B.Sc. (Agriculture)

Semester wise distribution of courses

I Year I Semester

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

Theory:

Unit - I:

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

Unit - II:

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

Unit - III:

Agronomy - Definition - Importance - Meaning 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 - 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:

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.

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.

ICAR. 2011. Handbook of Agriculture. Indian Council of Agricultural Research, New Delhi.

E-References:

http://icar.res.in

ww.webcast.gov.in

ww.icar.org.in/nasm.html

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. Stages of agriculture development - Era of civilization - Importance of Neolithic civilization.
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. **Mid-semester Examination.**
9. Crops and major soils - classification - Economic and agricultural importance in Tamil Nadu and India.
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. **Practical Examination.**

AIT 111 Fundamentals of Information Technology (1+1)

Aim

By the completion of this course, the student would:

- understand Computer, Operating systems, Office automation and Internet tools and technologies.
- have experienced Operating System Working Environment, Word Processing, Presentation, Spread sheet and Databases, eMails and Web utilities.
- understand Computer Programming basics and Logic building on solving problems.

Theory

UNIT I: COMPUTER BASICS

Introduction to Computer – Evolution and Generation of Computers - Classification of Computers – Computer Organization and Architecture - Data Representation - Memory and Storage - Input Output Media - Current Trends in Computer.

UNIT II: OPERATING SYSTEM AND SOFTWARE

Introduction to Software - Categories – System Software - Evolution and Types of Operating System - Functions of Operating System - Application Software - Installation and Un-installation – Office Automation Software - Word Processing – Spread sheet - Presentation – Multimedia and its Building Blocks - Multimedia Applications – Virtual Reality – Current Trends in System and Application softwares.

UNIT III: COMPUTER NETWORKS AND INTERNET

Introduction to Computer Networks – Topologies – Communication Protocol – Network Devices - Introduction to Internet – Internet Applications – Internet Tools - Web Browser – Email client – Search Engines – Instant Messaging – Computer Security - Current Trends in Computer Networks and Internet.

UNIT IV: COMPUTER PROGRAMMING AND LANGUAGES

Introduction to Computer Programming – Algorithm – Flowchart – Decision Tables – Pseudo code – Program Control Structures – Programming paradigms – Introduction to Programming Languages – Generation of Programming Languages - Current Trends in Computer Programming and Languages.

UNIT V: DATABASE MANAGEMENT SYSTEMS

Introduction to Database - Logical and Physical Data Concepts – Data Base Management System - DBMS Architecture - Database Models – Normalization Techniques – Types of Databases – Introduction to Structured Query Language – SQL Commands - Current Trends in Database Management Systems.

Practical

Computer Hardware - Number System – Bits and Bytes Conversion - MS DOS commands - Windows Operating system - Linux Operating System - Word Processing Software - Presentation Software -Spreadsheet Software - Image Editing Software - networking commands - Web Browsers and Search Engines – Emails - Programming constructs - DBMS softwares - SQL commands

Text book :

1. Pearson , Introduction to Information Technology, 2013 Second Edition, ITL Education Solutions Limited.

Reference book :

1. Fundamentals of Information Technology, 2/e, Alexis Leon & Mathews Leon, 2009

e-reference :

https://www.coursera.org/ https://www.edx.org/

https://www.khanacademy.org/ https://www.udemy.com/

http://pearsoned.co.in/ITLEducationSolutionsLimited/

Course Learning Outcomes

Upon successful completion of this course the student would be able to:

- Describe and apply basic concepts of Information Technologies
- Familiarize the working environment of Desktop Operating systems, Desktop Office Automation and Internet and email Tools
- Gain hands on skill on word processing, presentation, spread sheet and database applications.
- Gain problem solving skills through programming techniques.

