SRI SATYA SAI UNIVERSITY OF TECHNOLOGY & MEDICAL SCIENCES, SEHORE

B.Sc. (Ag.) (2nd) Year

3rd Semester **2016-2017**

Subject Code	Subject Name	Credits
AG- 301	Farm Machinery and Power	2(1+1)
AG -302	Agricultural Finance and Cooperation	3(2+1)
AG -303	Production Technology for Vegetable and Spices	2(1+1)
AG -304	Livestock & Poultry Management	4(3+1)
AG -305	Crop Production Technology-I (Kharif-Crops)	2(1+1)
AG -306	Agricultural Informatics	2(1+1)
AG -307	Environmental Studies and Disaster Management	3(2+1)
AG -308	Introductory Agro meteorology & Climate Change	2(1+1)
AG -309	Fundamentals of Plant Breeding	3(2+1)
AG -310	Entrepreneurship Development and Business Communication	2(1+1)
Total		24

SRI SATYA SAI UNIVERSITY OF TECHNOLOGY & MEDICAL SCIENCES, SEHORE

Subject Code-AG-301 **Credit 2(1+1)**

W.e.f. 2016-2018

Farm Machinery and Power

UNIT-1. Status of Farm Power in India, Sources of Farm Power , I.C. engines, working principles of IC engines, comparison of two stroke and four stroke cycle engines.

UNIT-2. Study of different components of I.C. engine, I.C. engine terminology and solved problems, Familiarization with different systems of I.C. engines.

UNIT-3. Air cleaning, cooling, lubrication, fuel supply and hydraulic control system of a tractor, Familiarization with Power transmission system.

UNIT-4. clutch, gear box, differential and final drive of a tractor, Tractor types, Cost analysis of tractor power and attached implement, Familiarization with Primary and Secondary Tillage implement, Implement for hill agriculture.

UNIT-5. Implement for intercultural operations, Familiarization with sowing and planting equipment, calibration of a seed drill and solved examples, Familiarization with Plant Protection equipment, Familiarization with harvesting and threshing equipment.

Practical

1. Study of different components of I.C. engine.
2. To study air cleaning and cooling system of engine, Familiarization with clutch, transmission, differential and final drive of a tractor,
3. Familiarization with lubrication and fuel supply system of engine, Familiarization with brake, steering, hydraulic control system of engine, Learning of tractor driving, Familiarization with operation of power tiller,
4. Implements for hill agriculture, Familiarization with different types of primary and secondary tillage implements: mould-board plough, disc plough and disc harrow .
5. Familiarization with seed-cum-fertilizer drills their seed metering mechanism and calibration, Planters and Transplanter Familiarization with different types of sprayers and dusters
6. Familiarization with different inter-cultivation equipment, Familiarization with harvesting and threshing machinery.

References

1. Elements of Agricultural Engineering – Dr. Jagdishwar Shay
2. Principle of Agricultural Engineering Vol. I – T.P. Ojha, A.M. Michael
3. Farm Power and Machinery management- D.N. Sharma, S. Mukesh
4. Farm Machinery and Power- Ashok G. Powar, Vijay V. Aware
5. Farm Machinery and Power Engineering- Manisha Sahu, Ajay sharma

SRI SATYA SAI UNIVERSITY OF TECHNOLOGY & MEDICAL SCIENCES, SEHORE

Subject Code-AG-302

Credit 3(2+1)
W.e.f. 2016-2017

Agricultural Finance and Cooperation

UNIT-1. Agricultural Finance- meaning, scope and significance, credit needs and its role in Indian agriculture.

UNIT-2. Agricultural credit: meaning, definition, need, classification. Credit analysis: 4 R's, and 3C's of credits.

UNIT-3. Sources of agricultural finance: institutional and non-institutional sources, commercial banks, social control and nationalization of commercial banks, Micro financing including KCC. Lead bank scheme, RRBs, Scale of finance and unit cost. An introduction to higher financing institutions – RBI, NABARD, ADB, IMF, world bank, Insurance and Credit Guarantee Corporation of India.

UNIT-4. Cost of credit. Recent development in agricultural credit. Preparation and analysis of financial statements – Balance Sheet and Income Statement. Basic guidelines for preparation of project reports- Bank norms – SWOT analysis.

