mahasweta Devi**

Scene 1

Scene 2

Scene 3

Scene 4

UNIT II – PLAY

Mother of 1084, **Mahasweta Devi**

Scene 5

Scene 6

Scene 7

Scene 8

UNIT III – PLAY

Mother of 1084, **Mahasweta Devi**

Scene 9

Scene 10

Scene 11

Scene 12- The Last Scene

UNIT IV- SHORT STORIES

1. *The Refugee,* **Pearl S Buck**
2. *Dusk*, **Saki**
3. *A Cup of Tea*, **Katherine Mansfield**
4. *A Friend in Need*, **Somerset Maugham**
5. *Post Haste*, **Colin Howard**

UNIT V- SHORT STORIES

1. *The Babus of Nayanjore,* **Rabindranth Tagore**
2. *The Lost Child*, **Mulkraj Anand**
3. *The Silver Lining,* **Chaman Nahal**
4. *The Boss came to Dinner,* **Bisham Sahni**
5. *Two Red Roosters,* **Manohar Malgonkar**

REFERENCE BOOKS:

1. Mahasweta Devi. *Mother of 1084*
2. Shakti Batra and P S Sidhu. *A Choice of Short Stories.* Oxford University Press

WEB RESOURCES:

https://www.youtube.com/watch?v=VcKihvGVXUg&ab_channel=SparkSharesLiterature

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DEPARTMENT OF ENGLISH
COURSE TITLE: CONTEMPORARY INDIAN WRITINGS AND FILM STUDIES
COURSE CODE: ENG 356 CIW
SEMESTER: V **2020-2021**
NO. OF HOURS WEEK/ SEMESTER: 4/60
CREDITS: 3

UNIT I

INTRODUCTION TO FILM

1. Film culture -Introduction to the theory and historical evolution of film genres –turn of silent era to feature film and genres (language, style, grammar, syntax)
2. Film Genres: Fiction & Non-Fiction, Action, Adventure, Comedy, Children, Animated, Melodrama, Musical, Historical, Horror & Thriller, Sci-fiction. Documentary & Docudrama etc
3. Different Types of Cinemas –Bollywood, Third World Cinema, Hollywood, National Cinemas. Film Concepts and Film Movements. -Great Auteur from Hollywood, Europe, Russia, Asia & India.
4. Film Audience. Audience Positioning. Audience as the Meaning Makers. Hero Worship. Fan Clubs. Problematizing Audience –Film Appreciation

UNIT II

FILM APPRECIATIONS/ STRUCTURAL ANALYSIS OF A FILM

1. Film Criticism, Formal Analysis
2. Aspects of Film; semilogy, semiotic analysis

3. Styles of specific filmmakers, Language of a Film
4. Film aesthetics

UNIT III

ADAPTATIONS OF SHAKESPEARE'S PLAYS

1. *A Midsummer Night's Dream* (1999 film)
2. *Julius Caesar [edit] JULIUS CAESAR* (1971)
3. *The Tempest* (2010 Stratford Shakespeare Festival Production / video) -

UNIT IV

FILM ADAPTATIONS FORM FICTION

1. *Pride & Prejudice* is a 2005 British Romantic Drama directed by Joe Wright and based on Jane Austen's novel of the same name, published in 1813.
2. Film adaptation of Charles Dickens' *A Tale of Two Cities*, 1989 Director: Philippe Monnier
3. *The Mayor of CasterBridge* is a British made-for-TV film, produced by Georgina Lowe for Sally Head Productions and directed by David Thacker, based on the 1886 novel by Thomas Hardy.

UNIT V

Wings of Fire, **A.P.J. Abdul Kalam**

REFERENCES:

1. A.P.J. Abdul Kalam. *Wings of Fire*

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DEPARTMENT OF VISUAL COMMUNICATION
COURSE TITLE: INTRODUCTION TO COMMUNICATION THEORIES
COURSE CODE: VIS01T2
SEMESTER: I **2020-2021**
NO. OF HOURS WEEK/ SEMESTER: 5/75
CREDITS: 4

UNIT I

What is communication theory? – Why study communication theory? – The academic study of communication – Defining communication – The process of inquiry in communication: A basic model of inquiry and types scholarships – Communication theory as a field: The rhetorical tradition, semiotic tradition, the phenomenological tradition, socio-psychological tradition, socio-cultural tradition and critical tradition – Levels of communication

UNIT II

The nature of theory – Basic elements of theory – the traditional ideals of theory – An alternative paradigm – theory development and change – How to evaluate a communication theory – Theoretical scope, appropriateness, Heuristic value, validity, parsimony, and openness

UNIT III

Symbolic Interactionism of George Herbert Mead – Coordinated management of meaning (CMM) – Expectancy violations theory - Interpersonal deception theory

UNIT IV

Constructivism – Social Penetration theory - Uncertainty reduction theory – Face negotiation theory – Rhetoric

UNIT V

Semiotics –Feminist theories– Technological Determinism – Cultural Studies – Cultivation theory.

REFERENCE BOOKS:

1. *Social Penetration: Development of Interpersonal Relationships*, Irwin Actman, Dalmas A. Taylor
2. *Semiotics and the Philosophy of Language*, Umberto Eco
3. *Feminist Theory*, Josephine Donovan
4. *Introducing Communication Theory: Analysis and Application*, Lynn H Turner and Richard L West

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DEPARTMENT OF VISUAL COMMUNICATIONS
COURSE TITLE: VISUAL ANALYSIS TOOLS
COURSE CODE: VIS5.2
SEMESTER: V **2020-2021**
NO. OF HOURS WEEK/ SEMESTER: 4/60
CREDITS: 3

UNIT I

Visual message and meanings. The six perceptions of visual message: Personal, Historical, Technical, Ethical, Cultural Critical perspectives

UNIT II

Semiotic Analysis – Aspects of signs and symbols. The sign and the meaning making processes. Way of describing signs. Paradigmatic and syntagmatic aspects of sign. Signs and codes, referent systems and mythologies. Audience and Interpretation

UNIT III

Existentialism. Psychological and visuality. Subjectivity, Sexuality and the unconscious. The castration complex and visual pleasure. Phallocentrism. Voyeurism. Lancanian gazes: other ways of seeing – Laura Mulvey and visual pleasure

UNIT IV

Marxian analysis of visuals. Base and superstructure. Class Conflict. The role of ideology. Alienation. Power Relations

UNIT V

Feminist approaches to visuals. Women and representation. Stereotyping. Gender discrimination. Post Modernism and visual analysis. Application of visual analysis tools to different media texts.

REFERENCE BOOK:

Visual Communication, Perception, Rhetoric and Technology, Diane S Hope