I SEMESTER

S. No	Course code	Course Title	Credit load
1	AGR 101	Fundamentals of Agronomy and Agricultural Heritage	1+1
2	BIC 101	Fundamentals of Plant Biochemistry	2+1
3	SAC 101	Fundamentals of Soil Science	2+1
4	FOR 111	Introduction to Forestry	1+1
5	ENG 101	Comprehension & Communication Skills in English	1+1
6	HOR 111	Fundamentals of Horticulture	1+1
7	MAT 111	Elementary Mathematics	1+1
8	PBG 101	Introduction to Agricultural Botany	1+1
9	AEX101	Rural Sociology & Educational Psychology	2+0
10	TAM101/ ENG103	,yf;fpa';fspy; ntshz;ika[k; mwptpay; jkpH; gadhf;fKk; / Development Education	0+1
		Development Education	
11	NSS/NCC 101	NSS/NCC	0+1*
12	PED 101	Physical Education	0+1*
13	PED102	Yoga for human excellence	0+1*
			12+9=21
		***Non-gradial courses compulsory courses**	

AGR 101 Fundamentals of Agronomy and Agricultural Heritage (1+1)

Unit - I: Importance of agriculture

Agriculture - Definition - Importance and scope - Branches of agriculture - Evolution of human and agriculture - History of agricultural development in the World and India.

Unit - II: Agricultural heritage

Agriculture heritage - Agriculture in ancient India - Chronological agricultural technology development in India - Kautilya's Arthasasthra - Sangam literature - Kambar Eaer Ezhupathu - Development of scientific Agriculture - National and International Agricultural Research Institutes in India - Indian agriculture.

Unit - III: Agroclimatic zones, crops and soils

Agronomy - Definition - Importance and scope - Agro-climatic zones of Tamil Nadu - Agro ecological zones of India - Crops and their classification - Economic and agronomic - Major crops of India and Tamil Nadu - Major soils of Tamil Nadu - Factors affecting crop production - climatic - edaphic - biotic - physiographic and socio economic factors.

Unit - IV: Tillage and after cultivation

Tillage - Definition - Types - Objectives - Modern concepts of tillage - Main field preparations - Seeds - seed rate - sowing methods - Crop establishment methods - Planting geometry and its effect on growth and yield - After cultivation -Thinning - Gap filling - Weeds - Definition - Weed control methods.

Unit - V: Cropping and farming systems

Manures and fertilizers (organic, in-organic, green manure) - time and method of application - Irrigation

- Principles and concepts - Cropping patterns and cropping systems - Sustainable agriculture - integrated farming systems - Organic agriculture - Principles and concepts - Dry farming - Principles and concepts.

Practical:

Visit to college farm - Study of farm features and measurements - identification of crops and seeds - working out seed rate - Study of seed treatment practices - Study of tillage implements; practicing ploughing, puddling operations, practicing seeding different methods of sowing and planting - Study and practicing inter-cultivation implements; Practicing fertilizer applications - Participation in ongoing field operations.

Theory Lecture Schedule:

1. Agriculture - Definition - Importance and scope - Branches of agriculture - Evolution of man and agriculture.
2. Indian agriculture - Indian economy - National income - per capita income - Agricultural income in GDP - Women in agriculture and empowerment.
3. History of agricultural development in the world and India. Agriculture heritage - Agriculture in ancient India.
4. Agriculture heritage - Agriculture in ancient India.
5. Chronological agricultural technology development in India. Kautilya's Arthasasthra - Sangam literature - rainfall prediction - ITK - Tamil Almanac.

6. Development of scientific agriculture - National and International Agricultural Research Institutes.
7. Agronomy - definition - meaning and scope. Agro-climatic zones of India and Tamil Nadu - Agro ecological zones of India and Tamil Nadu.
8. Crops and major soils - classification - Economic and agricultural importance in Tamil Nadu and India.
9. **Mid Semester Examination**
10. Factors affecting crop production - climatic - edaphic - biotic- physiographic and socio economic factors.
11. Tillage - Definition - objectives - types of tillage - modern concepts of tillage - main field preparation.
12. Seeds - Seed rate - sowing methods - Germination - Crop stand establishment - Planting geometry.
13. Weeds - Definition - harmful and beneficial effects of weeds - crop weed competition and management of weeds - IWM.
14. Role of manures and fertilizers in crop production - Inter cultivation - Thinning - gap filling and other intercultural operations.
15. Irrigation - time and methods - Modern techniques of irrigation - Drainage and its importance.
16. Cropping patterns and cropping system - intensive cropping - sustainable agriculture – IFS.
17. Organic / eco - friendly agriculture - Dry farming- principles and concepts.

Practical schedule:

1. Visit to college farm to observe wetland farming system and identification of crops.
2. Visit to college farm to observe garden land and dry land farming systems and identification of crops.
3. Identification of seeds, manures, fertilizers, green manures and green leaf manures.
4. Identification of tools and implements.
5. Acquiring skill in handling primary and secondary tillage implements.
6. Practicing different methods of land configuration for raising nursery for wet land crops.
7. Practicing different methods of land configuration for raising nursery for garden land crops.
8. Practicing different methods of seed treatments, methods of sowing and seeding implements.
9. Working out seed rates and practicing thinning, gap filling operations for optimum crop stand and intercultural operations.
10. Working out manure and fertilizer requirement of crops.
11. Practicing methods of application: manures and fertilizers and incorporation of green manure and green leaf manure.
12. Identification of weeds, weeding practices and handling of weeding tools and implements.
13. Observing various irrigation methods.
14. Practicing harvesting operations in major field crops.
15. Participation in on-going field operations during on campus / off campus visit.
16. Visit to nearby Agricultural Research station.
17. **Final Practical Examination**.

References:

Yellamananda Reddy, T. and G.H. Sankara Reddi. 1997. Principles of Agronomy. Kalyani Publishers, New Delhi.

Sankaran, S. and V.T. Subbiah Mudaliar. 1997. Principles of Agronomy. The Bangalore Printing and Publishing Co. Ltd., Bangalore.

Reddy,S.R. Principles of Agronomy.2016.Kalyani Publishers, New Delhi.

Somasundaram,E.2017. Agronomy: Principles and Practices. NewIndia Publishing agency, New Delhi.

ICAR. 2015. Handbook of Agriculture. Indian Council of Agricultural Research, New Delhi.

E-References:

1. http://icar.res.in
2. ww.webcast.gov.in
3. ww.icar.org.in/nasm.html

BIC 101 Fundamentals of Biochemistry (2+1)

UNIT I
Carbohydrates

Carbohydrates - occurrence and classification. Structure of monosaccharides, **oligosaccharides** and polysaccharides. Physical and chemical properties of carbohydrates – optical isomerism, optical activity, mutarotation, reducing property, reaction with acids and alkalies. **Glycoconjugates - Glycoproteins and Lectin - structure and significance.**

UNIT II
Lipids

Lipids - occurrence and classification. Storage lipids - fatty acids, triacyl glycerol, essential fatty acids, waxes. **Structural lipids - role of lipids in biological membrane - glycolipids** and phospholipids - types and importance; Sterols - basic structure and their importance. Physical and chemical constants of oils. Rancidity of oils.

UNIT III
Proteins and Enzymes

Amino acids - classification and structure. Essential amino acids. Properties of amino acids - amphoteric nature and isomerism. Classification of proteins based on functions and solubility. Structure of proteins: primary structure, secondary structure, tertiary structure and quaternary structure - **protein folding and denaturation**. Properties and reactions of proteins. Enzymes - Properties, classification and nomenclature. Mechanism of enzyme action. Factors affecting enzyme activity. Enzyme inhibition - Competitive, Non-competitive and Uncompetitive inhibition; **Allosteric enzymes**. Coenzymes, cofactors and isoenzyme.

UNIT IV
Metabolism

Carbohydrate metabolism - breakdown of starch by amylases, glycolysis, TCA cycle and pentose phosphate pathway. Respiration - electron transport chain and oxidative phosphorylation. Bioenergetics of glucose. Lipid metabolism - lipases and phospholipases. Beta-oxidation of fatty acids and bioenergetics. Biosynthesis of fatty acids and triacyl glycerol. General catabolic pathyway for amino acids - transamination, deamination and decarboxylation. Ammonia assimilating enzymes. Metabolic inter-relationship.

UNIT V
Secondary metabolites

Secondary metabolites - occurrence, classification and functions of phenolics, terpenes and alkaloids.

Lecture schedule:

1. Introduction to Biochemistry, Carbohydrates – occurrenceand classification R2: 1-4, 66-72.
2. Structure of monosaccharides. R2: 75-82.
3. Structure of oligosaccharides and polysaccharides. R2: 82-90.
4. Physical properties of carbohydrates - Mutarotation, optical activity, isomerism. R2: 73-78.
5. Chemical reactions of carbohydrates. R2: 90-95.
6. Glycoproteins and lectin - structure and significance. R1: 316-321.
7. Lipids - occurrence and classification. R2: 99-100.
8. Storage lipids - Fatty acids and triacyl glycerol. Essential fatty acids, waxes. R2: 101-106.
9. Structural lipids - Glycolipids and phospholipids - types and importance. R2: 107-111.