UNIT-5. Agricultural Cooperation – Meaning, brief history of cooperative development in India, objectives, principles of cooperation, significance of cooperatives in Indian agriculture. Agricultural Cooperation in India- credit, marketing, consumer and multi-purpose cooperatives, farmers' service cooperative societies, processing cooperatives, farming cooperatives, cooperative warehousing; role of ICA, NCUI, NCDC, NAFED.

Practical

1. Determination of most profitable level of capital use.
2. Optimum allocation of limited amount of capital among different enterprise.
3. Analysis of progress and performance of cooperatives using published data.
4. Analysis of progress and performance of commercial banks and RRBs using published data.
5. Visit to a commercial bank, cooperative bank and cooperative society to acquire firsthand knowledge of their management, schemes and procedures. Estimation of credit requirement of farm business – A case study.
6. Preparation and analysis of balance sheet – A case study. Preparation and analysis of income statement – A case study. Appraisal of a loan proposal – A case study. Techno economic parameters for preparation of projects.
7. Preparation of Bankable projects for various agricultural products and its value added products. Seminar on selected topics.

References

1. An Introduction to Agricultural Finance – U.K. Pandey, Himalayan Publication Ltd, New Delhi
2. Agricultural Finance - Theory and Practical – J.P. Singh
3. Agricultural Finance - Theory and Practical – Kahlon and Tyagi
4. Agricultural Finance and Management – S. Subba Reddy

SRI SATYA SAI UNIVERSITY OF TECHNOLOGY & MEDICAL SCIENCES, SEHORE

Subject Code-AG-303

Credit 2(1+1)
W.e.f. 2016-2017

Production Technology for Vegetable and Spices

UNIT-1. Importance of vegetables & spices in human nutrition and national economy.

UNIT-2. Brief about origin, area, production, improved varieties and cultivation practices such as time of sowing, sowing.

UNIT-3. Transplanting techniques, planting distance, fertilizer requirements.

UNIT-4. Irrigation, weed management, harvesting, storage, physiological disorders.

UNIT-5. Disease and pest control and seed production of important vegetable and spices.

Practical

1. Identification of vegetables & spices crops and their seeds.
2. Nursery raising. Direct seed sowing and transplanting.
3. Study of morphological characters of different vegetables & spices.
4. Fertilizers applications. Raising of nursery of vegetables & spices.
5. Vegetables & spices seed extraction.
6. Harvesting & preparation for market.
7. Economics of vegetables and spices cultivation.

References

1. Vegetable crops in India – T.K. Bose and M.G. Som
2. Production Technology – S.P. Singh of Vegetable crops
3. Production Technology – K.G. Shanumughavelu of Vegetable crops
4. Complete Gardening in India – K.S. Gopal Swamiyanger
5. Floriculture in India – G.S. Randhawa and A. Mukhopadhyay
6. Commercial Flowers – T.K. Bose

SRI SATYA SAI UNIVERSITY OF TECHNOLOGY & MEDICAL SCIENCES, SEHORE

Subject Code-AG-304

Credit 4(3+1)
W.e.f. 2016-2017

Livestock & Poultry Management

UNIT-1. Role of livestock in the national economy. Reproduction in farm animals and poultry. Housing principles, space requirements for different species of livestock and poultry.

UNIT-2. Management of calves, growing heifers and mulch animals. Management of sheep, goat and swine. Incubation, hatching and brooding. Management of growers and layers.

UNIT-3. Important Indian and exotic breeds of cattle, buffalo, sheep, goat, swine and poultry. Improvement of farm animals and poultry. Digestion in livestock and poultry.

UNIT-4. Classification of feedstuffs. Proximate principles of feed. Nutrients and their functions. Feed ingredients for ration for livestock and poultry. Feed supplements and feed additives.

UNIT-5. Feeding of livestock and poultry. Introduction of livestock and poultry diseases. Prevention (including vaccination schedule) and control of important diseases of livestock and poultry.

Practical

1. External body parts of cattle, buffalo, sheep, goat, swine and poultry.
2. Handling and restraining of livestock.
3. Identification methods of farm animals and poultry.
4. Visit to IDF and IPF to study breeds of livestock and poultry and daily routine farm Operations and farm records.
5. Judging of cattle, buffalo and poultry.
6. Culling of livestock and poultry.
7. Planning and layout of housing for different types of livestock.
8. Computation of rations for livestock.
9. Formulation of concentrate mixtures.
10. Clean milk production, milking methods.