Theory – Lecture Schedule

1	Introduction to Computer, Evolution of Computers, Generation of Computers and Classification of Computers.
2	The Computer System, Computer Organization and Architecture, Central Processing Unit, Inside a Computer.
3	Data Representation in Computers, Computer Memory and Storage, Input Output Media and Current Trends in Computer.
4	Introduction to Software, Categories of Software, System Software, Evolution of Operating System, Types of Operating System, Functions of Operating System.
5	Introduction to Application Software**,** Installation and Un-installation of software, Software Piracy, Software Terminologies, Office Automation Software, Word Processing, Spread sheet, Presentation.
6	Introduction to Multimedia, Building Blocks of Multimedia, Multimedia Systems, Multimedia Applications, Virtual Reality. Current Trends in System and Application softwares.
7	Introduction to Computer Networks**,** Network Topologies, Communication Protocol, Network Devices
8	Introduction to Internet, Internet Applications, Internet Tools, Web Browser and Email client
9	**Mid-semester examination**
10	Search Engines, Instant Messaging, Computer Security. Current Trends in Computer Networks and Internet.
11	Introduction to Computer Programming, Algorithm, Flowchart, Decision Tables, Pseudo code and Program Control Structures
12	Programming paradigms, Introduction to Programming Languages
13	Generation of Programming Languages, Current Trends in Computer Programming and Languages.
14	Introduction to Database, Logical and Physical Data Concepts, Data Base Management System and its Architecture, Database Models
15	Normalization Techniques, Types of Databases, Introduction to Structured Query Language
16	Data Definition Language, Data Manipulation Language
17	Current Trends in Database Management Systems.

Practical Schedule

1. Working with basic Computer Hardware
2. Number System conversion : Decimal, Binary, Octal, Hexa Decimal, Binary addition and subtraction
3. Conversion between bits, bytes, kilobits, kilobytes, megabits, megabytes, gigabits, gigabytes
4. Working with MS DOS commands
5. Working with Windows Operating system
6. Working with Linux Operating System
7. Working with Word Processing Software
8. Working with Presentation Software
9. Working with Spreadsheet Software
10. Working with Image Editing Software
11. Working with basic networking commands
12. Working with Web Browsers and Search Engines

13. Working with Emails
14. Working with Programming basics : Algorithm, Flowchart, Pseudo Code and Coding
15. Working with DBMS softwares
16. Working with SQL commands

17 **Final Pracitcal Examination**

MAT 111 APPLIED MATHEMATICS (1+1)

Objective

To understand and apply fundamental concepts of mathematics applicable in biology and to acquire about theoretical concepts of Algebra, Calculus and Mathematical Modelling.

Theory

Unit – I: *Algebra:*

Permutation and Combination -meaning of nPr and nCr and simple problems. Progressions - Arithmetic, Geometric and Harmonic progressions. Matrices: Types - Algebra of matrices - Determinants – expansion– inverse of a matrix by adjoint method-solving system of equations by Cramer's rule and matrix inverse method.

Unit – II: *Differential Calculus I:*

Definition – methods of differentiation. Geometrical and physical meaning of the derivative - Higher order derivatives - Applications of differentiation. Partial differentiation –Homogeneous functions and Euler's Theorem - Applications

Unit – III *Differential Calculus II:*

Increasing and decreasing function-Maxima and minima of single and several variables with and without constraints- Physical and Economic optimum- Applications in agriculture.

Unit – IV *Integral Calculus*:

Definition of integration-indefinite and definite integrals-Formulae-methods of integration - substitution, method of partial fractions-Integration by parts -Simple applications in finding the area and volume by integration.

Unit – V Mathematical Models:

Agricultural systems - Mathematical models - classification of mathematical models- Linear, quadratic, exponential and logistic models.

Practical:

Problems in Permutation and Combination . Problems in A.P, G.P, and H.P. in biology. Problems in forming price and quantity matrix and estimation of revenue matrix. Formation and solution (using matrix inverse and Cramer's rule) of simultaneous equations from problems in agriculture.

Problems in differentiation- maxima and minima of single and several variables with and without constraints - physical and economic optimum-finding the fertilizer dosage for maximum yield and maximum profit. Simple problems in methods of integration computation of area, volume using definite integrals. Problems in fitting linear, quadratic, exponential and logistic models to data from agricultural experiments.

Outcome :

Students will acquire knowledge in basic techniques that are applicable to agricultural sciences. Further the course will provide them good introduction to various mathematical models used in Biological sciences.

Text Books:

1. Manickavasagam Pillai, T. K and Natarajan, T. 2003. Calculus, Viswanathan Publications, Madras.
2. Suyambulingom, C and Kailasam, C. 1990. Mathematics for Plant Sciences, Sakthi Publications, Coimbatore.

