Where talent meets opportunity

SRI SATYA SAI UNIVERSITY
OF TECHNOLOGY AND MEDICAL SCIENCES

SYLLABUS REVISION

Name of School-School of Agriculture

Department/Program- Agriculture /B.Sc

2017-18 TO 2021-22

www.sssutms.co.in

Opp.Oilfed Plant, Bhopal-Indore Road,Sehore (M.P), Pin - 466001

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Sri Satya Sai
University of Technology and Medical Sciences
(Established under Govt. of M.P. Registered under UGC 2(F) 1956)

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Name of Faculty: School of Agriculture

Name of Department: Agriculture

Minutes of Board of Studies Committee Meeting Dated on 18.12.2017

The Board of Studies Committee Meeting was held in the room of Department of Agriculture at 2:30 PM. on 18.12.2017. Following members were present.

1. Mr.L.N.Pachwariya SDO, Dept. of Agriculture, (External Member)
2. Mr.Veerbal khuswaha, (SSSUTMS, Sehore) Chairperson
3. Mr.Rajmal Ateriya (SSSUTMS, Sehore)
4. Mr. Satish patidar, (SSSUTMS, Sehore)
5. Mrs.Hemlata parmar (SSSUTMS, Sehore)

The Chairperson of Board of Studies Committee welcomes and appreciated the efforts put up by the faculty for progress of the departmental activities. The following Agenda points were discussed and resolved.

Agenda 1 Preparation of syllabus and Scheme for 2nd Semester, 4th Semester and 6th Semester.
Discussion

Bos member discuss the syllabus proposed for 2nd Semester, 4th Semester and 6th Semester in detail and recommended.....

Resolution of the Discussion:

After discussion the Bos member agreed with the proposed 2nd Semester, 4th Semester and 6th Semester Scheme and Syllabus.
Agenda 2 Any other agenda with the permission of chairman.

Discussion .....
Resolution of the Discussion:.....

The Chairman thanks the members for peaceful conduction of meeting.

Signature of All members (Including Chairperson)

1. Mr.L.N.Pachwariya
2. Mr.Veerbal khuswaha
3. Mr.Rajmal Ateriya
4. Mr. Satish patidar
5. Mrs.Hemlata parmar

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Chairperson

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Scheme of Examination

School of Agriculture

Bachelor of Science (B.Sc.) (Hons.) Agriculture

Semester-II as per Fifth Dean Committee, w.e.f. 2016-17

S.No.	SUBJECT CODE	Subject Name	Maximum Marks Allotted					Period/hour/week			Credits	Total Marks
			Theory Slot			Practical Slot						
			End Sem.	Mid Tests	Quiz, Assignment	End Sem. Practical & Viva	Practical record/quiz /Assignment	L	T	P		
1	AG 201	Fundamentals of Genetics	50	30	-	15	5	2		2	3	100
2	AG 202	Agricultural Microbiology	50	30	-	15	5	1	-	2	2	100
3	AG 203	Soil and Water Conservation Engineering	50	30	-	15	5	1	-	2	2	100
4	AG 204	Fundamentals of Crop Physiology	50	30	-	15	5	1	-	2	2	100
5	AG 205	Fundamentals of Agricultural Economics	50	40	10	-	-	2	-	-	2	100
6	AG 206	Fundamentals of Plant Pathology	50	30	-	15	5	2	1	2	4	100
7	AG 207	Fundamentals of Entomology	50	30	-	15	5	2	1	2	4	100
8	AG 208	Fundamentals of Agricultural Extension Education	50	30	-	15	5	1	1	2	3	100
9	AG 209	Communication Skills and Personality Development	50	30	-	15	5	1	-	2	2	100
			450	**280**	**10**	**120**	**40**	**13**	**3**	**16**	**24**	**900**

Note: - Minimum passing marks in each theory and practical separately is 50%

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B.Sc. (Ag.) (IST) Year

2nd Semester

w.e.f-2016-2017

Subject Code	Subject Name	Credits
AG- 201	Fundamentals of Genetics	3(2+1)
AG -202	Agricultural Microbiology	2(1+1)
AG -203	Soil and Water Conservation Engineering	2(1+1)
AG -204	Fundamentals of Crop Physiology	2(1+1)
AG -205	Fundamentals of Agricultural Economics	2(2+0)
AG -206	Fundamentals of Plant pathology	3(2+1)
AG -207	Fundamentals of Entomology	4(3+1)
AG -208	Fundamentals of Agricultural Extension Education	3(2+1)
AG -209	Communication Skills and Personality Development	2(1+1)
	Total	24

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SUBJECT CODE-AG 201 **Credit 3(2+1)**

Fundamentals of Genetics **w.e.f. - 2016-2017**

UNIT-1 Pre and Post Mendelian concepts of heredity, Mendelian principles of heredity, Cell division – mitosis, meiosis, Probability and Chi-square, Dominance relationships, gene interaction.

UNIT-2 Multiple alleles, pleiotropism and pseudoalleles, Sex determination and sex linkage, sex limited and sex influenced traits, Blood group genetics, Linkage and its estimation, crossing over mechanisms, chromosome mapping.

UNIT-3 Structural changes in chromosome, Mutation, classification, Methods of inducing mutation & CIB technique, mutagenic agents and induction of mutation.

UNIT-4 Qualitative & Quantitative traits, Polygenes and continuous variations, multiple factor hypothesis, Epistatic interactions with examples. Cytoplasmic inheritance.

UNIT-5 Genetic disorders, Nature, structure & replication of genetic material. Protein synthesis, Transcription and translational mechanism of genetic material, Gene concept: Gene structure, function and regulation, Lac and Trp operons.

Practical

1. Study of microscope. Study of cell structure.
2. Experiments on monohybrid, dihybrid, trihybrid, test cross and back cross, Experiments on epistatic interactions including test cross and back cross, Practice on mitotic and meiotic cell division.
3. Experiments on probability and Chi-square test.
4. Determination of linkage and cross over analysis (through two point test cross and three point test cross data).
5. Study on sex linked inheritance in Drosophila. Study of models on DNA and RNA structure.

References

1. Fundamentals of Genetics – B.D. Singh, Kalyani Publisher
2. Elements of Genetics – Phundan Singh, Kalyani Publisher
3. Genetics – M.W. Strickberger
4. Principles of Genetics – Snoids & Simonds (4th edition) John Willy Publication, New York
5. Manual of Practical genetics – Singh, Chouhan and Katiyar, Kalyani Publisher
6. Cytogenetical practices – Choubey and Bhardwaj, Kalyani Publisher
7. Genetic – R.K. Gupta

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SUBJECT CODE-AG 202 Credit 2(1+1)

Agricultural Microbiology w.e.f. - 2016-2017

UNIT-1 Introduction. Microbial world: Prokaryotic and eukaryotic microbes. Bacteria: cell structure, chemoautotrophy, photo autotrophy, growth.

UNIT-2 Bacterial genetics: Genetic recombination- transformation, conjugation and transduction, plasmids, transposon.

UNIT-3 Role of microbes in soil fertility and crop production: Carbon, Nitrogen, Phosphorus and sulphur cycles.

UNIT-4 Biological nitrogen fixation- symbiotic, associative and asymbiotic. Azolla, blue green algae and mycorrhiza. Rhizosphere and phyllosphere.

UNIT-5 Microbes in human welfare: silage production, biofertilizers, biopesticides, biofuel production and biodegradation of agro-waste.

Practical

1. Introduction to microbiology laboratory and its equipments; Microscope- parts, principles of microscopy, resolving power and numerical aperture.
2. Methods of sterilization. Nutritional media and their preparations. Enumeration of microbial population in soil- bacteria, fungi, actinomycetes.
3. Methods of isolation and purification of microbial cultures.
4. Isolation of *Rhizobium* from legume root nodule. Isolation of *Azotobacter* from soil. Isolation of *Azospirillum* from roots.
5. Staining and microscopic examination of microbes.

References

1. Agricultural Microbiology – Rangaswami and Bhagyaraj
2. Soil Microbiology – N.S. Subbarao
3. Agricultural Microbiology – N. Mukherjee and T. Ghosh
4. Biofertilizers – L.L. Somani, S.C. Bhandari, S.N. Saxena
5. Introduction to Soil Microbiology – M. Alexender
6. An Introduction to Microbiology – P. Tauro, K.K. Kapoor and K.S. Yadav

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SUBJECT CODE-AG 203 **Credit 2(1+1)**

Introductory Soil and Water Conservation Engineering w.e.f. - 2016-2017

UNIT-1 Introduction to Soil and Water Conservation, causes of soil erosion. Definition and agents of soil erosion.

UNIT-2 Water erosion: Forms of water erosion. Gully classification and control measures.

UNIT-3 Soil loss estimation by universal Loss Soil Equation. Soil loss measurement techniques.

UNIT-4 Principles of erosion control: Introduction to contouring, strip cropping. Contour bund. Graded bund and bench terracing. Grassed water ways and their design. Water harvesting and its techniques.

UNIT-5 Wind erosion: mechanics of wind erosion, types of soil movement. Principles of wind erosion control and its control measures.

Practical

1. General status of soil conservation in India.
2. Calculation of erosion index.
3. Estimation of soil loss.
4. Measurement of soil loss.
5. Preparation of contour maps.
6. Design of grassed water ways. Design of contour bunds. Design of graded bunds. Design of bench terracing system.
7. Problem on wind erosion.

References

1. Principles of Agricultural Engineering Vol. II – Dr. A.M. Michael and Dr. T.P. Ojha
2. Irrigation – Theory and Practice – Dr. A.M. Michael
3. Surveying and Leveling – B.C. Punamia

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SUBJECT CODE-AG 204 **Credit 2(1+1)**

Fundamentals of Crop Physiology **w.e.f. - 2016-2017**

UNIT-1 Introduction to crop physiology and its importance in Agriculture; Plant cell: an Overview; Diffusion and osmosis; Absorption of water, transpiration and Stomatal Physiology;

UNIT-2 Mineral nutrition of Plants: Functions and deficiency symptoms of nutrients, nutrient uptake mechanisms; Photosynthesis: Light and Dark reactions, C3, C4 and CAM plants.

UNIT-3 Respiration: Glycolysis, TCA cycle and electron transport chain; Fat Metabolism: Fatty acid synthesis and Breakdown.

UNIT-4 Plant growth regulators: Physiological roles and agricultural uses, Physiological aspects of growth and development of major crops.

UNIT-5 Growth analysis, Role of Physiological growth parameters in crop productivity.

Practical

1. Study of plant cells, structure and distribution of stomata.
2. Imbibitions, osmosis, plasmolysis.
3. Measurement of root pressure, rate of transpiration.
4. Separation of photosynthetic pigments through paper chromatography.
5. Rate of transpiration, photosynthesis, respiration.
6. Tissue test for mineral nutrients, estimation of relative water content.
7. Measurement of photosynthetic CO_2 assimilation by Infra Red Gas Analyser (IRGA).

References

1. Plant Physiology - R.M. Devlin and F.S. Witham (1986)
2. Text Book of Plant Physiology - C.P. Malik and A.K. Shrivastava
3. Crop Physiology - U.S. Gupta
4. Plant Physiology - Frank, B. Salisbury & Cleon W. Ross (1995)
5. Test Book of Plant Physiology - S. Mukherjee and A.K. Ghosh
6. Practical Plant Physiology - O.P. Sharma
7. Plant Physiology - C.P. Malik
8. Plant Physiology - S.C. Dutta
9. Plant Physiology - H.S. Shrivastava
10. An introduction to crop physiology - Milthorpe, F.L. and Moorley, J.