References

1. Livestock Production Management – Dr. N.S.R. Shastry, Dr. R.A. Singh and Dr. Thomas
2. A Text Book of Animal Husbandry – Dr. G.C. Banerjee
3. Poultry Production – Dr. R.A. Singh and others
4. Animal Husbandry and Draining – Dr. Jagdish Prasad
5. Animal Husbandry – Dr. Harbansh Singh & Dr. Moor 6. Dairy India – 2007

SRI SATYA SAI UNIVERSITY OF TECHNOLOGY & MEDICAL SCIENCES, SEHORE

Subject Code-AG-305

Credit 2(1+1)
W.e.f. 2016-2017

Crop Production Technology-I (Kharif-Crops)

UNIT-1. Origin, geographical distribution, economic importance,

UNIT-2. Soil and climatic requirements, varieties, cultural practices and yield of Kharif crops. Cereals – rice, maize, sorghum, pearl millet and finger millet,

UNIT-3. Pulses-pigeon pea, mungbean and uradbean;

UNIT-4. Oilseeds- groundnut, and soybean; fibre crops- cotton & Jute;

UNIT-5. Forage crops-sorghum, cowpea, cluster bean and Napier.

Practical

1.Rice nursery preparation.
2.Transplanting of Rice, sowing of soybean, pigeon pea and mungbean. maize, groundnut and cotton.
3.Effect of seed size on germination and seedling vigour of kharif season crops, effect of sowing depth on germination of kharif crops.
4.Identification of weeds in kharif season crops, top dressing and foliar feeding of nutrients,
5.Study of yield contributing characters and yield calculation of kharif season crops, study of crop varieties and important agronomic experiments at experimental farm.
6.Study of forage experiments, morphological description of kharif season crops, visit to research centers of related crops.

References

1. Kharif crop Production (Hindi), by - Arya R.L. 2019
2. Crop Production at a Glance by - Sah, Akhilesh 2018
3. Production technology of kharif crops- Suresh Singh Tomar and Yagya Dev Mishra
4. Science of crop Production Part-1 (Kharif Crop) – Dr. G .S. Tomar, Dr S. K. Tounk, Dr. J. L. Chaudhary
5. Textbook of Field Crop- Mukund Joshi
6. Principles of Crop Production – SR Reddy, C Nagamani
7. Textbook of Field Crop Production (Commercial Crops)- Rajendra Prashad

SRI SATYA SAI UNIVERSITY OF TECHNOLOGY & MEDICAL SCIENCES, SEHORE

Subject Code-AG-306

Credit 2(1+1)
W.e.f. 2016-2017

Agricultural Informatics

UNIT-1. Introduction to Computers, Anatomy of Computers, Memory Concepts, Units of Memory, Operating System, definition and types, Applications of MS-Office for creating, Editing and Formatting a document, Data presentation, tabulation and graph creation,

UNIT-2.statistical analysis, mathematical expressions, Database, concepts and types, creating database, uses of DBMS in Agriculture, Internet and World Wide Web (WWW), Concepts and components.

UNIT-3. Computer Programming, General Concepts, Introduction to Visual Basic, Java, Fortran, C/ C++, etc, concepts and standard input/output operations. e-Agriculture, concepts, design and development.

UNIT-4. Application of innovative ways to use information and communication technologies (IT) in Agriculture. Computer Models in Agriculture: statistical, weather analysis and crop simulation models, concepts, structure, inputs-outputs files,

UNIT-5. Limitation, advantages and application of models for understanding plant processes, sensitivity, verification, calibration and validation. IT application for computation of water and nutrient requirement of crops, Computer-
controlled devices (automated systems) for Agri-input management, Smartphone mobile apps in Agriculture for farm advises, market price, postharvest management etc;

Practical

1. Study of Computer Components, accessories, practice of important DOS Commands.
2. Introduction of different operating systems such as windows, Unix/ Linux, Creating, Files & Folders, File Management.
3. Use of MS-WORD and MS Power-point for creating, editing and presenting a scientific Document.
4. MS-EXCEL - Creating a spreadsheet, use of statistical tools, writing expressions, creating Graphs, analysis of scientific data, handling macros.
5. MS-ACCESS: Creating Database, preparing queries and reports, demonstration of Agri-information system.
6. Introduction to World Wide Web (WWW) and its components. Introduction of programming languages such as Visual Basic, Java, Fortran, C, C++.
7. Hands on practice on Crop Simulation Models (CSM), DSSAT/Crop-Info/Crop-Syst/ Wofost.