References:

1. Duraipandian, 2007, Calculus and Analytical Geometry, Emerald Publishers, Chennai.
2. James Stewart and Barhara Frank, Calculus, 2008, International Thomson Publishers, Singapore
3. Mehta, B. C. and G. M. K. Madnani.2006, Mathematics for Economists, Latest edition, Sultan Chand & Sons, New Delhi.
4. Veerarajan, T, 2004. Engineering Mathematics, Tata McGraw-Hill Publishing Company Limited, New Delhi.
5. Ranganathan.C.R. 2006, A First Course in Mathematical Models of Population Growth (with MATLAB programs), Associated publishing company, New Delhi

E-Reference:

www.mathworld.com

http://en.wikipedia.org/wiki/Portal:Mathematics

http://www.sosmath.com/

E-Journals:

http://www.math.neu.edu/~Suciu/journals.html

Lecture Schedule:

1. Permutation and combination-meaning of nPr and nCr-simple problems
2. Arithmetic, Geometric and Harmonic progression.
3. Matrix Algebra and evaluation of determinants.
4. Inverse of a matrix by adjoint method.
5. Solution of simultaneous equations by Cramer's rule & inverse method.
6. Differentiation – definition – methods of differentiation- Geometrical and physical meaning of the derivative
7. Higher order derivatives- Applications of differentiation
8. Partial differentiation –Homogeneous functions and Euler's Theorem
9. **Mid Semester Examination.**
10. Increasing and decreasing function- Maxima and minima of single variables- Physical and Economic optimum –Applications in agriculture- finding the fertilizer dosage for maximum yield and maximum profit.
11. Maxima and minima of several variables without constraints
12. Maxima and minima of several variables with constraints
13. Integration – methods of integration and definite integrals
14. Integration by parts -Application of integration in area and volume.
15. Agricultural systems - Mathematical models - classification of mathematical models
16. Linear and Quadratic models-their applications in agriculture.
17. Exponential and Logistic models - their applications in agriculture.

Practical schedule:

1. Simple problems in permutation and combination and its applications.
2. Problems Arithmetic, Geometric and Harmonic progression
3. Problems in Matrix Algebra and determinants.
4. Inverse of a matrix by adjoint method
5. Solution of simultaneous equations by Cramer's rule & Inverse method.
6. Problems in Differentiation – methods of differentiation.
7. Problems in Partial differentiation
8. Problems in Homogeneous functions and Euler's Theorem
9. Problems in Increasing and decreasing function- Maxima and minima of single variables.
10. Physical and Economic optimum-Finding the fertilizer dosage for maximum yield and maximum profit.
11. Problems in Maxima and minima of several variables without constraints
12. Problems in Maxima and minima of several variables with constraints
13. Simple problems in methods of integration and applications of definite integrals
14. Problems in integration by parts -Application of integration in area and volume.

15. Problems in fitting linear and quadratic models to data from agricultural experiments
16. Problems in fitting Exponential and Logistic models to data from agricultural experiments
17. **Final Practical Examination**

****

SAC 101 Principles of Analytical Chemistry (1+1)

Aim:

To impart knowledge on concepts and principles of analytical techniques among under graduatestudents. It also provides opportunity to develop skill among students in various analytical techniques.

Syllabus - Theory

Unit I - General principles

General principles of analytical chemistry - common analytical methods - qualitative and quantitative analysis - accuracy and precision of analytical results- Preparation of laboratory reagents

Unit II Volumetric analysis

Volumetric analysis - Calibration of apparatus- preparation of primary and secondary standards -standardization. Theory of indicators and buffers - acidimetry, alkalimetry, oxidometry, complexometry and precipitometry

Unit III Gravimetric analysis

Gravimetric analysis - principles of precipitation reactions- solubility product - common ion effect -conditions of precipitation - Choice of filters - washing solutions.

Unit IV - Instrumental methods

Instrumental analysis - principles and practices of potentiometry, conductometry, colorimetry, spectrophotometry, absorption and emission spectrometry - chromatography - Choice of analytical methods.