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SUBJECT CODE-AG 205 **Credit 2(2+0)**

Fundamentals of Agricultural Economics **w.e.f. - 2016-2017**

UNIT-1 Economics: Meaning, scope and subject matter, definitions, activities, approaches to economic analysis; micro and macroeconomics, positive and normative analysis. Nature of economic theory; rationality assumption, concept of equilibrium, economic laws as generalization of human behavior. Basic concepts: Goods and services, desire, want, demand, utility, cost and price, wealth, capital, income and welfare. Agricultural economics: meaning, definition, characteristics of agriculture, importance and its role in economic development. Agricultural planning and development in the country.

UNIT-2 *Demand:* meaning, law of demand, demand schedule and demand curve, determinants, utility theory: law of diminishing marginal utility, equi-marginal utility principle. Consumer's equilibrium and derivation of demand curve, concept of consumer surplus. Elasticity of demand: concept and measurement of price elasticity, income elasticity and cross elasticity. Production: process, creation of utility, factors of production, input output relationship.

UNIT-3 *Laws of returns:* Law of variable proportions and law of returns to scale. *Cost:* Cost concepts, short run and long run cost curves. Supply: Stock v/s supply, law of supply, supply schedule, supply curve, determinants of supply, elasticity of supply. Market structure: meaning and types of market, basic features of perfectly competitive and imperfect markets. Price determination under perfect competition; short run and long run equilibrium of firm and industry, shut down and break even points. Distribution theory: meaning, factor market and pricing of factors of production. Concepts of rent, wage, interest and profit.

UNIT-4 *National income:* Meaning and importance, circular flow, concepts of national income accounting and approaches to measurement, difficulties in measurement. Population: Importance, Malthusian and Optimum population theories, natural and socio-economic determinants, current policies and programmes on population control. Money: Barter system of exchange and its problems, evolution, meaning and functions of money, classification of money, money supply, general price index, inflation and deflation. Banking: Role in modern economy, types of banks, functions of commercial and central bank, credit creation policy. Agricultural and public finance: meaning, micro v/s macro finance, need for agricultural finance, public revenue and public expenditure.

UNIT-5 *Tax:* meaning, direct and indirect taxes, agricultural taxation, VAT. *Economic systems:* Concepts of economy and its functions, important features of capitalistic, socialistic and mixed economies, elements of economic planning.

References

1. Elements of Economic Theory – K.K. Dewett and J.P. Verma
2. Indian Economy – S.K. Mishra and V.K. Puri, Himalayan Publication Pvt. Ltd., New Delhi
3. Fundamentals of Agricultural Economics – K.N. Sandhu & Amarjeet Singh. Himalayan Publicarion Pvt.Ltd., New Delhi.
4. Agricultural Economics – S. Subba Reddy and P. Raghuram, Oxford and IBH Publication Co. Pvt. Ltd., New Delhi 5. An Introduction to Agricultural Economics – Dilgrami

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SUBJECT CODE-AG 206 **Credit: 3(2+1)**

Fundamentals of Plant Pathology **w.e.f. - 2016-2017**

UNIT-1 Introduction: Importance of plant diseases, scope and objectives of Plant Pathology. History of Plant Pathology with special reference to Indian work, Terms and concepts in Plant Pathology.

UNIT-2 Pathogenesis.Cause and classification of plant diseases. Important plant pathogenic organisms, different groups: fungi, bacteria, fastidious vesicular bacteria, phytoplasmas, spiroplasmas, viruses, viroids, algae, protozoa, phanerogamic parasites and nematodes with examples of diseases caused by them. Diseases and symptoms due to abiotic causes.

UNIT-3 Fungi: general characters, definition of fungus, somatic structures, types of fungal thalli, fungal tissues, modifications of thallus, reproduction (asexual and sexual). Nomenclature, Binomial system of nomenclature, rules of nomenclature, classification of fungi. Key to divisions,sub-divisions, orders and classes.

UNIT-4 Bacteria and mollicutes: general morphological characters. Basic methods of classification and reproduction. Viruses: nature, architecture, multiplication and transmission.Study of phanerogamic plant parasites. Nematodes: General morphology and reproduction, classification, symptoms and nature of damage caused by plant nematodes (Heterodera, Meloidogyne, *Anguina* etc.)

UNIT-5 Role of enzymes, toxins and growth regulators in disease development, Defence mechanism in plants. Epidemiology: Factors affecting disease development. Principles and methods of plant disease management.Nature, chemical combination, classification, mode of action and formulations of fungicides and antibiotics.

Practical

1. Acquainance with various laboratory equipments and microscopy.
2. Preparation of media, isolation and Koch's postulates.
3. General study of different structures of fungi. Study of symptoms of various plant diseases.
4. Study of representative fungal genera. Staining and identification of plant pathogenic bacteria. Transmission of plant viruses.
5. Study of phanerogamic plant parasites.
6. Study of morphological features and identification of plant parasitic nematodes. Extraction of nematodes from soil and plant material.
7. Study of fungicides and their formulations. Methods of pesticide application and their safe use. Calculation of fungicide sprays concentrations.

References

1. Introduction to Principles of Plant Pathology - R.S. Singh
2. Plant Pathology - E.N. Agrios
3. Plant Pathology - R.S. Mehrotra
4. A text book of modern Plant Pathology - Bilgramic and Dubey
5. Essentials of Plant Pathology - V.N Pathak

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SUBJECT CODE-AG 207 **Credit 4(3+1)**
Fundamentals of Entomology **w.e.f. - 2016-2017**

UNIT-1 History of Entomology in India. Factors for insect's abundance. Major points related to dominance of Insecta in Animal kingdom. Classification of phylum Arthropoda upto classes. Relationship of class Insecta with other classes of Arthropoda. Morphology: Structure and functions of insect cuticle and molting. Body segmentation. Structure of Head, thorax and abdomen. Structure and modifications of insect antennae, mouth parts, legs, Wing venation, modifications and wing coupling apparatus. Structure of male and female genital organ. Metamorphosis and diapause in insects. Types of larvae and pupae. Structure and functions of digestive, circulatory, excretory, respiratory, nervous, secretary (Endocrine) and reproductive system, in insects. Types of reproduction in insects. Major sensory organs like simple and compound eyes, chemoreceptor.

UNIT-2 Insect Ecology: Introduction, Environment and its components. Effect of abiotic factors– temperature, moisture, humidity, rainfall, light, atmospheric pressure and air currents. Effect of biotic factors – food competition, natural and environmental resistance. Concepts of Balance of life in nature, biotic potential and environmental resistance and causes for outbreak of pests in agro-ecosystem.

UNIT-3 Pest surveillance and pest forecasting. Categories of pests. Host plant resistance, Cultural, Mechanical, Physical. Legislative. Biological (parasites, predators & transgenic plant pathogens such as bacteria, fungi and viruses) methods of control. Chemical control-importance, hazards and limitations. Classification of insecticides, toxicity of insecticides and formulations of insecticides. Recent methods of pest control, repellents, antifeedants, hormones, antracnans, gamma radiation and genetic control. Practices, scope and limitations of IPM. Insecticides Act 1968-Important provisions. Application techniques of spray fluids. Phytotoxicity of insecticides. Symptoms of poisoning, first aid and antidotes.

UNIT-4 Beneficial insects: parasites and predators used in pest control and their mass multiplication techniques. Important groups of microorganisms, bacteria, viruses and fungi used in pest control and their mass multiplication techniques. Important species of pollinators, weed killers and scavengers, their importance.

UNIT-5 Systematics: Taxonomy –importance, history and development and binomial nomenclature. Definitions of Biotype, Sub-species, Species, Genus, Family and Order. Classification of class Insecta upto Orders, basic groups of present day insects with special emphasis to orders and families of Agricultural importance like Orthoptera: Acrididae, Tettigonidae, Gryllidae, Gryllotalpidae; Dictyoptera: Mantidae, Blattidae; Odonata; Isoptera: Termitidae; Thysanoptera: Thripidae; Hemiptera: Pentatomidae, Coreidae, Cimicidae, Pyrrhocoridae, Lygaeidae, Cicadellidae, Delphacidae, Aphididae, Coccidae, Lophophidae, Aleurodidae, Pseudococcidae; Neuroptera: Chrysopidae; Lepidoptera: Pieridae, Papilionidae, Noctuidae, Sphingidae, Pyralidae, Gelechiidae, Arctiidae, Saturnidae, Bombycidae; Coleoptera:

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Coccinellidae, Chrysomelidae, Cerambycidae, Curculionidae, Bruchidae, Scarabaeidae; Hymenoptera: Tenthridinidae, Apidae. Trichogrammatidae, Ichneumonidae, Braconidae, Chalcididae; Diptera: Cecidomyiidae, Tachinidae, Agromyziidae, Culicidae,Muscidae, Tephritidae.

Practical

1. Methods of collection and preservation of insects including immature stages.
2. External features of Grasshopper/Blister beetle.
3. Types of insect antennae, mouthparts and legs; Wing venation, types of wings and wing coupling apparatus.
4. Types of insect larvae and pupae.
5. Dissection of digestive system in insects (Grasshopper); Dissection of male and female reproductive systems in insects (Grasshopper).
6. Study of characters of orders Orthoptera, Dictyoptera, Odonata, Isoptera, Thysanoptera, Hemiptera, Lepidoptera, Neuroptera, Coleoptera, Hymenoptera, Diptera and their families of agricultural importance.

References

1. कृषि कीट विज्ञान – Sharma, J.P.
2. कृषि कीट विज्ञान – Mathur and Upadhyaya
3. An introduction to Entomology (1997) Publishing Company, New Delhi 110059 – Shrivastava, P.D. and Singh, R.P., Concept
4. Text Book of Entomology – Pruthi, H.S.
5. Agricultural Entomology for Indian – Khanna, S.S. Students

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SUBJECT CODE-AG 208 **Credit 3(2+1)**

Fundamentals of Agricultural Extension Education w.e.f. - 2016-2017

UNIT-1 Education: Meaning, definition & Types: Extension Education- meaning, definition, scope and process; objectives and principles of Extension Education; Extension Programme planning- Meaning, Process, Principles and Steps in Programme Development. Extension systems in India: extension efforts in pre-independence era (Sriniketan, Marthandam, Firka Development Scheme, Gurgaon Experiment, etc.) and post-independence era (Etawah Pilot Project, Nilokheri Experiment, etc.);

UNIT-2 Various extension/ agriculture development programmes launched by ICAR/ Govt. of India (IADP, IAAP, HYVP, KVK, IVLP, ORP, ND,NATP, NAIP, etc.). New trends in agriculture extension: privatization extension, cyber extension/ e-extension, market-led extension, farmer-led extension, expert systems, etc.

UNIT-3 Rural Development: concept, meaning, definition; various rural development programmes launched by Govt. of India. Community Dev.-meaning, definition, concept & principles, Physiology of C.D. Rural Leadership: concept and definition, types of leaders in rural context;

UNIT-4 Extension administration: meaning and concept, principles and functions. Monitoring and evaluation: concept and definition, monitoring and evaluation of extension programmes; transfer of technology: concept and models, capacity building of extension personnel;

UNIT-5 Extension teaching methods: meaning, classification, individual, group and mass contact methods, media mix strategies; communication: meaning and definition; models and barriers to communication, Agriculture journalism; diffusion and adoption of innovation: concept and meaning, process and stages of adoption, adopter categories.