10. Sterols - basic structure and their importance. R2: 111-114.
11. Physical and chemical constants of oils. Rancidity of oils. R2: 114-119.
12. Amino acids - Classification and structure. R2: 17-21.
13. Properties of amino acids - amphoteric nature, isomerism, essential amino acids. R2: 21-26.
14. Classification of proteins based on function and solubility. R2: 26-31.
15. Structure of protein - Primary, secondary, tertiary and quaternary structure. R2: 31-41.
16. Protein folding, physical and chemical properties of proteins. R2: 41-43, R1: 52-55.
17. **Mid Semester Examination**
18. Enzymes - Properties, classification and nomenclature. R2: 123-127.
19. Mechanism of enzyme action. R2: 129-131.
20. Factors affecting enzyme activity. R2: 131-136.
21. Enzyme inhibition - competitive, non-competitive, uncompetitive and allosteric enzymes. R2: 136-137, R1: 224-225.
22. Coenzymes, cofactors and isoenzyme. R2: 127-129, 138.
23. Carbohydrate metabolism - breakdown of starch by amylases, Glycolysis - Reactions and bioenergetics. R2:159-164.
24. TCA cycle - Reactions and bioenergetics. R2: 164-168.
25. Pentose phosphate pathway - Reactions . R2: 174-177.
26. Respiration - electron transport chain and oxidative phosphorylation. R2: 170-173.
27. Lipid metabolism - lipases and phospholipases. R2: 205-208.
28. Beta-oxidation of fatty acids and bioenergetics. R2: 208-212.
29. Biosynthesis of fattyacids and triacylglycerol. R2: 213- 220.
30. Transamination, deamination and decarboxylation of amino acids. R2: 224-231.
31. Ammonia assimilating enzymes - GS, GOGAT and GDH. R2: 231-233.
32. Metabolic inter-relationship. R2: 287-289.
33. Secondary metabolites - occurrence, classification and functions of phenolics. R2: 274-276.
34. Occurrence, classification and functions of terpenes and alkaloids. R2: 277-280.

Practical Schedule:

1. Qualitative analysis of carbohydrates
2. Estimation of starch
3. Estimation of amylose
4. Determination of reducing sugars
5. Qualitative analysis of amino acids
6. Sorenson’s formal titration of amino acids
7. Estimation of amino acids by Ninhydrin method
8. Estimation of protein by Biuret method
9. Determination of free fatty acid of an oil
10. Determination of iodine number of an oil
11. Estimation of ascorbic acid by dye method
12. Assay of amylase
13. Estimation of total phenols
14. **Extraction and estimation of lycopene and carotenoids**
15. Separation of amino acids by paper chromatography
16. Separation of **phenols** by thin layer chromatography
17. **Final Practical Examination**

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1. Berg JM, Tymoczko JL and Stryer L, (2007), Biochemistry, 7th Ed. Wiley Eastern Ltd. ISBN:0-7167-8724-5.
2. Thayumanavan, B, Krishnaveni, S and Parvathi, K, (2004), Biochemistry for Agricultural Sciences, Galgotia Publications Pvt Ltd., New Delhi. ISBN :81-7515-459-4.

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2. Harper's illustrated Biochemistry -https:// freemedebooks. files.wordpress.com /2014/01/ harpers-illustrated-biochemistry-28th-edition.pdf
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5. Wilson, K. and Walker, J.M. (2000), Principles and techniques of Practical Biochemistry, 5th Edn. – Cambridge University Press.
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SAC 101 Fundamentals of Soil Science (2+1)

Unit I

Soil as a natural body, Pedological and edaphological concepts of soil. Components of soil. Soil genesis: Composition of Earth's crust- soil forming rocks and minerals – Primary and secondary minerals. Weathering of rocks and minerals. Factors of soil formation. Soil forming processes. Soil Profile.

Unit II

Soil physical properties: Soil texture, structure, density and porosity, soil colour, consistence and plasticity. Soil water retention, movement and availability. Soil air, composition, gaseous exchange-problem and its effect on crop growth. Source, amount and flow of heat in soil, Soil temperature and crop growth.

Unit III

Soil physico chemical and chemical properties: Soil reaction-pH, soil acidity and alkalinity, buffering, effect of pH on nutrient availability. Electrical conductivity. Soil colloids - inorganic and organic. Silicate clays: constitution and properties, sources of charge, ion exchange, cation and anion exchange capacity and base saturation.

Unit IV

Soil organic matter: composition, properties and its influence on soil properties. Humic substances - nature and properties. Soil Biology : Soil organisms : macro and micro organisms, their beneficial and harmful effects. Soil enzymes. Soil pollution – Types and behaviour of pesticides. Inorganic contaminants. Prevention and mitigation of soil pollution.

PRACTICAL SCHEDULE

Study of soil profile in field. Study of soil sampling tools, collection of representative soil sample, its processing and storage. Study of soil forming rocks and minerals. Determination of soil density, moisture content and porosity. Determination of soil colour. Determination of soil texture by feel and Bouyoucos Methods. Studies of capillary rise phenomenon of water in soil column and water movement in soil. Demonstration of heat transfer in soil. Preparation and standardization of laboratory reagents, indicators and buffers. Determination of soil pH and electrical conductivity. Determination of cation exchange capacity of soil. Estimation of organic matter content of soil. Study of soil map.

Lecture Schedule:

1. Soil definition - Soil as a three dimensional natural body, Pedological and edaphological concepts of soil
2. Components of soil – soil a three phase system- Composition of Earth's crust.
3. Soil genesis: soil forming rocks-definition, formation, Classification of rocks- igneous, sedimentary and metamorphic rocks
4. Brief description of important rocks - mineralogical composition
5. Minerals- definition, occurrence, classification of important soil forming primary minerals - silicate and non silicate minerals, ferro and non-ferro magnesium minerals
6. Formation of secondary minerals - clay minerals and amorphous minerals
7. Weathering - Rocks and minerals - Physical, chemical and biological weathering
8. Factors of soil formation- Passive and active soil forming factors soil forming factors
9. Soil forming process- Fundamental - Simenson's four fold soil forming process -eluviation, illuviation, translocation and humification

10. Specific Soil forming processes - podzolization, laterization, salinization, alkalization, calcification, decalcification and pedoturbation
11. Soil Profile – Horizons, Master horizons and subordinate horizons, subdivisions, Lithological discontinuity.
12. Soil physical properties: Soil texture - particle size distribution - textural classes - textural triangular diagram - significance of soil texture
13. Soil structure - classification - genesis - factors influencing structural stability - significance of soil structure
14. Soil bulk density, particle density and porosity - factors influencing – significance.
15. Soil colour - causes and measurement - Munsell colour chart - factors influencing soil colour – Significance of soil colour.
16. Soil consistence - cohesion, adhesion, plasticity, Atterberg's constants - upper and lower plastic limits, plasticity number- significance of soil consistence
17. **Mid semester Examination**
18. Soil water- forms of water, units of expression and pF scale
19. Soil water potentials - gravitational, matric, osmotic- Soil moisture constants and Soil moisture measurements.
20. Movement of soil water - Saturated and unsaturated flow - infiltration, hydraulic conductivity, percolation, permeability and drainage
21. Soil air, composition, gaseous exchange – Problem and its effect on crop growth.
22. Source, amount and flow of heat in soil, soil temperature and crop growth. and crop growth.
23. Soil reaction (pH) - definition, pH scale, soil acidity and alkalinity, buffering, effect of pH on nutrient availability and factors affecting soil pH
24. Soil Electrical Conductivity - Factors affecting EC – its significance
25. Soil colloids - inorganic and organic
26. Silicate clays: constitution and classification - 1:1, 2:1 expanding and non expanding - 2:2 clay minerals, amorphous minerals and their properties
27. Sources of charge, ion exchange – positive and negative charge – isomorphous substitution, pH dependant charge.
28. Ion exchange - Cation and anion exchange capacity and base saturation
29. Soil organic matter: composition, properties and its influence on soil properties
30. Humic substances – fractionation, nature and properties, Theories of humus formation.
31. Soil Biology- Soil organisms: macro and micro organisms, their beneficial and harmful effects, Soil enzymes
32. Soil carbon sequestration and carbon trading
33. Soil pollution - behaviour of pesticides and inorganic contaminants
34. Prevention and mitigation of soil pollution

Practical schedule:

1. Study of soil sampling tools, collection of representative soil sample, its processing and storage.
2. Study of soil profile in field.
3. Study of soil forming rocks and minerals.
4. Determination of soil density and porosity.
5. Determination of soil colour and moisture content and porosity.
6. Determination of soil texture by feel and Bouyoucos Methods
7. Determination of soil texture by International pipette method.
8. Studies of capillary rise phenomenon of water in soil column and water movement in soil (Infiltration Rate)

9. Studies of capillary rise phenomenon of water in soil column and water movement in soil (Hydraulic conductivity)
10. Determination of soil temperature and demonstration of heat transfer.
11. Preparation and standardization of laboratory reagents, indicators and buffers
12. Determination of soil pH and electrical conductivity.
13. Determination of cation exchange capacity of soil - I.
14. Determination of cation exchange capacity of soil - II
15. Estimation of soil organic carbon.
16. Study of soil map (India and Tamil Nadu)
17. **Final Practical Examination**

References

1. Brady, N.C. and Raymond, C.Weil. 2013. The Nature and Properties of Soils (14th Edition). Pearson Education, Inc. Publishing as Prentice Hall.
2. Fundamentals of Soil Science. 2009. ISSS Publication, New Delhi.
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FOR 111 Introduction to Forestry (1+1)

UNIT I

Forest and Forestry

Introduction - Definition of Forest and Forestry - Role of Forest (Production, Protection and Amelioration) - Classification of Forest (Regeneration, Age, Composition. ownership, object of management, growing stock) - National Forest Policy 1988.

UNIT II

Silviculture and Forest plantation

Forest regeneration - Natural regeneration- Seeds and vegetative parts (Coppice , Root suckers) - Artificial regeneration , Objectives - Nurseries - Types of nurseries, Quality seedling production techniques - Silvicultural practices for *Eucalyptus spp, Casuarina equisetifolia, Tectona grandis*, *Ailanthus excelsa, Melia dubia, Leucaena leucocephala*. Tending operations - Weeding, Cleaning, Thinning and pruning.

UNIT III

Forest Mensuration

Forest Mensuration - Objectives- Diameter measurements, instruments used in diameter measurement-Height measurement, instrumental methods of height measurement - Tree form, form factor, Volume estimation of standing and felled trees.