Unit V - Nuclear Techniques

Radioactivity - radio tracer techniques in agriculture - Stable isotopes - tracing carbon and nitrogen -mass spectroscopy - use of stable isotopes in agriculture

Syllabus - Practical

Analytical techniques and concepts - Volumetry - Gravimetry - Acidimetry - Alkalimetry -Permanganometry - Dichrometry - lodometry, Complexometry - Potentiometry - Conductometry -Colorimetry - Spectro-photometry -Turbidimetry - Flame Photometry - Atomic absorption spectrophotometry- Radioactivity-Measurement

Text books

1. Jeffery, G.H, J.Basset, J.Mendham, R.C. Denney (1988,) Vogel's e-book on Text book of Quantitative Chemical Analysis Vth edition Longman Scientific &Technical and John Wiley &Sons Inc., NewYork

2. Pradyot Patnaik. (2004) e-book on Dean's Analytical Chemistry Handbook, Second edition. McGraw –Hill Handbooks

Reference books

1. Chatwal Anand. 1999. Instrumental Methods of Chemical Analysis. Himalaya Publishing House, New Delhi.

2. Chopra, S.L. and J.S.Kanwar. 1976. Analytical Agricultural Chemistry. Kalyani Publishers, Ludhiana, New Delhi.

3. Gabb, M.H. and Latchem, W.E. 2012. A Hand Book of Laboratory Solutions. Scientific Publishers, Jodhpur, India,

4. Gary D.Christian. 2007. Analytical Chemistry. Wiley Student Edition, Singapore.

5. Gupta A.K. and Varshney ML., 1989. Practical manual for Agricultural Chemistry - Kalyani Publishers, New Delhi.

6. Hamilton I.F. and Simpson G.S.G., 1964. Quantitative Chemical Analysis - The MC Millan Co., New York.

7. Hessee, P.R. 2002. A Text book of Soil Chemical Analysis. CBS Publishers and Distributors Pvt. Ltd., New Delhi.

8. Jackson, ML. 2014. Soil Chemical Analysis. Scientific Publishers, Jodhpur, India.

9. James Holler, F. and Donald, M.West. 2008. Fundamentals of Analytical Chemistry. Cengage Learning Publishers

10. Khandpur, R.S. 2012. Hand Book of Analytical Instrumentation. Tata McGraw Hill Education Pvt. Ltd..

11. Keith A. Smith, 1983. Soil Analysis - Instrumental Techniques and Related

Procedures, New York.
12. Khopkar, S.M. 1998. Basic concepts of Analytical Chemistry. New Age International Publications
15
13. Kreshkov A.P. and Yaroslavtsev, 1977. Course of Analytical Chemistry Vol.ll. Quantitative Analysis - Mir Publishers, Moscow.
14. Liptak, 1994. Analytical Instrumentation. Taylor and Francis. Pp. 471.
15. Piper, C.S 2014. Soil and plant analysis: Scientific Publishers, Jodhpur, India.
16. Sankaram, A. 1966. A Laboratory Manual for Agricultural Chemistry - Asia Publishing House, Bombay.
17. Valcarcel, M. 2000. Principles of Analytical Chemistry. Vol. XV. Pp.372. Springer Publishers
18. Verma, R.M. Analytical Chemistry - Theory and Practice. 2010. CBS Publishers and Distributors Pvt. Ltd., New Delhi.

e-references

1. http://en.wikipedia.org/wiki/AnalyticaLchemistry
2. http://www.scribd.com/doc/30296831/lnstant-Notes-in-Analytical-Chemistry
3. http://nzic.org.nz/ChemProcesses/analysis/15B.pdf
4. www.aoac.org
5. http://www.tutornext.com/ws/rock-type-chart
6. http://www.chem.uoa.gr
7. http://www.chemguide.co.vk/analysis/paper.html.
8. http://www.ias.ac.in/initiat/scied/resources/chemistry
9. Portal.acs.org/portal/career/CTP-003375

Out come:

The students will gain knowledge on concepts and principles of analytical techniques. They will also acquire skills in various analytical techniques. Further, the knowledge gained will form as building block to pursue many research works. ,