References

1. Agriculture information by- Dr.Narayan jitendra
2. Agro Informatics- Mamta Rana, D. Prasad
3. Agro Informatics- G. Vanitha and M. Kalpana
4. Agriculture and Environmental informatics, governance and management- Z.Andreopoulou, Basil Monos, Nico Polman and Dvid Viaggi

SRI SATYA SAI UNIVERSITY OF TECHNOLOGY & MEDICAL SCIENCES, SEHORE

Subject Code-AG-307

Credit 3(2+1)
W.e.f. 2016-2017

Environmental Studies and Disaster Management

UNIT-1. Multidisciplinary nature of environmental studies Definition, scope and importance.

UNIT-2. Natural Resources: Renewable and non-renewable resources, Natural resources and associated problems. a) Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forest and tribal people.

UNIT-3.b) Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems. c) Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies.

UNIT-4.d) Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies. e) Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources. Case studies. f) Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification.

UNIT-5. • Role of an individual in conservation of natural resources. • Equitable use of resources for sustainable lifestyles. Ecosystems: Concept of an ecosystem, Structure and function of an ecosystem, Producers, consumers and decomposers, Energy flow in the ecosystem. Ecological succession, Food chains, food webs and ecological pyramids. Introduction, types, characteristic features, structure and function of the following ecosystem: a. Forest ecosystem b. Grassland ecosystem c. Desert ecosystem d. Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)Biodiversity and its conservation:

Practical

1. Pollution case studies. Case Studies- Field work:
2. Visit to a local area to document environmental assets river/ forest/ grassland/ hill/ mountain,
3. Visit to a local polluted site-Urban/Rural/Industrial/ Agricultural,
4. Study of common plants, insects, birds and study of simple ecosystems-pond, river, hill slopes, etc.

References

1. Introduction to Environmental and disaster management by kakul, S.S., kingra P.K.

SRI SATYA SAI UNIVERSITY OF TECHNOLOGY & MEDICAL SCIENCES, SEHORE

Subject Code-AG-308

Credit 2(1+1)
W.e.f. 2016-2017

Introductory Agro meteorology & Climate Change

UNIT-1. Earth atmosphere- its composition, extent and structure; Atmospheric weather variables; Atmospheric pressure, its variation with height;

UNIT-2. Wind, types of wind, daily and seasonal variation of wind speed, cyclone, anticyclone, land breeze and sea breeze;

UNIT-3. Nature and properties of solar radiation, solar constant, depletion of solar radiation, short wave, longwave and thermal radiation, net radiation, albedo; Atmospheric temperature, temperature inversion, lapse rate, daily and seasonal variations of temperature, vertical profile of temperature, Energy balance of earth; Atmospheric humidity, concept of saturation, vapor pressure, process of condensation, formation of dew, fog, mist, frost, cloud; Precipitation, process of precipitation, types of precipitation such as rain, snow, sleet, and hail, cloud formation and classification; Artificial

UNIT-4.rainmaking. Monsoon- mechanism and importance in Indian agriculture, Weather hazards - drought, floods, frost, tropical cyclones and extreme weather conditions such as heat-wave and cold-wave.

UNIT-5. Agriculture and weather relations; Modifications of crop microclimate, climatic normals for crop and livestock production. Weather forecasting- types of weather forecast and their uses. Climate change, climatic variability, global warming, causes of climate change and its impact on regional and national Agriculture.

Practical:

1. Visit of Agro meteorological Observatory, site selection of observatory, exposure of instruments and weather data recording.
2. Measurement of total, shortwave and longwave radiation, and its estimation using Planck's intensity law.
3. Measurement of albedo and sunshine duration, computation of Radiation Intensity using BSS.
4. Measurement of maximum and minimum air temperatures, its tabulation, trend and variation analysis.
5. Measurement of soil temperature and computation of soil heat flux.
6. Determination of vapor pressure and relative humidity.
7. Determination of dew point temperature.
8. Measurement of atmospheric pressure and analysis of atmospheric conditions.