Practical

1. To get acquainted with university extension system.

2. Group discussion- exercise; handling and use of audio visual equipment's and digital camera and LCD projector;

3. Preparation and use of AV aids.

4. Preparation of extension literature – leaflet, booklet, folder, pamphlet news stories and success stories;

5. Presentation skills exercise; micro teaching exercise;

6. A visit to village to understand the problems being encountered by the villagers/ farmers;

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7. To study organization and functioning of DRDA and other development departments at district level;

8. Visit to NGO and learning from their experience in rural development;

9. Understanding PRA techniques and their application in village development planning; exposure to mass media;

10. Visit to community radio and television studio for understanding the process of programme production; script writing, writing for print and electronic media, developing script for radio and television.

References

1. Extension Education in Community – Directorate of Extension, Development Ministry of Agriculture, Govt. of India
2. Education and Communication for Development – Dhama, O.P. and Bhatnagar, O.P., Oxford and IBH Publicity Co. New Delhi
3. An Introductory of Agricultural Extension - Mosher, A.T.
4. Extension Communication and Management - Ray G.L., Naya Prakashan 206 Bidhan Sarani, Calcutta-6
5. Rural Development, Principles, Policies and Management – Singh, Katar, Sage Publications, New Delhi
6. Dimensions of Agriculture Extension – Singh, A.K. and K. Roy Burman, Aman Publication, Meerut
7. Text Book of Extension Education – Singh, Ranjeet, Oxford & IBH
8. Extension Education – Reddy, A.V.V., Laxmi Press, Baptala (AP)
9. An Introductory to Extension Education – Supe, S.V., Oxford & IBC Published Co. New Delhi

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SUBJECT CODE-AG 209 **Credit 2(1+1)**

Communication Skills and Personality Development
w.e.f. - 2016-2017

UNIT-1. Communication Skills: Structural and functional grammar; meaning and process of communication, verbal and nonverbal communication;

UNIT-2. listening and note taking, writing skills, oral presentation skills; field diary and lab record; indexing, footnote and bibliographic procedures.

UNIT-3. Reading and comprehension of general and technical articles, precise writing.

UNIT-4. Summarizing, abstracting; individual and group presentations, impromptu presentation.

UNIT-5. Public speaking; Group discussion. Organizing seminars and conferences.

Practical

1. Listening and note taking, writing skills, oral presentation skills;
2. field diary and lab record; indexing.
3. Footnote and bibliographic procedures.
4. Reading and comprehension of general and technical articles.
5. Precise writing, summarizing, abstracting;
6. Individual and group presentations.

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Scheme of Examination

School of Agriculture

Bachelor of Science (B.Sc.) (Hons.) Agriculture

Semester-IV as per Fifth Dean Committee, w.e.f. 2016-17

S.No.	SUBJECT CODE	Subject Name	Maximum Marks Allotted					Period/hour/week			Credits	Total Marks
			Theory Slot			Practical Slot						
			End Sem.	Mid Tests	Quiz, Assignment	End Sem. Practical & Viva	Practical record/quiz/Assignment	L	T	P		
1	AG 401	Crop production Technology-II (Rabi crops)	50	30	-	15	5	1	-	2	2	100
2	AG 402	Production technology of for Ornamental crops, MAP and Landscaping	50	30	-	15	5	1	-	2	2	100
3	AG 403	Renewable Energy and Green Technology	50	30	-	15	5	1	-	2	2	100
4	AG 404	Problematic Soils & Their management	50	40	10	-	-	2	-	-	2	100
5	AG 405	Production technology for fruit and Plantation Crops	50	30	-	15	5	1	-	2	2	100
6	AG 406	Principles of Seed Technology	50	30	-	15	5	1	-	4	3	100
7	AG 407	Farming system & Sustainable Agriculture	50	40	10	-	-	1	-	-	1	100
8	AG 408	Statistical Methods	50	30	-	15	5	1	-	2	2	100
9	AG 409	Agriculture Marketing Trade & Price.	50	30	-	15	5	2	-	2	3	100
10	AG 410(A)	Protected Cultivation	50	30	-	15	5	1	1	2	3	100
	AG 410(B)	Biopesticide and Biofertilizers										
	AG 410(C)	Agrochemicals										
			500	**320**	**20**	**120**	**40**	**12**	**1**	**18**	**22**	**1000**

Note: - Minimum passing marks in each theory and practical separately is 50%

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

4th Semester w.e.f-2016-2017

Subject Code	Subject Name		Credits
AG- 401	Crop Production Technology –II *(Rabi Crops)*		2(1+1)
AG –402	Production Technology for Ornamental Crops, MAP and Landscaping		2(1+1)
AG -403	Renewable Energy and Green Technology		2(1+1)
AG-404	Problematics Soil & Their Management		2(2+0)
AG -405	Production Technology for Fruit and Plantation Crops		2(1+1)
AG -406	Principles of Seed Technology		3(1+2)
AG -407	Farming System & Sustainable Agriculture		1(1+0)
AG -408	Statistics Methods		2(1+1)
AG -409	Agricultural Marketing Trade & Prices		3(2+1)
AG-410(A) AG-410(B) AG-410(C)	Elective Course	Protected Cultivation Bio pesticide and Bio fertilizers Agrochemicals	3(2+1)
Total			**22**

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SUBJECT CODE-AG 401 **Credit 2(1+1)**

W.e.f.-2016-2017

Crop Production Technology-II (Rabi crops)

UNIT-1. Origin, geographical distribution, economic importance, soil and climatic requirements.

UNIT-2. Varieties, cultural practices and yield of *Rabi* crops: cereals –wheat and barley, pulses- Chickpea, lentil, peas.

UNIT-3. Oilseeds-rapeseed, mustard and sunflower;

UNIT-4. Sugar crops-sugarcane; other crops-potato,

UNIT-5. Forage crops-berseem, lucerne and oat.

Practical

1. Sowing methods of wheat and sugarcane.
2. Identification of weeds in rabi season crops.
3. Study of morphological characteristics of rabi crops.
4. Study of yield contributing characters of rabi season crops.
5. Yield and juice quality analysis of sugarcane.
6. Study of important agronomic experiments of *rabi* crops at experimental farms.
7. Study of *rabi* forage experiments, oil extraction of medicinal crops.
8. Visit to research stations of related crops.

References

1. Rabi Crop Production technology (Hindi)- R.L. Arya.
2. Crop Production at a Glance- Sha Akhilesh
3. Production technology of Rabi Crops – Suresh Singh Tomar, Yagya dev Mishra & Shailendra Singh

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SUBJECT CODE-AG 402 **Credit 2(1+1)**

W.e.f.-2016-2017

Production Technology for Ornamental Crops, MAPs and Landscaping

UNIT-1. Importance and scope of ornamental crops, medicinal and aromatic plants and landscaping.

UNIT-2. Principles of landscaping. Landscape uses of trees, shrubs and climbers.

UNIT-3. Production technology of important cut flowers like rose, gerbera, carnation, and orchids under protected conditions and gladiolus, tuberose, chrysanthemum under open conditions.

UNIT-4. Package of practices for loose flowers like marigold and jasmine under open conditions. Production technology of important medicinal plants like asparagus, aloe, costus, Cinnamomum, periwinkle, isabgol and aromatic plants like mint, lemongrass, citronella, , ocimum, rose, geranium,vetiver.

UNIT-5. Processing and value addition in ornamental crops and MAPs produce.

Practical

1.Identification of Ornamental plants.
2.Identification of Medicinal and Aromatic Plants.
3.Nursery bed preparation and seed sowing.
4.Training and pruning of Ornamental plants.
5.Planning and layout of garden.
6.Bed preparation and planting of MAP.
7.Protected structures – care and maintenance.
8.Intercultural operations in flowers and MAP.
9.Harvesting and post harvest handling of cut and loose flowers.
10.Processing of MAP. Visit to commercial flower/MAP unit.

References

1 Textbook of Production Technology for Ornamental Crops MAPs and Landscaping- Lal
2. Principal of Landscaping Gardening- Dr Hemla Nail & S.Y. Chandrashekhar & Laxmi

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SUBJECT CODE-AG 403 Credit 2(1+1)

W.e.f.-2016-2017

Renewable Energy and Green Technology

UNIT-1. Classification of with biomass utilization for biofuel production and their application, Familiarization with types of biogas plants and gasifies,

UNIT-2. Biogas, bio alcohol, biodiesel and biooil production and their energy sources, contribution of these of sources in agricultural sector, Familiarization utilization as bioenergy resource,

UNIT-3. Introduction of solar energy, collection and their application, Familiarization with solar energy gadgets: solar cooker, solar water heater,

UNIT-4. Application of solar energy: solar drying, solar pond, solar distillation, solar photovoltaic system and their application.

UNIT-5. Introduction of wind energy and their application.

Practical

1.Familiarization with renewable energy gadgets.
2.To study biogas plants.
3.To study gasifier, To study the production process of biodiesel,
4.To study briquetting machine,
5.To study the production process of bio-fuels. Familiarization with different solar energy gadgets.
6.To study solar photovoltaic system: solar light, solar pumping, solar fencing.
7.To study solar cooker, To study solar drying system.
8.To study solar distillation and solar pond.

References

1. Renewable Energy – Er. Kumar Sanjay.
2. Renewable Energy Sources and Methods- Anne Maczulak
3. Textbook of Renewable Energy & Green Technology-S.K & Laxmi lal Danhich.

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SUBJECT CODE-AG 404 **Credit 2(2+0)**

Problematic soil & their management **w.e.f.-2016-2017**

1. Soil quality and health, Distribution of Waste land and problem soils in India. Their categorization based on properties.
2. Reclamation and management of Saline and sodic soils, Acid soils, Acid Sulphate soils, Eroded and Compacted soils, Flooded soils, Polluted soils.
3. Irrigation water – quality and standards, utilization of saline water in agriculture.
4. Remote sensing and GIS in diagnosis and management of problem soils.
5. Multipurpose tree species, bio remediation through MPTs of soils, land capability and classification, land suitability classification, Problematic soils under different Agro-ecosystems

References

1. The Nature and Properties of Soil – Brady, N.C. & Weil, R.R., Macmill
2. Fundamentals of Soil Science – ICAR Publication, New Delhi
3. Text Book of Soil Physics – A.K. Saha, Kalyani Publication, New Delhi
4. Introductory of Soil Science – Dr. Dilip kumar das
5. Soil Science Fertilizers and Manures – Dr vinay singh.

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SUBJECT CODE-AG 405 **Credit 2(1+1)**

W.e.f.-2016-2017

Production Technology for Fruit and Plantation Crops

UNIT-1. Importance and scope of fruit and plantation crop industry in India;

UNIT-2. High density planting; Use of rootstocks;

UNIT-3. Production technologies for the cultivation of major fruits-mango, banana, citrus, grape, guava, litchi, papaya, apple,

UNIT-4. Pear, peach and; minor fruits- pineapple, pomegranate, jackfruit, strawberry, nut crops;

UNIT-5. Plantation crops-coconut, arecanut, cashew, tea, coffee & rubber.

Practical

1. Seed propagation, Scarification and stratification of seeds.
2. Propagation methods for fruit and plantation crops including Micro-propagation.
3. Description and identification of fruit.
4. Preparation of plant bio regulators and their uses, Pests, diseases and physiological disorders of above fruit and plantation crops.
5. Visit to commercial orchard.

References

1. Production technology of Fruit and Plantation Crops - G.S Sani.
2. Production technology of Fruit and Plantation Crops-M. Kavina, V. Jegadeeswari, R.M. Vijay Kumar & S.Balakrishnan
3. Production Technology of Fruit Crops- P.Singh

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SUBJECT CODE-AG 406 **Credit 3(1+2)**

W.e.f.-2016-2017

Principles of Seed Technology

UNIT-1. Seed and seed technology: introduction, definition and importance. Deterioration causes of crop varieties and their control; Maintenance of genetic purity during seed production, seed quality; Definition, Characters of good quality seed, different classes of seed.