Lecture schedule

1 General principles in analytical chemistry - common analytical methods - quantitative and qualitative analysis -Accuracy and precision of analytical results.
2 Preparation of laboratory reagents - digestion and distillation techniques
3 Volumetric analysis - Calibration of apparatus- preparation of primary and secondary standard solutions - standardization.
4 Theory of indicators and buffers. Preparation of indicators and buffer solutions.
5 Theory of acidimetry and alkalimetry - titration curve.
6 Theory of Permanganometry, dichrometry, complexometry and precipitometry
7 Gravimetric analysis -Precipitation - solubility product - common ion effect - conditions of precipitation.
8 Gravimetric analysis - moisture - filtration of suspension - precipitation techniques
9 Midsemester examination
10 Filtration and choice of filters - washing - washing solutions and washing technique
11 Instrumental methods of analysis - Principles of potentiometry, conductometry.
12 Principles of colorimetry and spectrophotometry
13 Principles of Atomic absorption and Atomic emission spectrometry
14 Principles of chromatography - Paper chromatography and TLC
15 Principles of Gas chromatography and HPLC.
16 Introduction to radioactivity - radio tracer techniques in agriculture
17 Stable isotopes C and N - Mass spectrometer applications in agricultural research

Practical Schedule

1. Common laboratory glassware and apparatus - do's and don'ts in the laboratory
2. Principles of Gravimetry and Moisture estimation
3. Volumetric analysis - Preparation of primary, secondary standard solutions and indicators
4. Acidimetry-Standardization of acids
5. Alkalimetry - Standardization of bases
6. Permanganometry - Standardization of $KMnO_4$
7. Dichrometry - Standardization of Ferrous Sulphate
8. lodometry - Estimation of Copper
9. Complexometry - Estimation of Calcium and Magnesium
10. Potentiometry and Conductometry - Determination of pH and EC
11. Spectrophotometry - Determination of phosphorus
12. Turbidimetry - Estimation of Sulphur
13. Flame Photometry - Estimation of Potassium
14. Absorption spectrophotometry - Estimation of Fe / Zn / Mn / Cu
15. Study of components of Gas chromatography/ HPLC
16. Detection and measurement of radioactivity using Geiger Muller (GM) Counter –Visit to Radio Isotope Laboratory, Coimbatore
17. Practical Examination

PBG 101 Introduction to Agricultural Botany (1+1)

Aim: To expose the students to the basic features of botanical description, economic parts and economic importance of different field and horticultural crops

SYLLABUS FOR THEORY

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 of Pedaliaceae, 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

SYLLABUS FOR 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

Assignment

- Collection and preparation of 25 herbarium specimens representing minimum of ten families of the crop species studied.
- Collection of crop seeds of 10 traditional varieties.

Outcome

- Botanical features and economic importance of different crop plants belonging to 20 families will be exposed.

References

1. Daniel Sundararaj, D. and G. Thulasidas, 1993. Botany of field crops. MacMillan India Ltd., New Delhi.
2. Sambamurthy, V.S. and N.S. Subramanian, 1989. Text Book of Economic Botany, Wiley Eastern, New Delhi

Further reading

1. Purse glow, 1988. Tropical Crops - Monocotyledons. The English Language book Society and Longman Co., Singapore
2. Purse glow. 1988. Tropical Crops - Dicotyledons. The English language book Society and Longman Co., Singapore.

3. Albert F. Hill and O.P. Sharma, 1996. Economic Botany. Tata McGraw - Hill Publishing Co. Ltd., New Delhi.
4. John Joel, A., C. Vanniarajan, T.S. Raveendran, and A. Gopalan 2006. Fundamentals of Crop Botany, Directorate of ODL, Tamil Nadu Agricultural University, Coimbatore–641 003.

Web resources

- www.nmsu.edu
- www.biology200.gsu.edu

Theory schedule

1. Bentham and Hooker's classification of plant kingdom — International code of nomenclature and 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 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

Final Theory Examination

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

AEX 101 Fundamentals of Rural Sociology and Educational Psychology 1+1

Objective

This course will enable students to acquire knowledge on basics concepts related to rural sociology and educational psychology. Students will also learn the practical applications of important sociological and psychological concepts.

Theory

UNIT I

Introduction to Sociology, Social groups and Culture

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.

UNIT II

Social Structure, Social Stratification, Migration and Social Values

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; Social Values – definition, values and norms, characteristics of values, functions; Migration – concept, factors influencing migration.

UNIT III

Social Control, Social Customs, Leadership

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; Leadership – definition of leader and leadership, classification, functions, characteristics, roles, selection of leaders.

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, 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.

Practical

Visit to a village to study the sociological characteristics of a rural society - patterns of settlement, culture, social stratification, social values, social control, customs, social interaction processes, social change, and social problems; Study of basic social institutions and social organizations and their functions in a village setting; Exercise on selection of leaders in a village; Practice on Personality and Intelligence measurement techniques.