UNIT IV

Social forestry and Agroforestry

Social Forestry and its branches - Extension Forestry, Urban forestry - Agroforestry, definition- Importance- Agroforestry systems - Shifting Cultivation, Taungya, Alley cropping, Wind break, Shelter belt, Home garden - Tree and crop combination in Agroforestry - Tree crop interaction in Agroforestry - National Agroforestry Policy 2014.

UNIT V

Forest Utilization

Forest Utilization - Definition - Wood products - solid wood and composite wood.- Non Wood Forest Products - fibres , floss, bamboo, tan, dye, resin, oleoresin.

Practical

Identification of important farm grown trees - Identification of tree seeds and seedlings- Site selection for tree nursery and layout of nursery- Study of nursery techniques for *Casuarina equisetifolia* and *Tectona grandis* - Practicing clonal propagation in trees Practicing land preparation, stacking, pitting, planting techniques and after care operations in plantations- Height measurement in trees, diameter measurement in trees , Volume estimation in trees- Identification of wood and non- wood forest products - Visit to Agroforestry plantations

Lecture schedule:

1. Introduction about forests, Definition of Forest and Forestry, branches in forestry
2. Role of Forest - Production function, Protection function and ameliorative functions of forests
3. Classification of Forest based on mode of regeneration, age, composition. ownership, object of management and growing stock
4. National Forest Policy 1988- Objectives and salient features
5. Forest regeneration - Types of regeneration - Natural regeneration through seeds and vegetative parts including coppice and root suckers
6. Artificial regeneration , Objectives - Nurseries - Types of nurseries, Quality seedling production techniques
7. Silvicultural practices for *Eucalyptus spp, Casuarina equisetifolia, Tectona grandis*, *Ailanthus excelsa,*

8. Silvicultural practices for *Melia dubia, Leucaena leucocephala*. Tending operations - Weeding, Cleaning, Thinning and pruning.
9. **Mid Semester Examination**
10. Forest Mensuration - Objectives- Diameter measurements, instruments used in diameter measurement
11. Height measurement, instrumental methods of height measurement - Tree form, form factor, Volume estimation of standing and felled trees.
12. Social Forestry and its branches - Extension Forestry and Urban forestry.
13. Agroforestry, definition- Importance- Agroforestry systems - Shifting Cultivation, Taungya, Alley cropping, Wind break, Shelter belt, Home garden
14. Tree and crop combination in Agroforestry- Tree crop interaction in Agroforestry -
15. National Agroforestry Policy 2014 , objectives and salient features
16. Forest Utilization - Definition - Wood products - solid wood and composite wood.
17. Forest Utilization - Non Wood Forest Products - fibres , floss, bamboo, tan, dye, resin, oleoresin

Practical schedule:

1. Identification of important farm grown trees
2. Identification of tree seeds and seedlings
3. Site selection for tree nursery and layout of nursery
4. Study of nursery techniques for *Casuarina equisetifolia*
5. Study of nursery techniques for *Tectona grandis*
6. Practicing clonal propagation in trees *Eucalyptus / Casuarina*
7. Practicing land preparation, stacking, pitting,
8. Planting techniques in plantation
9. After care operations in plantations
10. Height measurement in trees
11. Diameter measurement in trees
12. Volume estimation in standing and felled trees
13. Identification and study of wood products
14. Identification and study non- wood forest products
15. Visit to Agroforestry plantations
16. Visit to forest based industry
17. **Final Practical Examination**

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ENG 101 Comprehension and Communication Skills in English (1+1)

Theory

War Minus Shooting- The sporting Spirit. A Dilemma- A layman looks at science Raymond B. Fosdick. You and Your English – Spoken English and broken English G.B. Shaw. Reading Comprehension, Vocabulary-Antonym, Synonym, Homophones, Homonyms, often confused words. Exercises to Help the students in the enrichment of vocabulary based on TOEFL and other competitive examinations. Functional grammar: Articles, Prepositions, Verb, Subject verb Agreement, Transformation, Synthesis, Direct and Indirect Narration. Written Skills: Paragraph writing, Precise writing, Report writing and Proposal writing. The Style: Importance of professional writing. Preparation of Curriculum Vitae and Job applications. Synopsis Writing. Interviews: kinds, Importance and process.

Practical

Listening Comprehension: Listening to short talks lectures, speeches (scientific, commercial and general
in nature). Oral Communication: Phonetics, stress and intonation, Conversation practice. Conversation:

rate of speech, clarity of voice, speaking and Listening, politeness & Reading skills: reading dialogues, rapid reading, intensive reading, improving reading skills. Mock Interviews: testing initiative, team spirit, leadership, intellectual ability. Group Discussions.

Lecture Schedule:

1. **War Minus Shooting (**A lesson from the Text Book, "The Sporting Spirit" by George Orwell) textual grammar pertaining to factual comprehension and inferential comprehension & referential comprehension.
2. **War Minus Shooting (**A lesson from the Text Book, "The Sporting Spirit" by George Orwell) textual grammar pertaining to global comprehension and attitudinal comprehension
3. **War Minus Shooting (**A lesson from the Text Book, "The Sporting Spirit" by George Orwell) textual grammar on synonyms – antonyms – prefix – suffix – homonyms - homophones – TOEFL & IELTS vocabulary
4. **War Minus Shooting (**A lesson from the Text Book, "The Sporting Spirit" by George Orwell) textual grammar – English articles – preposition – conjunctions and its types
5. **A Dilemma** (A lesson from the Text Book, Layman looks at Science by Raymond Fosdick) textural grammar – verbs – auxiliary verbs - modals and basic tense forms
6. **A Dilemma** (A lesson from the Text Book, Layman looks at Science by Raymond Fosdick) textural grammar – sentence pattern and sentence forms (simple, compound and complex sentences)
7. **A Dilemma** (A lesson from the Text Book, Layman looks at Science by Raymond Fosdick) textural grammar – subject – verb – agreement
8. **A Dilemma** (A lesson from the Text Book, Layman looks at Science by Raymond Fosdick) textural grammar – transformation of sentences
9. **Mid Semester Examination**
10. **You and Your English** (A lesson from the Text Book, Spoken English and Broken English by G.B. Shaw) textural grammar – synthesis of sentences – reported speech (direct and indirect speech)

11. **You and Your English** (A lesson from the Text Book, Spoken English and Broken English by G.B. Shaw) textural grammar – paragraph writing (thesis sentences, supporting statements, inferential statements)
12. **You and Your English** (A lesson from the Text Book, Spoken English and Broken English by G.B. Shaw) textural grammar – four principles of writing
13. **You and Your English** (A lesson from the Text Book, Spoken English and Broken English by G.B. Shaw) textural grammar - professional writing – summary writing and paraphrasing, synopsis writing and citation
14. Graham's flow chart on writing skills
15. Letter writing – personal and social correspondence – job application
16. precise writing – report writing and proposal writing
17. Interview skills - kinds – importance and process

Practical Schedule:

1. Listening - Introduction - Listening vs Hearing - listening modes - types of listening - Intensive and Extensive Listening – practice
2. Process of Listening - methods of enhancing listening - barriers to listening and ways to overcome them – practice
3. Oral communication - organs of speech – English phonemes (consonant table, vowel table) - practice
4. English Stress & Intonation - exercises.
5. Conversation techniques and practice
6. Rate of speech (slow pace, medium pace, rhetoric)
7. Reading - types - skimming and scanning - SQ4R - critical reading - analytical reading – exercises
8. Principles and practice of presentation skills - PowerPoint preparation and presentation
9. Handout preparation - lecture notes preparation - practice and evaluation
10. Writing skills - note taking – precise writing – abstract writing – practice
11. Mind-mapping and article writing
12. Letter writing and rejoinder writing
13. Text writing - practice on table to text conversion
14. Interview skills – types of interview (group interview – panel interview – telephone interview – behavioural interview – video-conferencing interview – mock interview)
15. Practice on speaking skills – welcome address - vote of thanks - short extemporal speech
16. Group discussion – techniques – types and practice
17. **Final Practical Examination**

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HOR 111 Fundamentals of Horticulture (1+1)

Unit I

History, evolution and scope of horticulture

Origin of horticulture – history – evolution – definitions – scope and importance of horticulture – division and classification of horticultural crops – fruits, vegetables, spices and plantation crops, floriculture, landscaping, ornamental gardening, medicinal and aromatic crops – nutritive value and global and national scenario of horticultural crops.

Unit II

Sexual propagation

Sexual propagation – importance, advantages and disadvantages – methods of enhancement of seed viability – types of dormancy – seed invigoration – seed treatments

Unit III

Asexual propagation

Asexual propagation, importance, advantages and disadvantages - Asexual propagation types *viz*., Types of cutting, layering, grafting and budding. Use of specialized plant parts in propagation. Propagation structures and their role. Rootstock influence – stock / scion relationship in fruit crops. Scope and importance of micro propagation in horticultural crops. Direct and indirect organogenesis – media for micro propagation and hardening.

Unit IV

Planting systems and pollination

Principles of orchard establishment - Methods of planting systems including HDP and UHDP in horticultural crops – crop regulatory practices for horticultural crops – training, pruning, special operations in horticultural crops – off season production of horticultural crops. Flowering, pollination, fruit set, fruit drop, parthenocarpy, fruit ripening and senescence – Unfruitfulness and its causes.

Unit V.

Principles and types of garden

Principles and types of garden – principles and types of parks – principles of herbal garden

Practical

Features of an orchard - Identification of garden tools, implements and machineries. Identification of horticultural crops and herbarium making. Preparation of potting mixture, potting and repotting. Preparation of seed bed / nursery bed. Practice of sexual and asexual methods of propagation- cutting, layering, budding, grafting – specialized plant parts - Layout and planting of fruit trees. Training and pruning of fruit trees. Transplanting and care of vegetable seedlings. Making of herbaceous and shrubbery borders. Practicing irrigation, fertilizer and manures application in different crops. Preparation and application of Plant Growth Regulators – visit to tissue culture lab - Visits to commercial nurseries / orchard / garden.