UNIT-2. Foundation and certified seed production of important cereals, pulses, oilseeds, fodder and vegetables. Seed certification, phases of certification, procedure for seed certification, field inspection. Seed Act and Seed Act enforcement.

UNIT-3. Duty and powers of seed inspector, offences and penalties. Seeds Control Order 1983, Varietal Identification through Grow Out Test and Electrophoresis,Molecular and Biochemical test.

UNIT-4. Detection of genetically modified crops, Transgene contamination in non-GM crops, GM crops and organic seed production.Seed drying, processing and their steps, seed testing for quality assessment, seed treatment, its importance, method of application and seed packing. Seed storage; general principles, stages and factors affecting seed longevity during storage. Measures for pest and disease control during storage.

UNIT-5. Seed marketing: structure and organization, sales generation activities, promotional media. Factors affecting seed marketing. Role of WTO and OECD in seed marketing.

Practical

1. Seed production in major cereals: Wheat, Rice, Maize, Sorghum and Bajra.
2. Seed production in major pulses: Urd, Mung, Pigeonpea, Lentil, Gram, Fieldpea.
3. Seed production in major oilseeds: Soybean, Rapeseed and Mustard.
4. Seed production in vegetable crops.
5. Seed sampling and testing:
6. Physical purity, germination, viability, etc. Seed and seedling vigour test.
7. Genetic purity test: Grow out test and electrophoresis.
8. Seed certification: Procedure, Field inspection,
9. Preparation of field inspection report.
10. Visit to seed production farms, seed testing laboratories and seed processing plant.

References

1. Principles of Seed technology – P.K. Upadhyay.
2. Seed Technology (Hindi)-Mukesh Kumar
3. Principles of Seed Technology- Tomar

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SUBJECT CODE-AG 407 **Credit 1(1+0)**

W.e.f.-2016-2017

Farming System and Sustainable Agriculture

UNIT-1. Farming System-scope, importance, and concept. Types and systems of farming system and factors affecting types of farming. Farming system components and their maintenance,

UNIT-2. Cropping system and pattern, multiple cropping system, Efficient cropping system and their evaluation. Allied enterprises and their importance, Tools for determining production and efficiencies in cropping and farming system;

UNIT-3. Sustainable agriculture-problems and its impact on agriculture, indicators of sustainability, adaptation and mitigation.

UNIT-4.conservation agriculture strategies in agriculture, HEIA, and LEISA and its techniques for sustainability.

UNIT-5. Integrated farming system-historical background. objectives and characteristics, components of IFS and its advantages, Site specific development of IFS model for different agro-climatic zones, , Visit of IFS model in different agro-climatic zones of nearby states University/ institutes and farmers field.

References

1. Farming System and Sustainable Agriculture - S.R. Reddy
2. A Text Book of Farming System and Sustainable Agriculture-Aniket Kalhapure, Madhukar dhonde & Balasaheb Sheve.

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SUBJECT CODE-AG 408 Credit 2(1+1)

W.e.f.-2016-2017

Statistical Methods

UNIT-1. Introduction to Statistics and its Applications in Agriculture, Graphical Representation of Data, Measures of Central Tendency & Dispersion, Definition of Probability, Addition and Multiplication Theorem (without proof).

UNIT-2. Simple Problems Based on Probability, Binomial & Poisson Distributions, Definition of Correlation, Scatter Diagram, Karl Pearson's Coefficient of Correlation, Linear Regression Equations.

UNIT-3. Introduction to Test of Significance, One sample & two sample test t for Means, Chi-Square Test of Independence of Attributes in 2 ×2 Contingency Table.

UNIT-4. Introduction to Analysis of Variance, Analysis of One Way Classification.

UNIT-5. Introduction to Sampling Methods, Sampling versus Complete Enumeration, Simple Random Sampling with and without replacement, Use of Random Number Tables for selection of Simple Random Sample.

Practical

1. Graphical Representation of Data, Measures of Central Tendency (Ungrouped data) with Calculation of Quartiles, Deciles & Percentiles.
2. Measures of Central Tendency (Grouped data) with Calculation of Quartiles, Deciles & Percentiles.
3. Measures of Dispersion (Ungrouped Data), Measures of Dispersion (Grouped Data), Moments.
4. Measures of Skewness & Kurtosis (Ungrouped Data), Moments, Measures of Skewness & Kurtosis (Grouped Data), Correlation & Regression Analysis.
5. Application of One Sample t-test, Application of Two Sample Fisher's t-test, Chi-Square test of Goodness of Fit, Chi-Square test of Independence of Attributes for 2 ×2 contingency table.
6. Analysis of Variance One Way Classification.
7. Analysis of Variance Two Way Classification, Selection of random sample using Simple Random Sampling.

References

1. Fundamentals of Mathematical Statistics – S.C. Gupta and V.K. Kapoor
2. Basic Statistics – B.L. Agrawal
3. Design and Analysis of Experiments for – B.L. Mishra Agriculture workers
4. Theory of Sample Surveys and Statistical – K.S. Kushwaha and Decisions Rajesh Kumar

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SUBJECT CODE-AG 409 Credit 3(2+1)

W.e.f.-2016-2017

Agricultural Marketing, Trade and Prices

UNIT-1.Agricultural Marketing: Concepts and definitions of market, marketing, agricultural marketing, market structure, marketing mix and market segmentation, classification and characteristics of agricultural markets; demand, supply and producer's surplus of agri-commodities: nature and determinants of demand and supply of farm products, producer's surplus – meaning and its types, marketable and marketed surplus, factors affecting marketable surplus of agri-commodities; product life cycle (PLC) and competitive strategies: Meaning and stages in PLC; characteristics of PLC;

UNIT-2.Market promotion – advertising, personal selling, sales promotion and publicity – their meaning and merits & demerits; marketing process and functions: Marketing process-concentration, dispersion and equalization; exchange functions – buying and selling; physical functions – storage, transport and processing; facilitating functions – packaging, branding, grading, quality control and labeling (Agmark);Market functionaries and marketing channels;

UNIT-3.Types and importance of agencies involved in agricultural marketing; meaning and definition of marketing channel; number of channel levels; marketing channels for different farm products;, costs and price spread: Meaning, definition and types of market integration; marketing efficiency; marketing costs, margins and price spread; factors affecting cost of marketing; reasons for higher marketing costs of farm commodities; ways of reducing marketing costs;

UNIT-4.Role of Govt. in agricultural marketing: Public sector institutions- CWC, SWC, FCI & DMI – their objectives and functions; cooperative marketing in India; Risk in marketing: Types of risk in marketing; Agricultural prices and policy: Meaning and functions of price; administered prices; need for agricultural price policy; Trade: Concept of International Trade and its need, theories of absolute and comparative advantage.

UNIT-5.Present status and prospects of international trade in agri-commodities; GATT and WTO; Agreement on Agriculture (AoA) and its implications on Indian agriculture; IPR.

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Practical

1. Plotting and study of demand and supply curves and calculation of elasticities.
2. Study of relationship between market arrivals and prices of some selected commodities; Computation of marketable and marketed surplus of important commodities;
3. Study of price behaviour over time for some selected commodities.
4. Construction of index numbers.
5. Visit to a local market to study various marketing functions performed by different agencies.
6. Identification of marketing channels for selected commodity.
7. Collection of data regarding marketing costs, margins and price spread and presentation of report in the class;
8. Visit to market institutions – NAFED, SWC, CWC, cooperative marketing society, etc. to study their organization and functioning.

References

1. Agricultural Marketing in India – S.S. Acharya and N.L. Agrawal, Oxford and IBH Publication Co. Pvt. Ltd., New Delhi
2. An introduction to Marketing – Amarchand, D. and B. Vardhrajan, Vikash Publication House Pvt. Ltd., New Delhi
3. Export Marketing – Balagopal
4. Agricultural Marketing and - L.K. Wader and C. Murty, ICAR.

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Elective Course

SUBJECT CODE-AG 410(A) **Credit 3(2+1)**
W.e.f.-2016-2017

Protected Cultivation

UNIT-1.Protected cultivation-importance and scope, status of protected cultivation in India and world

UNIT-2. Types of protected structure based on site and climate. Cladding material involved in greenhouse/poly house.

UNIT-3. Green house design, environment control, artificial lights, automation. Soil preparation and management, substrate management. Types of benches and containers. Irrigation and fertigation management.

UNIT-4. Propogation and production of quality planting material of horticulture crops. Green house cultivation of important horticulture crops- rose, carnation, crysenthemum,gerbera, orchid, antherium, lilum, tulip, tomato, bell pepper, cucumber, strawberry, pot plants etc.

UNIT-5. Cultivation of economically important medicinal and aromatics plants. off season production of flowers and vegetables. Insects and pest and disease management.

Practical.

1. Raising of seedling and sapling under protected conditions.
2. Use of protrayes in quality planting material production.
3. Bed preparation and planting of crops for production interculture operation.
4. Soil EC and PH measurement regulation of irrigation and fertilizers through drip, fogging and Misting.

References

1. Green house management for – S. Prasad/U. Kumar, Agrobio (India) Horticultural Crops
2. Unit operations of Agricultural – K.M. Sahay and K.K. Singh, Vikas Processing Publishing House, Pvt. Ltd.
3. Post Harvest Technology of Cereals, Pulses and Oilseeds – Dr. A. Chakraverty, Oxford & IBH Publishing Co. Pvt. Ltd.

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Elective Course

SUBJECT CODE-AG 410(B) **Credit 3(2+1)**
W.e.f.-2016-2017

Biopesticide and Biofertilizers

UNIT-1. History and concept of biopesticide, Importance, scope and potential of biopesticide , Definition, concept and classification of biopesticide viz. pathogen, botanical-pesticide, and biorationales, Botanicals and their uses, Mass production technology of bio-pesticide. Virulence, pathogenicity and symptoms of entomopathogenic pathogens and nematodes,

UNIT-2. Methods of application of biopesticides. Methods of quality control and Techniques of use of biopesticides. Impediments and limitation of in production and use of biopesticides.

UNIT-3. Biofertilizers - Introduction, status and scope. Structure and characteristic features of bacterial biofertilizers- *Azospirillum, Azotobacter, Bacillus, Pseudomonas, Rhizobium* and *Frankia*;

UNIT-4. Cynobacterial biofertilizers- *Anabaena, Nostoc*, Hapalosiphon and fungal biofertilizers- AM mycorrhiza and ectomycorhiza. Nitrogen fixation -Free living and symbiotic nitrogen fixation

UNIT-5. Mechanism of phosphate solubilization and phosphate mobilization, K solubilization. Productiontechnology: Strain selection, sterilization, growth and fermentation, mass production of carrierbased and liquid biofertiizers. FCO specifications and quality control of biofertilizers. Application technology for seeds, seedlings, tubers, sets etc. Biofertilizers -Storage. abelf life. quality control and marketing. Factors influencing the efficacy of biofertilizers.

Practical.

1. Isolation and purification of important biopesticides: *Trichoderma Pseudomonas, Bacillus, Metarhyzium* etc. and its production.
2. Identification of important botanicals. Visit to biopesticide laboratory in nearby area.
3. Field visit to explore naturally infected cadavers. Identification of entomopathogenic entities in field condition.
4. Quality control of biopesticides. . Isolation and purification of *Azospirillum , Azotobacter, Rhizobium*, P-solubilizers and cyanobacteria.
5. Mass multiplication and inoculums production of biofertilizers. Isolation of AM fungi -Wet sieving method and sucrose gradient method. Mass production of AM inoculants.