Suggested Readings (Textbooks, Reviews, Journals)

- Adivi Reddy, A. 2001. Extension Education, Sree Lakshmi Press, Bapatla, Andhra Pradesh.
- Chatterjee, S. 2000. Advanced Educational Psychology, Books & Allied (P) Ltd., Calcutta.
- Chauhan, S.S. 2001. Advanced Educational Psychology, Vikas Publishing House Pvt. Ltd., New Delhi.
- Chitambar, J.B.1997. Introductory Rural Sociology, New Age International (P) Ltd., Publishers, New Delhi.
- Dahama, O.P. and O.P. Bhatnagar. 2007. Education and Communication for Development, Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi.

- Kundu, C.L and Tutoo, D.N. 2001. Educational Psychology, Sterling Publishers Pvt. Ltd., New Delhi.
- Lester Crow, D and Alice Crow. 1973. Educational Psychology, Eurasia Publishing House Pvt. Ltd., New Delhi.
- Madumita Gupta. 2011. Fundamentals of Sociology, Pacific Publications, New Delhi.
- Mangal, S.K. 2000. Educational Psychology, Prakash Brothers, Ludhiana.
- Shankar Rao, C.N. 2012. Sociology – Principles of Sociology with an Introduction to Social Thought, S.Chand & Co. Ltd., New Delhi.
- Sharma, R.N. 1968. Principles of Sociology, Asia Publishing House, New Delhi.
- Supe. S.V. 2012. Text book of Extension Education, Agrotech Publishing Academy, Udaipur.
- Usha Rao. 2008. Advanced Educational Psychology, Himalaya Publishing House, New Delhi.
- Vidya Bhushan and Sachdeva, D.R. 2003. An Introduction to Sociology, Kitab Mahal, Allahabad.

Journals

- Indian Journal of Social Research
- Journal of Rural Development

- Journal of Social Sciences
- Journal of Advances in Social Work
- Journal of Asian Social Sciences
- Journal of Social Sciences and Research
- Journal of Current Research in Social Psychology
- Journal of Rural Sociology
- Journal of Extension Education - Coimbatore

Web resources

- www.sociologyguide.com
- eu.wikipedia.org
- www.princeton.edu

Theory Schedule

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

Practical Schedule

1. Understanding the sociological characteristics of a rural society – (Brainstorming).
2. Data collection methods – survey, questionnaire, mailed questionnaire, interview schedule, observation method, case study.
3 & 4. Preparation of interview schedule to study the social characteristics of rural society – pattern of settlement, culture, social stratification, social values, social control, customs, social interaction process, social change and social problems (Group exercise).
5. Visit to a village for data collection (Group exercise).
6 & 7. Processing of data and presentation of Reports.
8 & 9. Preparation of interview schedule to study the basic social institutions and social organizations and their functions in a village setting (Group exercise). Preparatory work for selection of leaders in a village (Group exercise).
10. Visit to a village for data collection (Group exercise).
11& 12. Processing of data and presentation of reports.
13 & 14. Practicing Personality measurement techniques (Group exercise).
15 & 16. Practicing Intelligence measurement techniques (Group exercise).
17. Final Practical Examination

ENG 101 ENGLISH FOR EFFECTIVE COMMUNICATION (0+1)

Aim

- **To make the students competent in**
- **Listening – Receptive skill**
- **Speaking – Productive skill**
- **Reading - Receptive skill**
- **Writing - Productive skill**

Unit I - LISTENING

Introduction - Listening vs Hearing -Basic listening modes - Types of listening - Intensive and Extensive Listening - Process of Listening - Methods of enhancing listening- Barriers of listening.

Unit II - SPEAKING

Introduction to English Phonology – English Phonemes – Stress & Intonation - Influence of Language 1 on Language 2 - Oral Discourse skills - Principles of speech preparation - Presentation skills - Techniques of speaking.

Unit III - READING

Introduction to Reading - Types of reading - Skimming and Scanning - Idea reading (Reading for information) - Exploratory reading - Study reading (Text reading) - Critical reading - Analytical reading - Note-making – Précis Writing.