Theory Lecture schedule:

1. Origin of horticulture – history – evolution – definitions – scope and importance of horticulture
2. Division and classification of horticultural crops – fruits, vegetables, spices and plantation crops, floriculture, landscaping, ornamental gardening, medicinal and aromatic crops
3. Nutritive value and global and national scenario of horticultural crops
4. Sexual propagation – importance, advantages and disadvantages – methods of enhancement of seed viability
5. Types of dormancy – seed invigoration – seed treatments
6. Asexual propagation, importance, advantages and disadvantages - Asexual propagation types
7. Vegetative propagation – merits and demerits – cutting and layering
8. Vegetative propagation – merits and demerits – grafting and budding
9. **Mid Semester Examination**
10. Use of specialized plant parts in propagation - Propagation structures and their role.
11. Rootstock influence – stock / scion relationship in fruit crops
12. Scope and importance of micro propagation in horticultural crops- Direct and indirect organogenesis
    – media for micro propagation and hardening
13. Principles of orchard establishment - Methods of planting systems including HDP and UHDP in horticultural crops
14. Crop regulatory practices for horticultural crops – training, pruning, special operations in horticultural crops – off season production of horticultural crops.
15. Flowering, pollination, fruit set, fruit drop, parthenocarpy, fruit ripening and senescence, unfruitfulness and its causes
16. Principles and types of garden
17. Principles and types of parks – principles of herbal garden

Practical schedule:

1. Visit to orchard and identifying its components
2. Identification of garden tools, implements and machineries
3. Identification of horticultural crops and herbarium making
4. Preparation of pot mixture, potting and repotting
5. Preparation of nursery beds for raising rootstocks and seedlings
6. Practicing asexual methods of propagation- cutting and layering
7. Practicing asexual methods of propagation – budding and grafting
8. Plant propagation structures and specialized plant parts for propagation
9. Layout and planting of fruit trees
10. Training and pruning of fruit trees
11. Transplanting and care of vegetable seedlings
12. Making of herbaceous and shrubbery borders
13. Practicing irrigation, fertilizer and manures application in different crops
14. Preparation and application of Plant Growth Regulators
15. Visit to tissue culture lab
16. Visit to commercial nurseries / garden
17. **Final Practical Examination**

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MAT 111 ELEMENTARY MATHEMATICS (1+1)

Unit - I

Algebra: Permutation and Combination -meaning of nPr and nCr (simple problems). Matrices- Definition of Matrices, Addition, Subtraction, Multiplication, Transpose and Inverse up to 3^{rd} order by adjoint method, Properties of determinants up to 3^{rd} order and their evaluation**.**

Unit - II

Analytical Geometry: Distance formula, section formula (internal and external division), Change of axes (only origin changed), Equation of co-ordinate axes, Equation of lines parallel to axes, Slope-intercept form of equation of line, Slope-point form of equation of line, Two point form of equation of line, Intercept form of equation of line, Normal form of equation of line, General form of equation of line, Point of intersection of two straight lines, Angles between two straight lines, Parallel lines, Perpendicular lines.

Equation of circle whose centre and radius is known, General equation of a circle, Equation of circle passing through three given points, Equation of circle whose diameters is line joining two points (x1, y1) & (x2,y2).

Unit - III

Differential Calculus: Definition of function, limit and continuity, Simple problems on limit, Simple problems on continuity, Differentiation of x^n , e^x , sin x & cos x from first principle, Derivatives of sum, difference, product and quotient of two functions, Differentiation of functions of functions (Simple problem based on it), Logarithmic differentiation (Simple problem based on it), Differentiation by substitution method and simple problems based on it, Differentiation of Inverse Trigonometric functions. Partial differentiation with first and second order -Maxima and Minima of the functions of the form y = f (x) and y = f(x1,x2) (Simple problems based on it).

Unit –IV

Integral Calculus: Integration of simple functions, Integration of Product of two functions, Integration by substitution method, Definite Integral (simple problems based on it), Area under simple well-known curves (simple problems based on it).

Unit-V

Mathematical Models: Agricultural systems - Mathematical models - classification of mathematical models- Fitting of Linear, quadratic and exponential models to experimental data.

Practical

Simple problems in Permutation and Combination -meaning of nPr and nCr Problems in Algebra of matrices , Transpose and Inverse up to 3^{rd} order by adjoint method, evaluation of determinants up to 3^{rd} order**.** Problems in Straight lines using distance formula, section formula (internal and external division), Change of axes (only origin changed)- Equation of co-ordinate axes- Equation of lines parallel to axes. Problems in equation of a line in : Slope-intercept form, Slope-point form, two point forms,

Intercept form, Normal form , General form, Point of intersection of two straight lines. Problems in Angles between two straight lines, Parallel lines, Perpendicular lines. Problems in Equation of circle whose centre and radius is known, General equation of a circle, Equation of circle passing through three given points, Equation of circle whose diameters is line joining two points (x1, y1) & (x2,y2). Simple problems in limit and continuity. Problems in differentiation of x^n , e^x , sin x & cos x, derivatives of sum, difference, product and quotient of two functions. Simple problem based on differentiation of functions of functions and Logarithmic differentiation. Simple

problems based on differentiation by substitution method. Problems in partial differentiation and Maxima and Minima of the functions of the form y=f (x)and y=f(x1,x2). Problems in integration of simple functions and product of two functions- Definite Integral. Integration by substitution method-Problems in Area under simple well-known curves. Problems in fitting linear, quadratic and Exponential models to experimental data.

Theory Lecture Schedule:

1. Permutation and Combination -meaning of nPr and nCr (Simple Problems) .
2. Matrices- Definition of Matrices- Types of Matrices- Addition, Subtraction, Multiplication, Transpose
3. Determinants-Properties of determinants -up to 3^{rd} order evaluation and inverse up to 3^{rd} order by adjoint method.
4. Straight lines - Distance formula-section formula (internal and external division) - Change of axes (only origin changed) - Equation of co-ordinate axes- Equation of lines parallel to axes.
5. Forms of equation of Line-Slope-intercept form -Slope one point form - Two point form - Intercept form.
6. Normal form of equation of line- General form of equation of line- Point of intersection of two straight lines.
7. Angles between two straight lines- Parallel lines- Perpendicular lines- Angle of bisectors between two lines.
8. Circle-Equation of circle whose centre and radius is known- General equation of a circle-Equation of circle passing through three given points- Equation of circle whose diameters is line joining two points (x1, y1) & (x2,y2).
9. **Mid Semester Examination**
10. Differential Calculus - Definition of function, limit and continuity- Simple problems on limit and continuity.
11. Differentiation of x^n , e^x , sin x & cos x from first principle-Derivatives of sum, difference, product and quotient of two functions- Differentiation using functions of function rule (Simple problem based on it)
12. Logarithmic differentiation (Simple problem based on it)- Differentiation by substitution method and simple problems based on it- Differentiation of Inverse Trigonometric functions
13. Maxima and Minima of the functions of the form y=f (x) and y=f(x1,x2) (Simple problems based on it).
14. Integral Calculus - Integration of simple functions and Product of two functions- Definite Integral (simple problems based on it)
15. Integration by substitution method- Area under simple well-known curves (simple problems based on it).
16. Agricultural systems - Mathematical models - classification of mathematical models- Linear model.
17. Quadratic and Exponential models- applications of mathematical models in agriculture.

Practical Schedule:

1. Simple problems in Permutation and Combination.
2. Problems in Addition, Subtraction, Multiplication and Transpose of a matrix
3. Problems in determinants and Inverse up to 3^{rd} order by adjoint method.
4. Problems in Straight lines using distance formula, section formula (internal and external division), Change of axes (only origin changed)- Equation of co-ordinate axes- Equation of lines parallel to axes.

5. Problems in Slope-intercept form of equation of line, Slope-point form of equation of line, two point forms of equation of line, Intercept form of equation of line.
6. Problems in Normal form of equation of line, General form of equation of line, Point of intersection of two straight lines.
7. Problems in Angles between two straight lines, Parallel lines, Perpendicular lines, Angle of bisectors between two lines.
8. Problems in Equation of circle whose centre and radius is known, General equation of a circle, Equation of circle passing through three given points, Equation of circle whose diameters is line joining two points (x1, y1) & (x2,y2).
9. Simple problems in limit and continuity.
10. Problems in differentiation of x^n , e^x , sin x & cos x, derivatives of sum, difference, product , quotient of two functions and differentiation of functions of functions.
11. Simple problem based on Logarithmic differentiation and differentiation by substitution method.
12. Problems in Maxima and Minima of the functions of the form y=f (x) and y=f(x1,x2)
13. Problems in integration of simple functions and product of two functions using integration by parts-Definite Integral.
14. Integration by substitution method-Problems in Area under simple well-known curves
15. Problems in fitting linear models to experimental data .
16. Problems in fitting Quadratic and Exponential models to experimental data.
17. **Final Practical Examination.**

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PBG 101 Introduction to Agricultural Botany (1+1)

Unit I:

Systems of classification and general morphological description

Bentham and Hooker's classification of plant kingdom — International code of nomenclature and its major guidelines – author citation – Agricultural classification of crops; General morphology: Life span, habit, root, stem, leaf - petiole, leaf margin, leaf apex, leaf shape, venation and phyllotaxy; Modification of roots and leaf; Floral morphology: Kinds of bracts, inflorescence; Structure of flower, androecium, gynoecium, placentation, types of fruits.