References

1. Biopesticide and Biofertilizers- H.C. Lakshman
2. Biofertilizers Technology- Singh and Purohit
3. Biofertilizers Technology- S.Kannaiyah

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Elective Course

SUBJECT CODE-AG 410(C) **Credit 3(2+1)**
Agrochemicals **w.e.f.-2016-2017**

UNIT-1. An introduction to agrochemicals, their type and role in agriculture, effect on environment, soil, human and animal health, merits and demerits of their uses in agriculture, management of agrochemicals for sustainable agriculture.

UNIT-2. Herbicides-Major classes, properties and important herbicides. Fate of herbicides. Fungicides - Classification – Inorganic fungicides - characteristics, preparation and use of sulfur and copper, Mode of action-Bordeaux mixture and copper oxychloride. Organic fngicides-Mode of action- Dithiocarbamates-characterisitics, preparation and use of Zineb and maneb.

UNIT-3. Systemic fungicides- Benomyl, carboxin, oxycarboxin, Metalaxyl, Carbendazim, characteristics and use. Introduction and classification of insecticides: inorganic and organic insecticides Organochlorine, Organophosphates, Carbamates, Synthetic pyrethroids Neonicotinoids, Biorationals, Insecticide Act and rules, Insecticides banned, withdrawn and restricted use, Fate of insecticides in soil & plant. IGRs Biopesticides, Reduced risk insecticides, Botanicals, plant and animal systemic insecticides their characteristics and uses.

UNIT-4. Fertilizers and their importance. Nitrogenous fertilizers: Feedstocks and Manufacturing of ammonium sulphate, ammonium nitrate, ammonium chloride, urea. Slow release N-fertilizers. Phosphatic fertilizers: feedstock and manufacturing of single superphosphate. Preparation of bone meal and basic slag. Potassic fertilizers: Natural sources of potash, manufacturing of potassiumchloride, potassium sulphate and potassium nitrate.

UNIT-5. Mixed and complex fertilizers: Sources and compatibility-preparation of major, secondary and micronutrient mixtures. Complex fertilizers: Manufacturing of ammonium phosphates,
nitrophosphates and NPK complexes. Fertilizer control order. Fertilizer logistics and marketing. Plant bio-pesticides for ecological agriculture, Bio-insect repellent.

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Practical.

1. Sampling of fertilizers and pesticides. Pesticides application technology to study about Various pesticides appliances. Quick tests for identification of common fertilizers. identification of anionand cation in fertilizer.
2. Calculation of doses of insecticides to be used. To study and identify various formulations of insecticide available kin market.
3. Estimation of nitrogen in Urea. Estimation of water soluble P2O5 and citrate soluble P2O5 in single super phosphate. Estimation of potassium in Muraite of Potash/ Sulphate of Potash by flame photometer.
4. Determination of copper content in copper oxychloride. Determination of sulphur content in sulphur fungicide. Determination of thiram. Determination of ziram content.

References

1. Handbook of Pesticides and Agricultural Chemicals- Richard P Pohanish
2. Agrochemicals Preparation and Mode of action – R.J. Cremlyn

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Scheme of Examination

School of Agriculture

Bachelor of Science (B.Sc.) (Hons.) Agriculture

Semester-VI as per Fifth Dean Committee, w.e.f. 2016-17

S.No.	SUBJECT CODE	Subject Name	Maximum Marks Allotted					Period/hour/week			Credits	Total Marks
			Theory Slot			Practical Slot						
			End Sem.	Mid Tests	Quiz, Assignment	End Sem. Practical & Viva	Practical record/quiz/Assignment	L	T	P		
1	AG 601	Rain fed Agriculture & Watershed Management	50	30	-	15	5	1	-	2	2	100
2	AG 602	Protected cultivation & Secondary Agriculture	50	30	-	15	5	1	-	2	2	100
3	AG 603	Disease of Field & Horticulture Crops and their Management-II	50	30	-	15	5	2	-	2	3	100
4	AG 604	Management of Beneficial Insects	50	30	-	15	5	1	-	2	2	100
5	AG 605	Crop Improvement-II(Rabi Crops)	50	30	-	15	5	1	-	2	2	100
6	AG 606	Principles of Organic Farming	50	30	-	15	5	1	-	2	2	100
7	AG 607	Farm Management ,Production & Resource Economics	50	30	-	15	5	1	-	2	2	100
8	AG 608	Principles of Food Science and Nutrition	50	40	10	-	-	2	-	-	2	100
9	AG 609	PHM & Value Addition of Fruit & Vegetables	50	30	-	15	5	1	-	2	2	100
10	AG-620	Practical Crop Production-II (Rabi)	-	-	-	80	20	-	-	4	2	100
11	AG 611(A)	Weed Management	50	30	-	15	5	2	-	2	3	100
	AG 611(B)	Hi-tech Horticulture										
	AG 611(C)	Landscaping										
			500	310	**10**	**215**	**65**	**13**	-	**22**	**24**	1100

Note: - Minimum passing marks in each theory and practical separately is 50%

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B.Sc. (Ag.) (3rd) Year

(6th) Semester w.e.f.-2016-2017

Subject Code	Subject Name		Credits
AG- 601	Rain fed Agriculture & Watershed Management		2(1+1)
AG -602	Protected Cultivation and Secondary Agriculture		2(1+1)
AG -603	Diseases of Field and Horticultural Crops and their Management-II		3(2+1)
AG -604	Management of Beneficial Insects		2(1+1)
AG -605	Crop Improvement-II *(Rabi crops)*		2(1+1)
AG -606	Principles of Organic Farming		2(1+1)
AG -607	Farm Management, Production & Resource Economics		2(1+1)
AG -608	Principles of Food Science and Nutrition		2(2+0)
AG -609	PHM & Value Addition Of Fruit & Vegetable.		2(1+1)
AG -610	Practical Crop Production –II (*Rabi* crops)		2(0+2)
AG-611(A)	Elective Course	Weed management	3(2+1)
AG-611(B)		Hi-tech Horticulture	
AG-611(C)		Landscaping	
Total			24

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SUBJECT CODE-AG 601 Credit 2(1+1)

w.e.f. 2016-2017

Rainfed Agriculture and Watershed Management

UNIT-1. Rain fed agriculture: Introduction, types, History of rain fed agriculture & watershed in India; Problems and prospects of rain fed agriculture in India

UNIT-2. Soil and climatic conditions prevalent in rain fed areas; Drought: types, Mechanism of crop adaptation under moisture deficit condition.

UNIT-3. Water harvesting: importance, its techniques, efficient utilization of water through soil and crop management practices, Management of crops in rain fed areas.

UNIT-4. Contingent crop planning for abetrant weather conditions, Concept, objective, principles and components of watershed management.

UNIT-5. Factors affecting watershed management.

Practical

1. Studies on climate classification, studies on rainfall pattern in rain fed areas of the country and pattern of onset and withdrawal of monsoons.
2. Studies on cropping pattern of different dry land areas in the country and demarcation of dry land area on map of India.
3. Interpretation of meteorological data and scheduling of supplemental irrigation on the basis of evapo-transpiration demand of crops.
4. Critical analysis of rainfall and possible drought period in the country, effective rainfall and its calculation.
5. Studies on cultural practices viz; mulching, plant density, depth of sowing, thinning and leaf removal for mitigating moisture stress.
6. Characterization and delineation of model watershed.
7. Field demonstration on soil & moisture conservation measures.
8. Field demonstration on construction of water harvesting structures.
9. Visit to rain fed research station/watershed.

References

1. Rainfed Agriculture and Watershed Management- S.R. Reddy & G.P. Reddy
2. Crop Production at a Glance- Sah Akilesh.
3. Post Harvest Technology of Cereals, Pulses and Oilseeds – Dr. A. Chakraverty, Oxford & IBH Publishing Co. Pvt. Ltd.

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SUBJECT CODE-AG 602 **Credit 2(1+1)**

w.e.f. 2016-2017

Protected Cultivation and Secondary Agriculture

UNIT-1.Green house technology: Introduction, Types of Green Houses; Plant response to Green house environment, Planning and design of greenhouses.

UNIT-2. Design criteria of green house for cooling and heating purposes. Green house equipment's, materials of construction for traditional and low cost green houses.

UNIT-3.Irrigation systems used in greenhouses. typical applications, passive solar green house, hot air green house heating systems, green house drying. Cost estimation and economic analysis.

UNIT-4.Important Engineering properties such as physical, thermal and aero & hydrodynamic properties of cereals, pulses and oilseed, their application in PHT equipment design and operation.

UNIT-5.Drying and dehydration; moisture measurement, EMC, drying theory, various drying method, commercial grain dryer (deep bed dryer, flat bed dryer, tray dryer, fluidized bed dryer, recirculatory dryer and solar dryer). Material handling equipment; conveyer and elevators, their principle, working and selection.

Practical

1. Study of different type of greenhouses based on shape.
2. Determine the rate of air exchange in an active summer winter cooling system.
3. Determination of drying rate of agricultural products inside green house.
4. Study of greenhouse equipment's. Visit to various Post Harvest Laboratories.
5. Determination of Moisture content of various grains by oven drying & infrared moisture methods.
6. Determination of engineering properties (shape and size, bulk density and porosity of biomaterials).
7. Determination of Moisture content of various grains by moisture meter.
8. Field visit to seed processing plant.

References

1. Green house management for – S. Prasad/U. Kumar, Agrobio (India) Horticultural Crops
2. Unit operations of Agricultural – K.M. Sahay and K.K. Singh, Vikas Processing Publishing House, Pvt. Ltd.
3. Post Harvest Technology of Cereals, Pulses and Oilseeds – Dr. A. Chakraverty, Oxford & IBH Publishing Co. Pvt. Ltd.

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SUBJECT CODE-AG 603 Credit 3(2+1)

w.e.f. 2016-2017

Diseases of Field & Horticultural Crops & their Management-II

UNIT-1.Symptoms, etiology, disease cycle and management of following diseases: Field Crops: Wheat: rusts, loose smut, karnal bunt, powdery mildew, alternaria blight, and ear Cockle.

UNIT-2.Sugarcane: red rot, smut, wilt, grassy shoot, ratoon stunting and Pokkah Boeng; Sunflower: Sclerotinia stem rot and Alternaria blight; Mustard: Alternaria blight, white rust, downy mildew and Sclerotinia stem rot;

UNIT-3.Gram: wilt, grey mould and Ascochyta blight; Lentil: rust and wilt;Cotton: anthracnose, vascular wilt, and black arm;Pea: downy mildew, powdery mildew and rustHorticultural Crops: Mango:anthracnose, malformation, bacterial blight and powdery mildew;

UNIT-4.Citrus: canker and gummosis;Grape vine: downy mildew, Powdery mildew and anthracnose;Apple: scab, powdery mildew, fire blight and crown gall;Peach: leaf curl Strawberry: leaf spot Potato: early and late blight, black scurf, leaf roll, and mosaic

UNIT-5.Cucurbits: downy mildew, powdery mildew, wilt;Onion and garlic purple blotch, and Stemphylium blight;Chillies: anthracnose and fruit rot, wilt and leaf curl;Turmeric: leaf spot Coriander: stem gallMarigold: Botrytis blight; Rose: dieback, powdery mildew and black leaf spot.

Practical

1. Identification and histopathological studies of selected diseases of field and horticultural crops covered in theory.
2. Field visit for the diagnosis of field problems.
3. Collection and preservation of plant diseased specimens for herbarium.