Unit IV - WRITING

Word formation (prefix , suffix & word coining) - Word expansion (root word & etymology) - Compound words - Single word substitutes -Abbreviations & acronyms – Sentence agreement - Sentence completion - Sentence correction - Writing definitions - Coherence and cohesion in writing - Mind mapping in writing - Paragraph writing techniques - Thesis sentence writing - Inferential sentence writing - Logical arrangement of sentences - Letter Writing - Text conversion- Interpreting charts , graphs, diagrams into text - Poster making - Essay writing (types of essays).

Unit V

Integrated skills - Group Discussion - Presentation (Seminar) - Forum discussion - Brain Storming – Debate – Writing Fan-mail – e-mail.

The Practical Class Schedule for the revised English course is as follows:

1. Introduction - Listening vs Hearing - listening modes - Types of listening -Intensive and Extensive Listening
2. Process of Listening - methods of enhancing listening
3. Barriers of listening - Note–taking
4. English Phonology - Influence of Language 1 on Language 2
5. English Stress & Intonation
6. Principles of speech preparation
7. Presentation skills
8. Techniques of speaking

9. MID SEMESTER

10. Introduction to reading - Types - Scanning and Skimming -Idea reading (Reading for information) - Exploratory reading -Study reading (Text reading) - Critical reading - Analytical reading - Note-making-précis writing.
11. Word formation(prefix , suffix & word coining) - Word expansion (root word & etymology) -Compound words - Single word substitute -Abbreviations & Acronyms
12. Sentence agreement - Sentence completion - Sentence correction - Writing definitions
13. Writing Practice -Mind mapping - sentence writing - Logical arrangement of sentences
14. Paragraph writing - techniques - Thesis sentence writing – Inferential sentence writing – coherence and cohesion in writing
15. Letter Writing – Types of letters
16. Text conversion- Interpreting charts, graphs diagrams into text - Poster making - Essay writing (types of essays)

17. FINAL PRACTICAL EXAMINATION

Outcome:

The students will gain competence in skills viz.,

1. **Listening -** Understanding the kinds of listening and acquire the techniques of active listening followed by note-taking and the art of asking questions.
2. **Speaking -** Acquire the correct pronunciation and the art of speaking in a forum.
3. **Reading**: Know the types of reading, the techniques of reading, reading for comprehension and note-making.
4. **Writing** - Understand the genre of writing, mechanics of writing, article writing (essay), abstract writing (précis) and letter writing.

28

REFERENCES

Bernhardt, E.B., **Reading Development in a Second Language,** 1991, Norwood, N.J., Ablex Publishing Goodale, Malcolm, **Professional Presentations**, 2005, Cambridge University Gerald, J. Alred et. al, **The Professional Writer,** 1992, New York: St. Martin's Press

Hariharan, S., **Authentic English for Agriculture and Allied Sciences** 2003, Hyderabad, Orient Longman.

Helgesen, Mark *et al*., **Active listening**, 1997, Cambridge University

Jones Daniel, **English Pronouncing Dictionary** 2006, Cambridge University Press.

Lynch, Tony and Kenneth Anderson, **Study Speaking**, 1992, Cambridge University.

Martin Cutts, **Oxford Guide to Plain English**, 2004, Oxford University Press.

Peregoy, S.F. and Boyle, O.F. **Reading, Writing and Learning in ESL,** 1997, New York. Longman.

Robert, A. Day **How to Publish a Scientific Article** 2001, Oxford University

Sahaneya Wandy, et.al. **IELTS, Preparation and Practice**, Oxford University, 2005.

Sundararajan, N., " Attentive Listening: How it matters " University News, March 19-25, 2005.

Sweeney, Simon, **English for Business Communication**, 2003, Cambridge University.

Swan, M. & Smith, B. **Learner English,** 1987, Cambridge.

Team of authors - **Read Better, Write Better** 2005, Readers Digest.

Team of authors – **Cambridge BEC Vantage,** 2005, Cambridge University.

Team of authors - **Cambridge IELTS** Books 1 to 5, 2006, Cambridge University.

Team of authors - **Objective IELTS,** 2006, Intermediate and Advanced, Cambridge University.

Team of authors -**TOEFL ibt**-2007-Barron.