Unit II:

Botanical description and economic uses of Poaceae

List of cultivated crops, economic parts, chromosome number and family description of Poaceae: Key botanical features of Rice, Wheat, Sorghum, Maize, Pearl millet, Finger millet, list of small millets, Guinea grass, Napier grass, *Cenchrus* and Sugarcane

Unit III:

Botanical description and economic uses of Papilionaceae

List of cultivated crops, economic parts, chromosome number and family description of Papilionaceae: Key botanical features of Red gram, Bengal gram, Soybean, Black gram, Green gram, Cowpea, Lablab, Horse gram, Groundnut, Lucerne, *Stylosanthes*, Clitoria, Agathi and Sunnhemp,

Unit IV:

Botanical description and economic uses ofPedaliaceae, Asteraceae, Oleaceae,Brassicaceae, Euphorbiaceae,Arecaceae and Malvaceae

List of cultivated crops, economic parts, chromosome number and family description of the following families and Key botanical features of the crops given against them:Pedaliaceae - Gingelly; Asteraceae - Sunflower, Safflower, Chrysanthemum; Oleaceae – Jasmine; Brassicaceae - Rapeseed and Mustard, Cabbage, Cauliflower; Euphorbiaceae: Castor; Jatropha and Tapioca; Arecaceae: Coconut, Arecanut, Oilpalm, Sugarpalm; Malvaceae: Cotton, Mesta and Bhendi.

Unit V:

Botanical description and economic uses of Tiliaceae, Piperaceae, Chenopodiaceae, Solanaceae, Mimosae, Moraceae,Cucurbitaceae, Alliaceae, Musaceae, Rubiaceae, Theaceae

List of cultivated crops, economic parts, chromosome number and family description of the following families and key botanical features of the crops given against them. Tiliaceae: Jute; Piperaceae: Betelvine; Chenopodiaceae: Sugar beet; Solanaceae: Tobacco, Potato, Chilli, Tomato and Brinjal; Mimosae: Desmanthes, Subabul and Acacia; Moraceae: Mulberry;Cucurbitaceae: Cucumber, Pumpkin, Ashgourd; Alliaceae: Onion and Garlic; Musaceae: Banana, Manila hemp;Rubiaceae: Coffee; Theaceae: Tea

PRACTICAL

Family features - observation and description of habit, morphology of root, stem, leaves, inflorescence, flowers, floral diagram, floral formula and economic parts of Poaceae: Rice, Wheat, Sorghum, Maize, Pearl millet, Finger millet, Guinea grass, Napier grass, *Cenchrus* and Sugarcane*;* Papilionaceae:Redgram, Bengal gram, Soybean, Blackgram, Greengram, Cowpea, Lab-lab, Horse gram, Groundnut, Lucerne, *Stylosanthes*, Clitoria, Agathi and Sunnhemp; Pedaliaceae: Gingelly; Asteraceae: Sunflower, Safflower and Chrysanthemum; Oleaceae:

Jasmine; Brassicaceae: Rape and Mustard, Cabbage, Cauliflower;Euphorbiaceae: Castor, Jatropha, Tapioca; Arecaceae: Coconut, Arecanut, Oilpalm and Sugar palm;
Malvaceae: Cotton, Mesta, Bhendi; Tiliaceae: Jute; Piperaceae: Betelvine; Chenopodiaceae: Sugar beet;
Solanaceae: Tobacco, Potato, Chilli, Tomato and Brinjal; Mimosae: Desmanthes, Subabul and Acacia;
Moraceae: Mulberry;Cucurbitaceae: Cucumber, Pumpkin, Ashgourd; Alliaceae: Onion and Garlic;
Musaceae: Banana, Manila hemp; Rubiaceae: Coffee; Theaceae: Tea

Theory Lecture schedule:

1. Bentham and Hooker's classification of plant kingdom —International code of nomenclatureand its major guidelines – author citation – Agricultural classification of crops
2. General morphology: Life span, habit, root, stem, leaf - petiole, leaf margin, leaf apex, leaf shape, venation and phyllotaxy; Modification of roots,stem and leaf
3. Floral morphology: Kinds of bracts, inflorescence; Structure of flower, androecium, gynoecium, placentation , types of fruits.
4. List of cultivated crops, economic parts, chromosome number and family description of Poaceae; Key botanical features of Rice and Wheat.
5. Key botanical features of sorghum, maize, pearl millet and finger millet. List of small millets
6. Key botanical features of Guinea grass, Napier grass, *Cenchrus* and sugarcane.
7. List of cultivated crops, economic parts, chromosome number and family description of (Papilionaceae) Key botanical features of Red gram, Bengal gram and Soybean
8. Key botanical features of Black gram, Green gram, Cowpea, Lab lab, Horse gram and Groundnut.
9. **Mid Semester Examination**
10. Key botanical features of Lucerne, *Stylosanthes*, Clitoria, Agathi, and Sunnhemp.
11. List of cultivated crops, economic parts, chromosome number and family description of Pedaliaceae and Asteraceae: Key botanical features of Gingelly, Sunflower, Safflower, Chrysanthemum; Oleaceae: Jasmine
12. List of cultivated crops, economic parts, chromosome number and family description of Brassicaceae and Euphorbiaceae; Key botanical features of Rapeseed and Mustard, Cabbage, Cauliflower, Castor, Jatropha and Tapioca
13. List of cultivated crops, economic parts, chromosome number and family description of Arecaceae and Malvaceae; Key botanical features of Coconut, Arecanut, Oilpalm, Sugarpalm, Cotton, Mesta and Bhendi.
14. List of cultivated crops, economic parts, chromosome number and family description of Tiliaceae, Piperaceae and Chenopodiaceae; Key botanical features of Jute, Betelvine, Sugar beet.
15. List of cultivated crops, economic parts, chromosome number and family description of Solanaceae,Mimosae and Moraceae; Key botanical features of Tobacco, Potato, Chilli, Tomato and Brinjal, Desmanthes. Subabul, Mulberry
16. List of cultivated crops, economic parts, chromosome number and family description of Cucurbitaceae and Alliaceae; Cucurbitaceae: Key botanical features of Cucumber, Pumpkin, Ashgourd; Alliaceae: Onion and Garlic
17. List of cultivated crops, economic parts, chromosome number and family description of Musaceae, Rubiaceae and Theaceae; Key botanical features of Banana, Manila hemp, Coffee and Tea

Practical schedule:

1. Observing general morphology of roots, stems and leaves.
2. Observing general morphology of inflorescence - flowers, stamens and pistils.
3. Family characters, Botany, Economic parts, Floral diagram and Floral formula of the following crop plants:- Poaceae: Rice and Wheat
4. Poaceae: Sorghum, Maize, Pearl millet, Finger millet.
5. Poaceae: Guinea grass, Napier grass, *Cenchrus* and Sugarcane.
6. Papilionaceae: Redgram, Bengal gram and Soybean.
7. Papilionaceae: Blackgram, Greengram, Cowpea, Lab-lab, Horse gram and Groundnut.
8. Papilionaceae: Lucerne, *Stylosanthes*, Clitoria, Agathi, Sunnhemp, and Sesbania.
9. Pedaliaceae: Gingelly; Asteraceae: Sunflower, Safflower and Chrysanthemum; Oleaceae: Jasmine
10. Brassicaceae: Rapeseed and Mustard, Cabbage, Cauliflower.
11. Euphorbiaceae: Castor, Jatropha, Tapioca; Arecaceae: Coconut, Arecanut, Oilpalm and Sugar palm.
12. Malvaceae: Cotton, Mesta, Bhendi
13. Tiliaceae: Jute; Piperaceae: Betelvine; Chenopodiaceae: Sugar beet;
14. Solanaceae: Tobacco, Potato, Chilli, Tomato and Brinjal; Mimosae: Desmanthes, Subabul , Moraceae:Mulberry
15. Cucurbitaceae: Cucumber,Pumpkin, Ashgourd; Alliaceae: Onion and Garlic
16. Musaceae: Banana, Manila hemp; Rubiaceae: Coffee; Theaceae: Tea
17. **Final Practical Examination**

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AEX 101 Rural Sociology and Educational Psychology (2+0)

Theory

UNIT I

Introduction to Sociology, Social groups, Culture and Social Values

Sociology and Rural Sociology – definitions; Society – rural and urban, characteristics, differences and relationships, important characteristics of Indian rural society; Social groups – definition, classification, role of social groups in extension; Culture – concept, cultural traits, characteristics, functions, Ethnocentrism, Acculturation, Cultural lag, Cultural diffusion, Marginal man, Ethos. Social Values – definition, values and norms, characteristics of values, functions;

UNIT II

Social Structure, Social Stratification and Migration

Structure of Rural Society – patterns of rural settlement, social institutions, social organizations, ecological entities (Region, Community, Neighbourhood, Family); Social Stratification – concept, functions, types, differences between class and caste system; Migration – concept, factors influencing migration.

UNIT III

Social Control, Social Customs

Social Control – definition; Customs – conventions, folkways, mores, rituals, taboos; Social Interaction Process – definition, basic social processes; Social Change – concept, factors influencing social change, indicators of social change; Social development :

UNIT IV

Introduction to Educational Psychology, Intelligence, Teaching-Learning Process;

Education – Psychology – Educational Psychology – Social Psychology – definitions, importance in extension; Basic principles of Human behaviour – Sensation, Attention, Cognitive, affective, psychomotor domain Perception – meaning, characteristics; Intelligence – concept, types, measurement, factors affecting intelligence; Personality – concept, types, measurement, factors influencing personality; Teaching–Learning Process – Teaching – definition, meaning, principles of teaching, steps in extension teaching; Learning – definition, meaning, principles, types of learning, learning situation.

UNIT V

Motivation, Attitude

Motivation – concept, Maslow's hierarchy of needs, intrinsic and extrinsic motivation, techniques of motivation, importance in extension; Attitude – concept, factors influencing the development of attitudes.