Note: Students should submit 50 pressed and well-mounted specimens.

References

1. Diseases of Field & Horticultural Crops & their Management-II- Dr. Mukherjee Dr.Jha Santanu, Dr. Ray Surjeet.
2. Diseases of Crops & their Management-Manoj Kumar Kalita

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SUBJECT CODE-AG 604 **Credit 2(1+1)**
w.e.f. 2016-2017

Management of Beneficial insects

UNIT-1. Importance of beneficial Insects, Beekeeping, pollinating plant and their cycle, bee biology, commercial methods of rearing, equipment used, seasonal management, bee enemies and disease.

UNIT-2. Bee pasturage, bee foraging and communication. Insect pests and diseases of honey bee. Types of silkworm, voltinism and biology of silkworm. Mulberry cultivation, mulberry varieties and methods of harvesting and preservation of leaves. Rearing, mounting and harvesting of cocoons.

UNIT-3. Pest and diseases of silkworm, management, rearing appliances of mulberry silkworm and methods of disinfection.

UNIT-4. Species of lac insect, morphology, biology, host plant, lac production – seed lac, button lac, shellac, lac- products. Identification of major parasitoids and predators commonly being used in biological control.

UNIT-5. Insect orders bearing predators and parasitoids used in pest control and their mass multiplication techniques. Important species of pollinator, weed killers and scavengers with their importance.

Practical

1. Honey bee species, castes of bees.
2. Beekeeping appliances and seasonal management, bee enemies and disease.
3. Bee pasturage, bee foraging and communication.
4. Types of silkworm, voltinism and biology of silkworm.
5. Mulberry cultivation, mulberry varieties and methods of harvesting and preservation of leaves.
6. Species of lac insect, host plant identification.
7. Identification of other important pollinators, weed killers and scavengers.
8. Visit to research and training institutions devoted to beekeeping, sericulture, lac culture and natural enemies.

References

1. Beneficial Insects- David V Alford
2. Selected Beneficial and Harmful Insects of Indian Subcontinent-Thomas K Sabu

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SUBJECT CODE-AG 605 **Credit 2(1+1)**
w.e.f. 2016-2017

Crop Improvement – II (*Rabi*)

UNIT-1. Centers of origin, distribution of species, wild relatives in different cereals; pulses; oilseeds; fodder crops and cash crops; vegetable and horticultural crops;

UNIT-2. Plant genetic resources, its utilization and conservation; Floral biology, study of genetics of qualitative and quantitative characters; Important concepts of breeding self pollinated, cross pollinated and vegetatively propagated crops;

UNIT-3. Major breeding objectives and procedures including conventional and modern innovative approaches for development of hybrids and varieties for yield, adaptability, stability, abiotic and biotic stress tolerance and quality (physical, chemical, nutritional);

UNIT-4. Seed production technology in self-pollinated, cross pollinated and vegetatively propagated crops.

UNIT-5. Hybrid seed production technology of rabi crops. Ideotype concept and climate resilient crop varieties for future.

Practical

1. Emasculation and hybridization techniques in different crop species namely Wheat, Oat, Barley, Chickpea, Lentil, Field pea,
2. Rapeseed Mustard, Sunflower, Potato, Berseem, Sugarcane, Cowpea;
3. Handling of germplasm and segregating populations by different methods like pedigree, bulk and single seed decent methods;
4. Study of field techniques for seed production and hybrid seeds production in *Rabi* crops; Estimation of heterosis, inbreeding depression and heritability;
5. Layout of field experiments; Study of quality characters, study of donor parents for different Characters; Visit to seed production plots;
6. Visit to AICRP plots of different field crops.

References

1. Principles of Plant Breeding – B.D. Singh.
2. Principles of Plant Breeding – Kundan Singh
3. Principles and Plant Breeding Methods of field crop in India– Soumendra Chakraborty & Tapash Dasgupta

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SUBJECT CODE-AG 606 Credit 2(1+1)

w.e.f. 2016-2017

Principles of Organic Farming

UNIT-1.Organic farming, principles and its scope in India; Initiatives taken by Government (central/state), NGOs and other organizations for promotion of organic agriculture;

UNIT-2.Organic ecosystem and their concepts; Organic nutrient resources and its fortification; Restrictions to nutrient use in organic farming;

UNIT-3. Choice of crops and varieties in organic farming; Fundamentals of insect, pest, disease and weed management under organic mode of production;

UNIT-4.Operational structure of NPOP; Certification process and standards of organic farming; Processing, leveling, economic considerations and viability.

UNIT-5. Marketing and export potential of organic products.

Practical

1.Visit of organic farms to study the various components and their utilization;
2.Preparation of enrich compost, vermicompost, bio-fertilizers/bio-inoculants and their quality analysis;
3.Indigenous technology knowledge (ITK) for nutrient, insect, pest disease and weed management;
4.Cost of organic production system; Post harvest management; Quality aspect, grading, packaging and handling.

References

1. Organic Food Production in India - Bhattacharya, P. 2003, Agribios- Status, Strategy and Scope - (India), Jodhpur
2. Organic Farming-Theory and - Palanniappan, S.P. and Anandurai, Practices K 1999, Scientific Publisher,Jodhpur
3. Organic Farming - Lumpkin, N. 1990, Farming Press Books, IPSWITCH, U.K.
4. Hand Book of Organic Farming - Sharma, A.K. 2001,

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SUBJECT CODE-AG 607 **Credit 2(1+1)**

w.e.f. 2016-2017

Farm Management, Production and Resource Economics

UNIT-1. Meaning and concept of farm management, objectives and relationship with other sciences. Meaning and definition of farms, its types and characteristics, factor determining types and size of farms. Principles of farm management.

UNIT-2. Concept of production function and its type, use of production function in decision-making on a farm, factor-product, factor-factor and product-product relationship, law of equi-marginal/or principles of opportunity cost and law of comparative advantage.

UNIT-3. Meaning and concept of cost, types of costs and their interrelationship, importance of cost in managing farm business and estimation of gross farm income, net farm income, family labor income and farm business income. Farm business analysis: meaning and concept of farm income and profitability, technical and economic efficiency measures in crop and livestock enterprises. Importance of farm records and accounts in managing a farm, various types of farm records needed to maintain on farm, farm inventory, balance sheet, profit and loss accounts.

UNIT-4. Meaning and importance of farm planning and budgeting, partial and complete budgeting, steps in farm planning and budgeting-linear programming, appraisal of farm resources, selection of crops and livestock's enterprises. Concept of risk and uncertainty occurs in agriculture production, nature and sources of risks and its management strategies, Crop/livestock/machinery insurance – weather based crop insurance, features, determinants of compensation.

UNIT-5. Concepts of resource economics, differences between NRE and agricultural economics, unique properties of natural resources. Positive and negative externalities in agriculture, Inefficiency and welfare loss, solutions, Important issues in economics and management of common property resources of land, water, pasture and forest resources etc.

Practical

1. Preparation of farm layout.
2. Determination of cost of fencing of a farm.
3. Computation of depreciation cost of farm assets.
4. Application of equi-marginal returns/opportunity cost principle in allocation of farm resources.
5. Determination of most profitable level of inputs use in a farm production process. Selection of most profitable enterprise combination.
6. Application of cost principles including CACP concepts in the estimation of cost of crop and livestock enterprises.

References

1. Elements of Farm Management – I.J. Singh and V.K. Puri
2. Economics of Farm Management – A.S. Kahlon and Karam Singh
3. Farm Business Management – S.S. Johl and T.R. Kapoor
4. Farm Management – S.P. Dondyal

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SUBJECT CODE-AG 608 **Credit 2(2+0)**

w.e.f. 2016-2017

Principles of Food Science and Nutrition

UNIT-1. Concepts of Food Science- definitions, measurements, density, phase change, pH, osmosis, surface tension, colloidal systems etc.

UNIT-2. Food composition and chemistry (water, carbohydrates, proteins, fats, vitamins, minerals, flavours, colours, miscellaneous bioactives, important reactions);

UNIT-3. Food microbiology (bacteria, yeast, moulds, spoilage of fresh & processed foods, Production of fermented foods);

UNIT-4. Principles and methods of food processing and preservation- use of heat, low temperature, chemicals, radiation, drying etc.

UNIT-5. Food and nutrition. Malnutrition (over and under nutrition), nutritional disorders; Energy metabolism (carbohydrate, fat, proteins); Balanced/ modified diets, Menu planning, New trends in food science and nutrition.

References

1. Textbook of Food Science and Technology- V. Khader
2. Bio chemistry – J.L. Jain
3. Bio chemistry(Hindi) – T.D Pandey

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SUBJECT CODE- (AG-201) DATE-

SRI SATYA SAI UNIVERSITY OF TECHNOLOGY & MEDICAL SCIENCES, SEHORE

SUBJECT CODE-AG 609 **Credit 2(1+1)**

W.e.f.-2016-2017

Post-harvest Management and Value Addition of Fruits and Vegetables

UNIT-1. Importance of fruits and vegetables,

UNIT-2. Extent and possible causes of post harvest losses; Pre-harvest factors affecting post harvest quality, maturity, ripening and changes occurring during ripening;

UNIT-3. Respiration and factors affecting respiration rate; Role of ethylene; Post harvest disease and disorders; Heat, chilling and freezing injury; Harvesting and field handling;

UNIT-4. Principles and methods of preservation; Intermediate moisture food- Jam, jelly, marmalade, preserve, candy –

UNIT-5. Concepts and Standards; Fermented and non-fermented beverages. Tomato products-Concepts and Standards; Drying/ Dehydration of fruits and vegetables – Concept and methods, osmotic drying. Canning -Concepts and Standards, packaging of products.

Practical

1. Applications of different types of packaging containers for shelf life extension.
2. Effect of temperature on shelf life and quality of produce.
3. Demonstration of chilling and freezing injury in vegetables and fruits.
4. Extraction and preservation of pulps and juices.
5. Preparation of jam, jelly, RTS, nectar, squash, osmotically dried products, fruit bar and candy and tomato products, canned products.
6. Quality evaluation of products -- physico-chemical and sensory. Visit to processing unit/ industry.

References

1. Post-Harvest Management of Horticultural Crops - S.N. Pandey
2. A Text Book of Farming System and Sustainable Agriculture-Aniket Kalhapure, Madhukar dhonde & Balasaheb Shete.
3. Post Harvest Technology of Horticultural Crops – K.P. Sudheer
4. Post Harvest Management of Horticultural Crops – M.A. Mir
5. Marketing of Processed, Fruits and Vegetables – M. Choudhory.
6. Principles and Practices of Post Harvest Technology – P.H. Panday
7. Post Harvest Technology of Fruits and Vegetables – L.R. Verma and V.K. Joshi

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SUBJECT CODE-AG 610 **Credit 2(0+2)**
W.e.f.-2016-2017

Practical Crop Production-II *(Rabi Crops)*

Practical

1. Crop planning, raising field crops in multiple cropping systems: Field preparation, seed Treatment, nursery raising, sowing, nutrient, water.

2. Weed management and management of insect-pests diseases of crops.

3. Harvesting, threshing, drying winnowing, storage and marketing of produce.

4. The emphasis will be given to seed production, mechanization, resource conservation.

5. Integrated nutrient, insect-pest and disease management technologies.

6. Preparation of balance sheet including cost of cultivation, net returns per student as well as per team of 8-10 students.