29

e-references :

www.esl--lab.com www.webenglishteacher.com
www.eflweb.com www.softskills.com
www.teachingenglish.org.uk www.reportingskills.com
www.essays.com www.writing-skills.com
www.onestopenglish.com www.negotiation.com
www.tealit.com www.businessballs.com
www.eltweb.com www.study-habits.com
www.angelfire.com www.timethoughts.com
www.primesl.com www.applyesl.com
www.learnbusinessEnglish.com www.teachersdesk.com
www.bogglesworld.com www.flexbilelearning.net.an

30

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 31
12. Cycle rally on environmental protection.
13. Campus development activities – clean environment campaign, formation of plastic free zones.
14 – 16: Campus development, tree planting maintenance and greening the campus cleaning.
17. **Final Examination**.

II Semester

1–3: Motivation of rural and urban youth for formation of SHG (Self Help Groups) in collaboration with Government machineries and NGOs.
4. Campaign on ill effects of plastics in the adjoining campus areas – Villages / urban areas.
5. Campaign on *Parthenium* eradication.
6. Cycle rally on air pollution – Vehicle exhaust and other means.
7. Popularization of biogas and smokeless chulah.
8. Demonstration on the use of wind energy and solar energy.
9. Demonstration of water harvesting techniques.
10. Demonstration on soil conservation techniques wherever possible.
11. Campaign on Community health programmes of central and state Government – involving Health department officials.
12. AIDS awareness campaign ; campaign on diabetes and healthy food habits and drug abuse
13. Planning formation of blood donors club – involving NGOs.
14. Campaign on gender equality and women empowerment.
15. 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. 32

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 – 3 : Visit to orphanages and old age homes to look after their needs.

4. Personality development programmes – Building up self confidence in youth.

5 – 7: Teaching NSS volunteers on mediation Yoga and art of healthy living with trained teachers

8 – 9 : Visit of nearby National Monument / Places of tourist importance and campaign on cleanliness and preservation.

10–11 : Exploration of hidden talents of village youth and public on folklore, traditional art, sports, martial arts and cultural heritage.

12–13. Campus improvement activities

14–16 : Visit to special camp village and pre camp planning.

17. **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. 33

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 : 30 marks
during special camp
b. Special camp activity report : 5 marks
c. *Viva - voce* on the 10th day : 5 marks
of the special camp

Total : **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.

I Semester

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.

38

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.

39

(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.

40

YGA 101 - YOGA FOR HUMAN EXCELLENCE (0+1)

Optional course (Two semesters)

SYLLABUS

Semester - I

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.

41

Practical Schedule

Semester I

Class Topic

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
centre meditation Practice (Agna) - Kayakalpa Yoga – Explanation and Kayakalpa

Practice
4 Body structure – Body functions - Genetic centre meditation Practice - Simplified Physical Exercises - Makarasana, Massage and Acupressure and Relaxation - Kayakalpa
5 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
6 Reasons for Diseases and Prevention - Crown centre meditation- Initiation (Thuriyam)
Importance of crown centre meditation - Simplified Physical Exercises Full exercises - Kayakalpa
7 Importance of Naturopathy - Crown centre meditation- (Thuriyam) - Simplified Physical Exercises Full exercises - Kayakalpa
8 Mind functions – Mental frequency – Thought – Brain and Memory power - Crown centre meditation- (Thuriyam) - Simplified Physical Exercises Full exercises - Kayakalpa
9 Analysis of thought - Moralization of desire - Genetic centre meditation Practice - Simplified Physical Exercises Full exercises - Kayakalpa
10 Neutralization of Anger – Eradication of Worries – Eye brow centre meditation Practice (Agna) - Simplified Physical Exercises Full exercises - Kayakalpa
11 Benefits of blessings - Human culture and values – Crown centre meditation
(Thuriyam) - Simplified Physical Exercises Full exercises - Kayakalpa
12 Fivefold culture – Time management - Crown centre meditation- (Thuriyam) - Simplified Physical Exercises Full exercises - Kayakalpa
13 Environment awareness and protection - Genetic centre meditation Practice - Simplified Physical Exercises Full exercises - Kayakalpa
14 Family peace – World peace - Harmonious friendship – Crown centre meditation- (Thuriyam)
Simplified Physical Exercises Full exercises – Kayakalpa
15 Greatness of Womanhood - Five duties - Genetic centre meditation Practice - Simplified
Physical Exercises Full exercises - Kayakalpa
16 Personality Assessment - Crown centre meditation- (Thuriyam) - Simplified Physical Exercises Full exercises – Kayakalpa
17 Physical health and mental health – revision