Theory Schedule

1. Sociology and Rural Sociology – Definitions, nature of rural sociology,
2. Importance of rural sociology in extension education.
3. Society – rural and urban, characteristics, differences and relationship, important characteristics of Indian rural society;
4. Social Groups – definitions, classification, role of social groups in extension.
5. Culture – concept, cultural traits, characteristics, functions,
6. Ethnocentrism, Acculturation, Cultural lag, Cultural diffusion, Marginal man, Ethos.
7. Structure of Rural Society – patterns of rural settlement,
8. Social institutions, Social organizations and ecological entities - Region, Community, Neighbourhood, and Family.
9. Social Stratification – concept, functions, types, differences between class and caste system;
10. Social Values – definition, values and norms, characteristics of values, functions.
11. Migration – concept, factors influencing migration.
12. Social Control – definition;
13. Customs – conventions, folkways, mores, rituals, taboos;
14. Social Interaction Process – definition, basic social processes.
15. Social Change – concept, theories, factors and indicators of social change.
16. Social development
17. **Mid semester Examination.**
18. Education – Psychology – Educational Psychology –definitions, importance in extension.
19. Social Psychology – Definitions, importance in extension.
20. Basic principles of Human behaviour –
21. Cognitive, affective, psychomotor domain
22. Perception – meaning, characteristics.
23. Sensation, Attention
24. Intelligence – concept, types,
25. Intelligence - measurement, factors affecting intelligence;
26. Personality – concept, types,
27. Personality measurement- factors influencing personality
28. Teaching–Learning Process – Teaching – definition, meaning,
29. Principles of teaching, steps in extension teaching.
30. Learning – definition, meaning, principles,
31. Types of learning, learning situation.
32. Motivation – concept, Maslow's hierarchy of needs (including selfless-service), intrinsic and extrinsic motivation,
33. Techniques of motivation, importance of motivation in extension.
34. Attitude – concept, factors influencing the development of attitudes.

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nehf;fk;

,sepiy ntshz;ik gapYk; hzth;fSf;Fk jkpH; ,yf;fpa';fs; tHp ntshz;ik kw;Wk; ntshz;ik rhh;e;j bjhHpy;El;g';fisa[k; bra;jpfisa[k; mwpar;-jw;fhybra;jy;ntshz; bjhHpy;El;g';fnshL bghUj;jpg; ghh;j;jy;-ntshz;ik jtpu njhl;lf;fiy_ tdtpay;-ntshz;bghwpapay;- kidapay; rhh;e;j fUj;Jf;fis btspf;bfhzh;jy;- ntshz;;Jiwf;F ,d;wpaikahj fiyr;brhw;fs;-bkhHpg;bgah;g;g[-ghuk;ghpa bjhHpy;El;g';fis mwpar;bra;jy;-khzth;fspd; vjph;fhyj; njitf;F mog;gilahd ngr;Rg;gap_ ne**h;**r;rpfhziy vjph;bfhs;Sk; tifapy; bkd;jpwd;fshd jiyikg;gz;g[-MSikg;gz;g[- fhynkyhz;ik Mfpatw;wpy; jpwk;bgwr;bra;jy;-khzth;fspd; Ma;t[f;fl;Liu jpwid tsh;j;jy;-ntshz;ik ,jH;fs;/ E}y;fs; Fwpj;J tpHpg;g[zh;it tH';Fjy;-fzpdp tHp jkpHpy; ntshz; bra;jpfis gjpntw;wk;/ gjptpwf;fk; bra;a[k; Kiwfis mwpar;bra;jy; Mfpatw;iwfkhfnehbfhz;L ghlj;jpl;lj;ij tiuaiw bra;jy;.

ghlj;jpl;lk;

bjhy;fhg;gpak; fhl;Lk; Kjw;bghUs;/ fUg;bghUs;-r';f,yf;fpaj;jpy; nthshz; bjhHpy; El;g';fs;- gjpbdz; fPH;f;fzf;F E}y;fspy; ntshz;ikmwptpay;-gs;S ,yf;fpa';fs;/ VbuGgJ/ ,yf;fpaj;jpy; ntshz; bghwpapay;- njhl;ltpay;- tdtpay; kidapay;- NHypay; ntshz;ikg; gHbkhHpfs;- ,yf;fpak; fhl;Lk; thH;tpay; bewpKiw-,**f**s;;fhy ,yf;fpa';fspy; ntshz;ikr; rpe;jidfs;-gpiHapd;wpvGJk; Kiwfs;- ghuk;ghpaj; bjhHpy;El;';fs;-,yffpaj;jpy; bkd;jpwd;fs; - mwptpay; jkpH; tsh;r;rpepiyfs;- fiyr;brhy;yhf;fk;-bkhHpbgah;g;g[-fl;Liur; RUf;fk; vGJjy;-fzpdpcyfpy; jkpH;

bra;Kiwg; gapw;rpfs;

1. bjhy;fhg;gpak; fhl;Lk; Kjw;bghUs;/ fUg;bghUs;/ jhtutpay; mwpt[/ ntshz; khe;jh; Fw bra;jpfis mwpjy;
2. r';f ,yf;fpaj;jpy; ntshz;py;bjhHEl;g';fs;-(vl;Lj;bjhif/ gj;Jg;ghl;L)
3. gjpbdz; fPH;f;fzf;F E}y;fspy; ntshz;ikmwptpay;
4. gs;S ,yf;fpa';fs;/ VbuGgJ_cHth; thH;tpay; bewpKiwfSk; ntshz;ikj; bjhHpy; El;g';fSk;
5. ,yf;fpaj;jpy; ntshz; bghwpapay;-njhl;ltpay;-tdtpay;- kidapay;- NHypay;
6. ntshz;ikg; gHbkhHpfs;-cHt[tpijmwptpay;- gUtk;- kiH - ehw;WeLjy;- vU ,Ljy;- ePh;g;ghrdk;-fisnkyhz;ik_gaph;ghJfhg;g[-mWtil_cHth; rKjhak;
7. ,yf;fpak; fhl;Lk; thH;tpay; bewpKiwfs;
8. ,f;fhy ,yf;fpa';fspy; ntshz;ikr; rpe;jidfs;-ghujp/ghujpjhrd; gilg;g[fs;-g[Jf;ftpij
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10. gpiHapd;wpvGJk; Kiwfs;- vGj;Jg; gpiHfs;- brhw;gpiHfs;- brhw; gphpg;g[g;gpiH_ thf;fpag;gpiH_bka;g;g[j; jpUj;jk;
11. ghuk;ghpa ntshz;ikj; bjhHpy;El;g';fs;
12. ,yf;fpaj;jpy; bkd;jpwd;fs;-jiyikg;gz;g[-fhynkyhz;ik
13. MSikg;gz;g[k;ghLnk_kdpj cwt[j;jpwd;fs; tsh;j;jy;
14. mwptpay; jkpH; tsh;r;rpepiyfs;/ ntshz; E}y;fs;/ ntshz;-mYtyff;,jH;fs;fojk;
15. fiyr;brhy;yhf;fk;- ntshz; fiyr; brhw;fiscUthf;Fk; _jug;gLj;Jjy;Kiw-,yf;fpantshz; fiyr;brhw;fs;/ tl;lhuntshz;iktHf;Fr;-mfuhjpapay;brw;fs;
16. bkhHpbgah;g;g[-Kf;fpatpjpfs;- goepiyfs;- bkhHpbgah;ghshpd; ,d;wpaikahg; gz;g[fs;- ntshz; bra;jpfisbkhHpbgah;j;jy;-fl;Liur; RUf;fk; vGJjy;
17. fzpdpcyfpy; jkpH;- tpf;fpgPoah_ntshz; bra;jpfisg; gjpntw;wk; bra;jy;-ntshz; bra;jpfis ,izajstHpmwpjy;

nkw;ghh;it E}y;fs;

1. fe;jrhkp.,y.br.ntshz;ika[k; gz;ghLk;/ jkpH;ehLntshz;ikg; gy;fiyf;fHfk;/ nfhak;g[j 1974

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5. kzpnkfiy.k.jkpH; bkhHpj; jlj;jpy; ntshz;ptpaypd;mw RtLfs;/ njtpgjpg;gfk;/ jpUr;rpuhg;gs;sp/ 2002

6. ,yf;fpaKk; ntshz;ika[k;/ midj;jpe;jpamwptpay; jkpH;f; fHfk;/ j";rht{h;;/ 2006 jkpHhpd; kug[r;bry;t';fs;/ cyfj; jkpHuha;r;rpepWtdk;/ brd;id

7. re;jpunrfud;/ ,uh/ bkhHpg;ghlk;-gilg;ghf;fj;jpwd; tsh;j;jy;

8. ntshz;fiyr;brhy; ngufuhjp/ jkpH; ehLntshz;ikg; gy;fiyf;fHfk;/ nfhak;g[j;J}h;/ 2008. ghnte;jd;/ ,uh/ jkpHpy; mwptpay; ,jH;fs;/ rhKnty;/ @gp#; fpwp!; gjpg;gfk;/ nfhak;g[j;J}h; lhf;lh; ,uhjhbry;yg;gd;/ fiyr;brhy;yhf;fk;/ jkpH;g; gy;fiyf;fHfk;/ j";rht{h;

ENG 103 DEVELOPMENT EDUCATION (0+1)
(Alternate course for non-Tamil students)

Unit I

Basic principles of learning

Basic principles of learning - discussion - Bloom's classification of educational objectives – cognitive, affective, psychomotor domain(s) - teaching and learning.

Unit II

Career development

Career development – growth and development, education – for – life and life – long education, motivation and morale - occupation and profession, training and education, lateral thinking and convergent thinking.

Unit III

Entrepreneurship

Entrepreneur- intrapreneur – managing an intrapreneur – motivation and entrepreneurship - development – planning, monitoring and evaluation.