References

1. Scientific crop production (1&2) – C. Thakur
2. Handbook of Agriculture (IV edition 2006)– ICAR Publication
3. Field Crops – Y.M. Iyyer
4. High Yielding Varieties of Crops – Mahabal Ram
5. Principal of Cereal Crop Production – Mahendra Pall, Deka & R.K. Rai

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Elective Course

SUBJECT CODE-AG 611(A) Credit 3(2+1)
W.e.f.-2016-2017

Weed management

UNIT-1. Introduction to weeds, characteristics of weeds their harmful and beneficial effects on ecosystem.

UNIT-2. Classification, reproduction and dissemination of weeds. Herbicide classification, concept of adjuvant, surfactant, herbicide formulation and their use.

UNIT-3. Introduction to mode of action of herbicide and selectivity,allelopathy and its application for weed management.

UNIT-4. Bio-herbicide and their application in agriculture. Concept of herbicide mixture and utility in agriculture. Herbicide compatibility with agro-chemical and their application.

UNIT-5. Integration of herbicide with non chemical methods of weeds management. herbicide resisuance and its management.

Practical

1. Techniques of weed preservation.
2. Weed identification and their losses study.
3. Biology of important weeds study of herbicide formulation and mixture of herbicide.
4. Herbicide and agro-chemicals study.
5. Shift of weed flora study in long term experiments.
6. Study of methods of herbicide application. Spraying equipments.
7. Calculation of herbicide doses and weed control efficiency and weed index.

References

1. Principal of Weed Science – V.S. Rao (1994), Oxford & IBH Publication, New Delhi.
2. Weed Management – Walia, U.S. (2003), Kalyani Publication, New Delhi
3. Weed Management-Principles and – Gupta, O.P. (2000), Agrobios practices Publication, India
4. All about Weed Control – Subramaniam, S., Ali, A.M. and Kumar, R.J. (1977), Kalyani Publication, New Delhi
5. Weed Science : Basics and Applications – T.K. Das (2008), Jain Brothers Publication

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Elective Course

SUBJECT CODE-AG 611(B)

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

Hi-tech Horticulture

UNIT-1. Introduction & importance; Nursery management and mechanization; micro propagation of horticultural crops; Modern field preparation and planting.

UNIT-2. Protected cultivation: advantages, controlled conditions, method and techniques, Micro irrigation systems and its components; use.

UNIT-3. EC, pH based fertilizer scheduling, canopy management, high density orcharding,.

UNIT-4. Methods Components of precision farming: Remote sensing, Geographical Information System (GIS),Differential Geo-positioning System (DGPS), Variable Rate applicator (VRA),

UNIT-5. Application of precision farming in horticultural crops (fruits, vegetables and ornamental crops); mechanized harvesting of produce.

Practical

1. Types of polyhouses and shade net houses,.
2. Intercultural operations, tools and equipments, identification and application,
3. Micro propagation, Nursery-protrays, micro-irrigation.
4. EC, pH based fertilizer scheduling, canopy management, visit to hi-tech orchard/nursery.

References

1. Instant Horticulture- S.N Gupta
2. Hitech horticulture- Davendra kumar singh

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Elective Course

SUBJECT CODE-AG 611(C)

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

Landscaping

UNIT-1. Importance and scope of landscaping. Principles of landscaping, garden styles and types, terrace gardening, vertical gardening, garden components, adornments, lawn making, rockery, water garden, walk-paths, bridges, other constructed features etc. gardens for special purposes.

UNIT-2. Trees: selection, propagation, planting schemes, canopy management, shrubs and herbaceous perennials: selection, propagation, planting schemes, architecture.

UNIT-3. Climber and creepers: importance, selection, propagation, planting, Annuals: selection, propagation, planting scheme, Other garden plants: palms, ferns, grasses and cacti succulents. Pot plants: selection, arrangement, management. Bio-aesthetic planning: definition, need, planning.

UNIT-4. landscaping of urban and rural areas, Peri-urban landscaping, Landscaping of schools, public places like bus station, railway station, townships, river banks, hospitals, play grounds, airports, industries, institutions.

UNIT-5. Bonsai: principles and management, lawn: establishment and maintenance. CAD application.

Practical

1. Identification of trees, shrubs, annuals, pot plants; Propagation of trees, shrubs and annuals, care and maintenance of plants, potting and reporting, identification of tools and implements used in landscape design,
2. Training and pruning of plants for special effects, lawn establishment and maintenance, layout of formal gardens, informal gardens, special type of gardens (sunken garden,
3. Terrace garden, rock garden) and designing of conservatory and lathe house. Use of computer software, visit to important gardens/ parks/ institutes..

References

1. Instant Horticulture- S.N Gupta
2. Hand Book of Horticulture- U.S. Bose
3. Glaustas Horticulture- P. Mathukumar

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Name of Faculty: School of Agriculture

Name of Department: Agriculture

Minutes of Board of Studies Committee Meeting Dated on **21.06.2017**

The Board of Studies Committee Meeting was held in the room of Department of Agriculture at 2:30 PM. on 21.06.2017. Following members were present.

1. Mr.L.N.Pachwariya SDO, Dept. of Agriculture, (External Member)
2. Mr.Veerbal khuswaha, (SSSUTMS, Sehore) Chairperson
3. Mr.Rajmal Ateriya (SSSUTMS, Sehore)
4. Mr. Sanjeev kumar Srivastav (SSSUTMS, Sehore)
5. Mr. Satish Patidar (SSSUTMS, Sehore)

The Chairperson of Board of Studies Committee welcomes and appreciated the efforts put up by the faculty for progress of the departmental activities. The following Agenda points were discussed and resolved.

Agenda 1 Preparation of syllabus and Scheme for 1st Semester, 3rd Semester and 5th Semester.
Discussion

Bos member discuss the syllabus proposed for 1st Semester, 3rd Semester and 5th Semester in detail and recommended.....

Resolution of the Discussion:

After discussion the Bos member agreed with the proposed 1st Semester, 3rd Semester and 5th Semester Scheme and Syllabus...
Agenda 2 Any other agenda with the permission of chairman.

Discussion .....
Resolution of the Discussion:.....

The Chairman thanks the members for peaceful conduction of meeting.

Signature of All members (Including Chairperson)

1. Mr.L.N.Pachwariya
2. Mr.Veerbal khuswaha
3. Mr.Rajmal Ateriya
4. Mr. Sanjeev kumar Srivastav
5. Mr. Satish Patidar

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Chairperson

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Sri Satya Sai University of Technology and Medical Sciences, Sehore M.P

Scheme of Examination

School of Agriculture

Bachelor of Science (B.Sc.) (Hons.) Agriculture

Semester-I as per Fifth Dean Committee, w.e.f. 2016-17

S.No	SUBJECT CODE	Subject Name	Maximum Marks Allotted					Period/hour/week			Credits	Total Marks
			Theory Slot			Practical Slot						
			End Sem.	Mid Tests	Quiz, Assignment	End Sem. Practical & Viva	Practical record/quiz /Assignment	L	T	P		
1	AG 101	Fundamentals of Horticulture	50	30	-	15	5	1	-	2	2	100
2	AG 102	Fundamentals of Plant Biochemistry & Biotechnology	50	30	-	15	5	2	-	2	3	100
3	AG 103	Fundamentals of Soil Science	50	30	-	15	5	2	-	2	3	100
4	AG 104	Introduction to Forestry	50	30	-	15	5	1	-	2	2	100
5	AG 105	Comprehension & Communication Skills in English	50	30	-	15	5	1	-	2	2	100
6	AG 106	Fundamentals of Agronomy	50	30	-	15	5	2	1	2	4	100
7	AG107 (A)	Introductory Biology*	50	30	-	15	5	1*	-	2**	2	100*/100
	AG107 (B)	Elementary Mathematics*		40	10	-	-	2*	-	-		
8	AG 108	Agriculture Heritage	50	40	10	-	-	1	-	-	1	100
9	AG 109	Rural Sociology & Educational Psychology	50	40	10	-	-	1	1	-	2	100
10	AG 110	Human Values & Ethics**	50	40	10	-	-	1	-	-	1	100
11	AG 111	NSS/NCC/Physical Education & Yoga Practices**			-	-	-	-	-	-	-	NUE
			500	**330/340***	30/40	**90/105**	**30/35**	13*/14*	**2**	12/14*	22	**1000**

Note: - One Subject Should be selected from AG 107 (A) or AG 107 (B)

**Remedial course, ** NCC/NSS (Non-University Exam).

* Minimum passing marks in each theory and practical separately is 50%

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B.Sc. (Ag.) (IST) Year

1st Semester w.e.f-2016-2017

Subject Code	Subject Name	Credits
AG- 101	Fundamentals of Horticulture	2(1+1)
AG -102	Fundamentals Of Plant Biochemistry & Biotechnology	3(2+1)
AG -103	Fundamentals of Soil Science	3(2+1)
AG -104	Introduction to Forestry	2(1+1)
AG -105	Comprehension & Communication Skills in English	2(1+1)
AG -106	Fundamentals of Agronomy	4(3+1)
AG 107(A)	Introductory Biology*	2(1+1)
AG -107(B)	Elementary Mathematics*	2(2+0)*
AG -108	Agriculture Heritage*	1(1+0)
AG -109	Rural Sociology & Education Psychology	2(2+0)
AG -110	Human Values & Ethics**	1(1+0)
AG -111	NSS/NCC/Physical Education & Yoga Practices**	0(0+0)
Total	***R: Remedial course; **NC: Non-gradial courses**	22

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SUBJECT CODE-AG 101 **Credit: 2(1+1)**

Fundamentals of Horticulture **w.e.f.-2016-2017**

UNIT-1- Horticulture-Its definition and branches, importance and scope; horticultural and botanical classification; climate and soil for horticultural crops.

UNIT-2- Plant propagation-methods and propagating structures; principles of orchard establishment; Principles and methods of training and pruning, juvenility and flower bud differentiation.

UNIT-3- unfruitfulness; pollination, pollinizers and pollinators; fertilization and parthenocarpy.

UNIT-4- kitchen gardening; garden types and parts; lawn making.

UNIT-5- medicinal and aromatic plants; species and condiments; use of plant bio-regulators in horticulture. Irrigation & fertilizers application-method and quantity.

Practical

1.Identification of garden tools. Identification of horticultural crops.
2.Preparation of seed bed/nursery bed.
3.Practice of sexual and asexual methods of propagation.
4.Layout and planting of orchard plants. Training and pruning of fruit trees.
5.Transplanting and care of vegetable seedlings.
6.Making of herbaceous and shrubbery borders. Preparation of potting mixture, potting and repotting. Fertilizer application in different crops. Visits to commercial nurseries/orchard.

References

1. Basic Horticulture - Jitendra Singh.
2. Plant propagation and nursery husbandry - Dr. Jay veer singh.
3. Udyan vigyan - Dr Shyam sundar shristava.

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SUBJECT CODE-AG 102 **Credit: 3(2+1)**

Fundamentals of Plant Biochemistry and Biotechnology w.e.f.-2016-2017

UNIT-1. Importance of Biochemistry. Properties of Water, pH and Buffer. Carbohydrate: Importance and classification, Structures of Monosaccharides, Reducing and oxidizing properties of Monosaccharides, Mutarotation; Structure of Disaccharides and Polysaccharides.

UNIT-2. Lipid: Importance and classification; Structures and properties of fatty acids; storage lipids and membrane lipids. Proteins: Importance of proteins and classification; Structures, titration and zwitterions nature of amino acids, Structural organization of proteins. Enzymes: General properties; Classification; Mechanism of action; Michaelis & Menten and Line Weaver Burk equation & plots; Introduction to allosteric enzymes.