References

1. Introductory Agro meteorology & Climate Change by Reddy SR
2. Fundamental of Agro meteorology & Climate Change by Mahi , G.S., Kingra ,P.K.

SRI SATYA SAI UNIVERSITY OF TECHNOLOGY & MEDICAL SCIENCES, SEHORE

Subject Code-AG-309 **Credit 3(2+1)**

Fundamentals of Plant Breeding **W.e.f. 2016-2017**

UNIT-1. Historical development, concept, nature and role of plant breeding, major achievements and future prospects; Genetics in relation to plant breeding, modes of reproduction and apomixes.

UNIT-2. Self – incompatibility and male sterility- genetic consequences, cultivar options. Domestication, Acclimatization, introduction; Centre of origin/diversity, component of Genetic variation.

UNIT-3. Heritability and genetic advance; Genetic basis and breeding methods in self-pollinated crops-mass and pure line selection, hybridization techniques and handling of segregating population; Multiline concept. Concepts of population genetics and Hardy-Weinberg Law, Genetic basis and methods of breeding cross pollinated crops, modes of selection.

UNIT-4. Heterosis and inbreeding depression, development of inbred lines and hybrids, composite and synthetic varieties; Breeding methods in asexually propagated crops, clonal selection and hybridization.

UNIT-5. Wide hybridization and pre-breeding; Polyploidy in relation to plant breeding, mutation breeding-methods and uses; Breeding for important biotic and abiotic stresses; Biotechnological tools-DNA markers and marker assisted selection. Participatory plant breeding; Intellectual Property Rights, Patenting, Plant Breeders and & Farmer's Rights.

Practical

1.Plant Breeder's kit, Study of germplasm of various crops.
2.Study of floral structure of self-pollinated and cross pollinated crops.
3.Emasculation and hybridization techniques in self & cross pollinated crops.
4.Consequences of inbreeding on genetic structure of resulting populations.
5.Study of male sterility system. Handing of segregation populations.
6.Methods of calculating mean, range, variance, standard deviation, heritability.
7.Designs used in plant breeding experiment, analysis of Randomized Block Design.
8.To work out the mode of pollination in a given crop and extent of natural out crossing.

References

1. Plant Breeding – B.D. Singh
2. Principles and Practices of Plant Breeding – J.R. Sharma
3. Breeding field crops – J.M. Poehlman and D.A.Sleper
4. Principles of Plant Breeding – R.C. Chouhan
3. Plant Pathology - R.S. Mehrotra
4. A text book of modern Plant Pathology - Bilgramie and Dubey
5. Essentials of Plant Pathology - V.N Pathak
6. Introductory Plant Pathology - M.N. Kamath
7. Plant Diseases - P.D. Sharma

SRI SATYA SAI UNIVERSITY OF TECHNOLOGY & MEDICAL SCIENCES, SEHORE

Subject Code-AG-310

Credit 2(1+1)
W.e.f. 2016-2017

Entrepreneurship Development and Business Communication

UNIT-1. Concept of Entrepreneur, Entrepreneurship Development, Characteristics of entrepreneurs.

UNIT-2. Assessment of entrepreneurship skills, SWOT Analysis & achievement motivation, Entrepreneurial behavior, Government policy and programs and institutions for entrepreneurship development, Entrepreneurial Development Process.

UNIT-3. Business Leadership Skills; Communication skills for entrepreneurship development, Developing organizational skill , Developing Managerial skills, Problem solving skill, Achievement motivation; time management.

UNIT-4. Supply chain management and Total quality management, Project Planning Formulation and report preparation.

UNIT-5. Opportunities for entrepreneurship and rural entrepreneurship.

Practical

1. Assessing entrepreneurial potential, problem solving ability,
2. Managerial skills and achievement motivation,
3. Exercise in creativity, time audit, preparation of business plan and proposal writing,
4. Visit to entrepreneurship development institute and entrepreneurs.

References

1. Trainer's Manual on Developing – Akhori, M.M.P, Mishra, S.P. and Entrepreneurial Motivation Sengupta, Rita (1989), NIESBUD
2. Entrepreneurial Development – Khanka, S.S., S. Chand Co. Ltd. Ramnagar, New Delhi
3. Fundamental of Entrepreneurship – Agrawal R.C., Laxmi Narayan Agrawal, Agra (U.P.)