Unit IV

Communication skills

Interpersonal communication – transactional communication - role – play - brainstorming – demonstration -the conduct of symposium - conferencing – the concept and presentation of a paper - scientific article writing and editing - popular article writing, editing and blogging -project proposal - project report – writing.

Unit V

Simulation exercises

Simulation - educational simulation-Interactive teaching - business simulation – company's annual report for analysis.

Lecture Schedule:

1. Basic principles of learning - binary terms viz., growth and development, education – for – life and life – long education, motivation and morale .
2. Occupation and profession, training and education, lateral thinking and convergent thinking, teaching and learning – discussion.
3. Bloom's classification of educational objectives – cognitive, affective, psychomotor domain(s)
4. Career development – opportunity for graduates of agriculture and allied sciences – discussion
5. Success story of a farmer / entrepreneur – factors involved – role – play.
6. Brainstorming – demonstration.
7. Simulation – Educational Simulation-Interactive Teaching - Business Simulation – Company's annual report for analysis
8. Interpersonal communication – Transactional communication – ice breaker
9. **Mid Semester Examination**
10. The conduct of a symposium
11. Conferencing – the concept and presentation of a paper
12. Scientific Article Writing and Editing
13. Popular Article Writing, Editing and Blogging
14. Project proposal
15. Project Report – writing
16. Entrepreneur – intrapreneur – Managing an intrapreneur – motivation and entrepreneurship development – planning, monitoring and evaluation.

17. **Final Practical Examination**

References

1. Sudarsanam.R 1985. “Development Education” Chapter 1,2
2. Krishna Mohan and Meera Banerji, (1990). “Developing Communication Skills”, Macmillan
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E-References :

http://www.e-booksdirectory.com/details.php?ebook=9481

NSS 101 NATIONAL SERVICE SCHEME (0+1)

I Year

Orientation – NSS origin – motto – symbol – NSS administration at different levels – programme planning – Rural Projects – Urban projects – Government schemes – Career guidance – Self help groups

– Environment protection – Use of natural energy – Conventional energy resources – Soil and Water conservation – Community health programmes – Women and child welfare – Education for all – National days – Commemorative days – NSS thematic programmes – literacy & computer awareness campaigns.

II Year

Popularization of agro techniques – Self employment opportunities – Animal health, Dairy and Poultry farming – Road safety – Training on First aid and emergency cell. Popularization of small savings – communal harmony and National integration – Care of Senior citizens – Personality development – meditation, Yoga Art of living – Activities on the preservation of National monuments, cultural heritage and folklore – special camp activities – National days – commemorative days – NSS thematic programmes – literacy & computer awareness campaigns.

Practical Schedule:

I Semester

1. Orientation of NSS volunteers and programme coordinator and Programme officers.
2. Origin of NSS in India and its development
3. NSS motto, symbol and NSS awards
4. Organizational set up of NSS at Central, State University and college levels.
5. Programme planning – Theme of the year – planning implementation at PC, PO and NSS volunteer level.
6. Visit to selected village - gathering basic data on socio economic status.
7. Participatory rural appraisal – studying the needs of the target group.
8. Visit of urban slum and gathering data on socio economic status.
9. Self involvement and methods of creating rapport with the target group.
10. Awareness campaign on welfare schemes of the central and state government.
11. Formation career guidance group with NSS volunteers and students welfare unit
12. Cycle rally on environmental protection.
13. Campus development activities – clean environment campaign, formation of plastic free zones.
14. Campus development, tree planting maintenance and greening the campus cleaning.
15. **15 Final Examination**.

II Semester

1. 1–3: Motivation of rural and urban youth for formation of SHG (Self Help Groups) in collaboration with Government machineries and NGOs.
2. Campaign on ill effects of plastics in the adjoining campus areas – Villages / urban areas.
3. Campaign on *Parthenium* eradication.
4. Cycle rally on air pollution – Vehicle exhaust and other means.
5. Popularization of biogas and smokeless chulah.
6. Demonstration on the use of wind energy and solar energy.
7. Demonstration of water harvesting techniques.
8. Demonstration on soil conservation techniques wherever possible.
9. Campaign on Community health programmes of central and state Government – involving Health department officials.
10. AIDS awareness campaign ; campaign on diabetes and healthy food habits and drug abuse
11. Planning formation of blood donors club – involving NGOs.
12. Campaign on gender equality and women empowerment.
13. Campaign on child health care – immunization, food habits and child labour abolition.

III Semester

1. Conducting field days with KVK to popularize improved agro techniques.
2. Conducing seminar / workshop in a nearby village to motivate the youth on agribusiness (involving DEE, KVK, NGO and local agro-entrepreneurs).

3–5 Campaign on self employment opportunities like Apiculture, mushroom cultivation, Food processing and value addition, production of biocontrol agents and biofertilizers, nursery techniques, seed production, tissue culture, vermicompost, manucacture of small gadgets and agricultural implements as per local needs and feasibility.

6. Animal health care campaign – Dairy and poultry farming - Forage production techniques and silage making.
7. Training the NSS volunteers on road safety measures in involving traffic wardens and RTO.
8. Training NSS volunteers on First AID and emergency call involving NGOs and organizations like St. John's Ambulance, Red Cross, etc.,
9. Organizing road safety rally.
10. Motivating NSS Volunteers on small savings concept and conveying the message to the public through them.
12. Observation of National integration and communal harmony.

14 – 16 : Campus development and greening activities

17. **Final Examination.**

IV Semester

1. Visit to orphanages and old age homes to look after their needs.
2. Personality development programmes – Building up self confidence in youth.
3. Teaching NSS volunteers on mediation Yoga and art of healthy living with trained teachers
4. Visit of nearby National Monument / Places of tourist importance and campaign on cleanliness and preservation.
5. Exploration of hidden talents of village youth and public on folklore, traditional art, sports, martial arts and cultural heritage . Campus improvement activities Visit to special camp village and pre camp planning.
6. **Final Examination.**

Besides the above, NSS volunteers will attend work during important occasions like Convocation, Farmers day, Sports meet and other University / College functions.

NSS Volunteers will attend one special camp in the selected village for a duration of 10 days and undertake various activities based on the need of that village.

For all out door regular activities villages / slums nearby the campus may be selected to avoid transport cost (cycle able distance)

Special camp activity will be conducted in a village situated within a radius of 15 – 20 KM.

EVALUATION

A. Regular activities

60 marks	=	I Semester	15 marks
		II Semester	15 marks
		III Semester	15 marks
		IV Semester	15 marks

(Written test 10 marks – participation in programmes and behavior-5 marks) 80% attendance is mandatory for attending special camp

B. Special camp activities

a. Attendance in daily activities during special camp:		30 marks
b. Special camp activity report	:	5 marks
c. *Viva - voce* on the 10th day of the special camp :		5 marks
Tota	:	**40 marks**

NCC 101 National Cadet Corps (0+1)

I Year

General - Military History – Introduction to NCC – Aims of NCC – Principles of NCC, NCC organization, Duties of good citizen – system of NCC training – Foot drill – Arms drill – Guard of Honour – Ceremonial Drill – Weapon training – First aid – Rifle and Light machine gun – Map reading – Civil defence – Leadership.

II Year

Drill – Weapon drill – Weapon training and firing – Introduction to National Integration – Historical – geographical – Religions back ground of India – Health and Sanitation – Aid to Civil Authorities – Civil defence – Ecology / Nature awareness – Map reading – Social service – Adventure Activities – Leadership qualities.

ISemester

1. NCC song – Aims and Motto of NCC – Motivation of cadets
2. History of NCC and organization of NCC
3. Food drill – General and word of Command
4. Human Resource Development – Motivation – Duties of Good citizen
5. National Integration – Indian History and Culture
6. Health and Hygiene – Structure and Function of a human body, hygiene and Sanitation
7. Social Service – weaker sections of our society and their needs
8. Self Defence – Theory and practice, prevention of untoward incidence
9. Map reading – introduction to map, and lay out of map
10. Disaster Management Civil defence organization and its duties
11. Communication – Different types – media
12. Signals – introduction to radio, telephony procedures
13. Field Engineering – principles and applications, camouflage and concealment
14. Adventure training introduction, different types
15. First Aid – methods and practices
16. Environment and Ecology – conservation
17. **Final Examination.**

II Semester

1. Drill – Weapon drill – Word of Commands
2. National integration- unity in diversity
3. Guard of Honour and Ceremonial drill
4. Types of weapon, Parts, Stripping and Assembling of light gun.
5. Rifle firing and follow up activities
6. Camps, types of Camps, Preparation and participation
7. Awards, different types, Ranks of officers and Cadets
8. Map reading – judging distance, conventional signs and uses of compass.
9. Leadership traits, types, perception
10. Fire Fighting, Role of NCC during natural hazards
11. Field Engineering – section formation
12. Obstacle training
13. Health and Sanitation – preventable diseases, Fractures and types of treatments
14. Environment and Ecology-Pollution and its control.
15. Social Service – contribution of youth towards social welfare
16. First Aid – Snake bite and other common medical Emergencies.
17. **Final Examination.**

III Semester

1. Drill – Individual word of command
2. Weapon training – parts of heavy weapons
3. Stripping and assembling of heavy weapons
4. Importance of team work values, code of ethics
5. Disaster management during Earth Quake
6. Evacuation of Causalities
7. Map reading – Camposs and Service Protractor
8. Aids to civil authority
9. Section and platoon formation
10. Social service, NGO's and their contribution to the society
11. Roll of NCC cadets in civil administration
12. Traffic rules and Road signs
13. Mines and types of mine fields
14. Dressing of Wounds, physical and mental health
15. Field signals
16. Air raid warning, Fire fighting
17. **Final Examination.**

IV Semester

1. Drill – Foot drill
2. Formation of squad and squad drill
3. Man Management, Morale
4. Time Management, stress management
5. Ecology and Environment wild life conservation
6. Adventure Activities, Trekking Camp
7. Map reading – Field to Map – Map to Field – Grids and scale systems
8. Communication systems – Internet – Faxi mail – Satellites
9. Collection and Distribution of Aid material
10. Field Engineering – Mines, anti tanks, explosives
11. Opportunities for NCC cadets in Army and other services
12. Social Service, Family Planning
13. Section battle drill
14. Roll of NCC cadets in National programmes.
15. Visit to Wellington, Coonoor.
16. Self defence mechanisms
17. **Final examination.**

Besides the above schedule, NCC cadets will be involved during important occasions during convocation, Independence day, Republic day, etc.

EVALUATION:

		Sem I	**Sem II**	**Sem III**	**Sem IV**	**Total**
A.	Regular activities and Behaviour	10	10	10	10	40
B.	Participation in camps and special assignments	5	5	5	5	20
C.	Written test and viva	10	10	10	10	40
	Total	**25**	**25**	**25**	**25**	**100**

PED 101 Physical Education (0+1)

Practical

(17 Practical classes – 2½ hours each class – 17 classes will be converted into 40 practical hours and 2½ hours for evaluation)

I Semester (20 Hours)

Exercises for strength, agility, co-ordination, flexibility, co-operation, vitalcapacity endurance, speed and for various systems of our body and team spirit.

Exercise for Good Posture – Conditioning and calisthenics for various Athletic activities *i.e (*a) Before start – Arm stretch, hand stretch and cat stretch (b) Loosening up jogging, bending and twisting (c) Standing – Lateral Arc, triangle and hands to feet pose (d) Sitting – camel kneel, spinal twist and supine knee bend (e) Relaxation – The corpse pose, quick and deep relaxation. Basic gymnastic exercises – participation of athletic events – running, throwing and jumping events.

Skill development in anyone of the following games

Warming up, suitable exercise, lead up games, advance skill for all the games.

Basket Ball : Dribbling, pass, two or three men pass, pivot, lay up shot, shooting, pass break, hook pass, screening, positional play, defence and offence tactics.

Volley Ball : Fingering, under arm pass, over head pass, setting, spiking, back pass, jump pass, stunts, elementarty dive, flaying dive, roll, blacking and various types of services.

Ball Badminton : Grip, service, foot work, fore hand stroke, back hand stroke, lob, smash, volley, wall practice, spin service and defence tactics.

Foot ball : Dribbling, passing, dodging, kicking, heading, screening, chest pass, throwing, dragging, goal kick, defence and offence tactics.

Hockey : Grip, bully, dribbling, hitting, drive, push strokes, scoop, flick, stopping, various types of passes, dodging, defence and offience tactics.

Kho-Kho : Quadra ped, bi-ped, how to given kho, taking a direction, recede, parallel toe method, bullet tow method, distal method, foot out, dive, ring game, chains and persue and defence skills.

Chess : Moves, move of king, move of pawns, move of rooks, move of bishops, move of queen, move of knights, en passant, castling, check and notation.

Kabaddi : Raid, touch, cant, catch, struggle, various types of defence and offence tactics.

Cricket : Grip, bowling, spin, leg spin, off spin, medium, batting, dive, sweep, mode of delivery, fielding, rolling etc.

Tennis : Grip, forehand drive, back hand drive, stroke, backhand ground stroke, service, volley, smash, wall practice, foot work, defence and offence tactics.

Table Tennis : Grip, tossing and serving, spin serve, rally, smash, flick, defence and offence tactics.

Shuttle Badminton : Grip, foot work, service, setting, smash, volley, forehand and back hand stroke, back hand serve and defence.

Gymnastics : Balanced walk, execution, floor exercise, tumbling/acrobatics, grip, release, swinging, parallel bar exercise, horizontal bar exercise, flic-flac-walk and pyramids.

ATHLETICS

(a) **Sprint** : Medium start, long start, bunch start, set, pick up, finish, upsweep, downsweep, placement, receiving and exchanging.

(b) **Jumps** : Western roll, belly roll, eastern cut off, fass ferry flop, approach, take off, straddle, hitch-kick, handging, clearance, landing, strides etc.

(c) **Throws** : Grip, momentum, pre shift, sub phase, the wind up, foot work, entry to the turn, shift, angle of release, follow throw, delivery, front cross step, rear cross step, hop step, fuck method pary obraine, discoput, rotation, carry and glide.

(d) **Hurdles** : Finding lead leg, use of lead leg and trial leg, flight, clearing, finish.

Lead up games, advance skills and game for any one of the above games.

II Semester (20+ 2 ½ hours)

Rules and regulations of anyone of the games and athletic events.

Aims and objectiaves of yoga – asanas : ie. padmasana, pujankasana, sarvangasana, chakrasana,dhanurasana, halasana, mayurasana and savasana, asanas for ailments, back pain, arthritis, abdominal problesm, stress, fatiguel, Insomnia, obsity, circulation, hypertension, varicose veins, respiration, heart, digenstion, headaches, depression, addiction and eye problems.

Mental balance and importance – development of concentration suriyanamaskar – advance skills of any one of the games which were taught in the I semester.

METHOD OF EVALUATION:

a. Attendance	60 Marks
b. Behavior	10 Marks
c. Participation in Sports and Games	20 Marks
d. Final *Viva Voce*	10 Marks

Marks will be awarded at the end of the IV Semester based on the above method of evaluation procedure. Final class grade chart of each student will be sent to the Dean of concerned colleges of Tamil Nadu Agricultural University.

PED 102 YOGA FOR HUMAN EXCELLENCE (0+1)

UNIT - 1:
PHYSICAL HEALTH AND REJUVENATION OF LIFE-FORCE

Significance of Value Education - Types of Education – Yoga for Human Excellence Principles and Purpose of living - Body structure – Body functions – Reasons for Diseases and Prevention - Concept of Health – Role of limit and method in five deeds for good health - Importance of Naturopathy - Objectives of physical exercises Benefits of physical exercises - Kayakalpa yoga philosophy - Youthfulness practices Enriching bio-magnetism.

UNIT - 2:
MENTAL PROSPERITY AND SOCIAL WELFARE

Mind functions – Mental frequency – Thought – Brain and Memory power – Problem solving and Decision making skills - Need and benefits for meditation - SKY Yoga types of meditation Part 1: Eye brow centre meditation - Genetic centre meditation - Spinal cord clearance - Crown centre meditation - Analysis of thoughts – Moralization of desires - Neutralization of Anger – Eradication of Worries – Benefits of blessings - Human culture and values – Five-fold culture - Time management – Personality Assessment - Environment awareness and protection - Family peace – World peace - Five duties - Harmonious friendship – Greatness of Womanhood.

UNIT - 3:
YOGA PRACTICES – I

PHASE I - Simplified Physical Exercises: Hand exercise - Leg exercise – Neuro muscular breathing exercise – Eye exercise – Kapalabathi - PHASE II – Makarasana Part 1 & 2 – Body massage - Acu-pressure – Relaxation exercise - Youthfulness practices (Kayakalpa) - SKY Yoga types of meditation Part 1: Eye Brow centre meditation - Genetic centre meditation - Spinal Clearance - Crown centre meditation.

Practical Schedule:

1. Significance of Value Education - Types of Education – Yoga for Human Excellence – Eye brow centre meditation (Agna) - Simplified Physical Exercises – Objective of physical exercises – Benefits of exercises.
2. Principles and Purpose of living - Genetic centre meditation - Explanation and initiation of Genetic centre - SPE – Hand exercises, Leg Exercises, Neuro Muscular Breathing exercises, Eye exercises, Kapalabathi and Relaxation
3. Kayakalpa yoga philosophy - Youthfulness practices - Enriching bio-magnetism - Eye brow
4. centre meditation Practice (Agna) - Kayakalpa Yoga – Explanation and Kayakalpa Practice
5. Body structure – Body functions - Genetic centre meditation Practice - Simplified Physical Exercises - Makarasana, Massage and Acupressure and Relaxation - Kayakalpa
6. Concept of Health – Role of limit and method in five deeds for good health - Spinal cord Clearance - Explanation and practice - Simplified Physical Exercises Full exercises – Kayakalpa
7. Reasons for Diseases and Prevention - Crown centre meditation- Initiation (Thuriyam)

8. Importance of crown centre meditation - Simplified Physical Exercises Full exercises - Kayakalpa
9. Importance of Naturopathy - Crown centre meditation- (Thuriyam) - Simplified Physical Exercises Full exercises - Kayakalpa
10. Mind functions – Mental frequency – Thought – Brain and Memory power - Crown centre meditation- (Thuriyam) - Simplified Physical Exercises Full exercises - Kayakalpa
11. Analysis of thought - Moralization of desire - Genetic centre meditation Practice - Simplified Physical Exercises Full exercises - Kayakalpa
12. Neutralization of Anger – Eradication of Worries – Eye brow centre meditation Practice (Agna) - Simplified Physical Exercises Full exercises - Kayakalpa
13. Benefits of blessings - Human culture and values – Crown centre meditation- (Thuriyam) - Simplified Physical Exercises Full exercises - Kayakalpa
14. Fivefold culture – Time management - Crown centre meditation- (Thuriyam) - Simplified Physical Exercises Full exercises - Kayakalpa
15. Environment awareness and protection - Genetic centre meditation Practice - Simplified Physical Exercises Full exercises - Kayakalpa
16. Family peace – World peace - Harmonious friendship – Crown centre meditation- (Thuriyam)
17. Simplified Physical Exercises Full exercises – Kayakalpa
18. Greatness of Womanhood - Five duties - Genetic centre meditation Practice - Simplified
19. Physical Exercises Full exercises - Kayakalpa
20. Personality Assessment - Crown centre meditation- (Thuriyam) - Simplified Physical Exercises Full exercises – Kayakalpa
21. Physical health and mental health – revision