UNIT-3. Nucleic acids: Importance and classification, Structure of Nucleotides, A, B & Z DNA; RNA: Types and Secondary & Tertiary structure. Metabolism of carbohydrates, Glycolysis, TCA cycle, Glyoxylate cycle, Electron transport chain. Metabolism of lipids: Beta oxidation, Biosynthesis of fatty acids.

UNIT-4. Concepts and applications of plant biotechnology: Scope, organ culture, embryo culture, cell suspension culture, callus culture, anther culture, pollen culture and ovule culture and their applications; Micro-propagation methods: organogenesis and embryogenesis, Synthetic seeds and their significance, Embryo rescue and its significance: somatic hybridization and cybrids, Somaclonal variation and its use in crop improvement, cryo-preservation.

UNIT-5. Introduction to recombinant DNA methods: physical (Gene gun method), chemical (PEG mediated) and Agrobacterium mediated gene transfer methods, Transgenics and its importance in crop improvement; PCR techniques and its applications: RFLP, RAPD, SSR; Marker Assisted Breeding in crop improvement; Biotechnology regulations.

Practical

1. Preparation of solution, pH & buffers, Qualitative tests of carbohydrates and amino acids. Quantitative estimation of glucose/ proteins.
2. Titration methods for estimation of amino acids/lipids, Effect of pH, temperature and substrate concentration on enzyme action, Paper chromatography/ TLC demonstration for separation of amino acids/ Monosaccharides.
3 Sterilization techniques. Composition of various tissue culture media and preparation of stock solutions for MS nutrient medium
4. Callus induction from various explants. Micro-propagation, hardening and acclimatization.
5. Demonstration on isolation of DNA. Demonstration of gel electrophoresis techniques and DNA finger printing.

References

1. Biotechnology – B.D. Singh,
2. Agriculture Biotechnology – Gautam V.K.
3. Elements of biotechnology- P.K.Gupta
4. Fundamental of plant biochemistry and biotechnology- Omkar Singh, L.L. Sharma, T.P. Sing

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SUBJECT CODE-AG 103 **Credit: 3(2+1)**

Fundamentals of Soil Science **w.e.f.-2016-2017**

UNIT-1-Soil as a natural body, Pedological and edaphological concepts of soil; Soil genesis: soil forming rocks and minerals; weathering, processes and factors of soil formation; Soil Profile.

UNIT-2- components of soil; Soil physical properties: soil-texture, structure, density and porosity, soil colour, consistence and plasticity; Elementary knowledge of soil taxonomy classification and soils of India.

UNIT-3-Soil water retention, movement and availability; soil air, composition, gaseous exchange, problem and plant growth; source, amount and flow of heat in soil; soil temperature and plant growth; Soil reaction-pH, soil acidity and alkalinity, buffering, effect of pH on nutrient availability.

UNIT-4-soil colloids - inorganic and organic; silicate clays: constitution and properties; sources of charge ion exchange, cation exchange capacity, base saturation; soil organic matter: composition, properties and its influence on soil properties.

UNIT-5-Soil organisms: macro and micro organisms, their beneficial and harmful effects; Soil pollution - behaviour of pesticides and inorganic contaminants, prevention and mitigation of soil pollution.

Practical

1. Study of soil profile in field. Study of soil sampling tools, collection of representative soil sample, its processing and storage.
2. Study of soil forming rocks and minerals.
3. Determination of soil density, moisture content and porosity. Determination of soil texture by feel and Bouyoucos Methods.
4. Studies of capillary rise phenomenon of water in soil column and water movement in soil.
5. Determination of soil pH and electrical conductivity. Determination of cation exchange capacity of soil. Study of soil map.
6. Determination of soil colour.
7. Demonstration of heat transfer in soil. Estimation of organic matter content of soil.

References

1. The Nature and Properties of Soil – Brady, N.C. & Weil, R.R., Macmillan
2. Fundamentals of Soil Science – ICAR Publication, New Delhi
3. Text Book of Soil Physics – A.K. Saha, Kalyani Publication, New Delhi
4. Introductory of Soil Science – Dr. Dilip kumar das
5. Soil Science Fertilizers and Manures – Dr vinay singh

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SUBJECT CODE-AG 104 **Credit: 1(1+1)**

Introduction to Forestry **w.e.f.-2016-2017**

UNIT-1-Introduction – definitions of basic terms related to forestry, objectives of silviculture, forest classification, salient features of Indian Forest Policies.

UNIT-2- Forest regeneration, Natural regeneration - natural regeneration from seed and vegetative parts, coppicing, pollarding, root suckers; Artificial regeneration – objectives, choice between natural and artificial regeneration, essential preliminary considerations. Crown classification. Tending operations – weeding, cleaning, thinning – mechanical, ordinary, crown and advance thinning.

UNIT-3-Forest mensuration – objectives, diameter measurement, instruments used in diameter measurement; Non instrumental methods of height measurement - shadow and single pole method; Instrumental methods of height measurement - geometric and trigonometric principles, instruments used in height measurement; tree stem form, form factor, form quotient, measurement of volume of felled and standing trees, age determination of trees.

UNIT-4- Agroforestry – definitions, importance, criteria of selection of trees in agroforestry, different agroforestry systems prevalent in the country.

UNIT-5-shifting cultivation, taungya, alley cropping, wind breaks and shelter belts, home gardens. Cultivation practices of two important fast growing tree species of the region.

Practical

1. Identification of tree-species.
2. Diameter measurements using calipers and tape, diameter measurements of forked, buttressed, Fluted and leaning trees.
3. Height measurement of standing trees by shadow method, single pole method and hypsometer.
4. Volume measurement of logs using various formulae.
5. Nursery lay out, seed sowing, vegetative propagation techniques.
6. Forest plantations and their management.
7. Visits of nearby forest based industries.

References

1. Principles and Practice of Silviculture – Laxman Singh Khanna
2. Indian Forestry – K. Manikandan
3. Forest Mensuration – A. Akca

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SUBJECT CODE-AG 105 **Credit: 2(1+1)**

Comprehension & Communication Skills in English **w.e.f.-2016-2017**

UNIT-1-War minus Shooting- The sporting Spirit. A Dilemma- A layman looks at science Raymond B. Fosdick.

UNIT-2- You and Your English – Spoken English and broken English G.B. Shaw. Reading Comprehension. Vocabulary- Antonym, Synonym, Homophones, Homonyms, often confused words.

UNIT-3- Exercises to Help the students in the enrichment of vocabulary based on TOEFL and other competitive examinations.

UNIT-4-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.

UNIT-5-The Style: Importance of professional writing. Preparation of Curriculum Vitae and Job applications. Synopsis Writing. Interviews: kinds, Importance and process.

Practical

1. Listening Comprehension: Listening to short talks lectures, speeches (scientific, commercial and general in nature).
2. Oral Communication: Phonetics, stress and intonation, Conversation practice. Conversation: rate of speech, clarity of voice, speaking and Listening, politeness & Reading.
3. Skills: reading dialogues, rapid reading, intensive reading, improving reading skills.
4. Mock Interviews: testing initiative, team spirit, leadership, intellectual ability.
5. Group Discussions.

References

1. Professional Ethics and Human Values - M.Govindarajan, S. Natarajan & V.S. Senthil Kumar
2. Human values - A.N. Tripathi
3. Human Values and Professional Ethics S. B. Gogate
4. Ethics Integrity and Aptitude – P.D. Sharma 5. Manviya mulya avam pashewar natikta – Sanjeev kumarBhalla&RupaBha

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SUBJECT CODE-AG 106 **Credit: 4(3+1)**

Fundamentals of Agronomy **w.e.f.-2016-2017**

UNIT-1-Agronomy and its scope, seeds and sowing, tillage and tilth, crop density and geometry,

UNIT-2-Crop nutrition, manures and fertilizers, nutrient use efficiency, water resources, soil plant water relationship, crop water requirement, water use efficiency.

UNIT-3-irrigation- scheduling criteria and methods, quality of irrigation water, water logging. Weeds- importance, classification, crop weed competition, concepts of weed management-principles and methods, herbicides- classification, selectivity and resistance, allelopathy

UNIT-4-Growth and development of crops, factors affecting growth and development, plant ide types,

UNIT-5- crop rotation and its principles, adaptation and distribution of crops, crop management technologies in problematic areas, harvesting and threshing of crops.

Practical

1. Identification of crops, seeds, fertilizers, pesticides and tillage implements,
2. Effect of sowing depth on germination and seedling vigour,
3. Identification of weeds in crops.
4. Methods of herbicide and fertilizer application,
5. Study of yield contributing characters and yield estimation,
6. Seed germination and viability test,
7. Numerical exercises on fertilizer requirement, plant population, herbicides and water requirement,
8. Use of tillage implements-reversible plough, one way plough, harrow, leveler, seed drill
9. Study of soil moisture measuring devices, Measurement of field capacity, bulk density and infiltration rate, Measurement of irrigation water.

References

1. Principles of Agronomy - S.R. Reddy (1999), Kalyani Publication, New Delhi
2. Hand Book of Agriculture (2006) - ICAR Publication
3. Principles Of Agronomy and Crops- Om Prakash Ahalawat

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REMEDIAL COURSE

SUBJECT CODE-AG 107(A) **Credit: 2(1+1)**
Introductory Biology **w.e.f.-2016-2017**

UNIT-1-Introduction to the living world.

UNIT-2-diversity and characteristics of life, origin of life, Evolution and Eugenics.

UNIT-3- Binomial nomenclature and classification Cell and cell division.

UNIT-4- Morphology of flowering plants. Seed and seed germination.

UNIT-5-Plant systematic-viz; Brassicaceae, Fabaceae and Poaceae. Role of animals in agriculture.

Practical

1. Morphology of flowering plants – root, stem and leaf and their modifications.
2. Inflorence, flower and fruits, Cell, tissues & cell division.
3. Internal structure of root, stem and leaf.
4. Study of specimens and slides.
5. Description of plants - Brassicaceae, Fabaceae and Poaceae.

References

1. Fundamental of biology, textbook and practice book – By Willey editorial.
2. Introductory plant biology – James bidlade and Shalley Jusky
3. A text book of botany- B.P. pandey

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SUBJECT CODE-AG 107(B) **Credit: 2(2+0)**

Elementary Mathematics **w.e.f.-2016-2017**

UNIT-1-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, 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 st. lines, Angles between two st. lines, Parallel lines, Perpendicular lines, Angle of bisectors between two lines,

UNIT-2- Area of triangle and quadrilateral. 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 (x_1, y_1) & (x_2,y_2), Tangent and Normal to a given circle at given point (Simple problems), Condition of tangency of a line $y = mx + c$ to the given circle $x^2 + y^2 = a^2$.

UNIT-3-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,

UNIT-3-Differentiation of Inverse Trigonometric functions. Maxima and Minima of the functions of the form $y=f(x)$ (Simple problems based on it).

UNIT-4-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-5-Matrices and Determinants: Definition of Matrices, Addition, Subtraction, Multiplication, Transpose and Inverse up to 3rd order, Properties of determinants up to 3rd order and their evaluation.

References

1. Remedial Mathematics- D.C. Agrawal

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SUBJECT CODE-AG 108 **Credit: 1(1+0)**

Agriculture Heritage **w.e.f.-2016-2017**

UNIT-1-Introduction of Indian agricultural heritage. status of farmers in society; advice by sages to kings on their duties towards farmers.

UNIT-2-soil management in ancient, medieval & pre-modern India and its relevance in modern day sustainable agriculture, heritage of crop & water management.

UNIT-3-plant growth and development & plant protection through vrikshayurveda and traditional knowledge.

UNIT-4-Heritage of medicinal plants and their relevance today. seed health in ancient & medieval history and its relevance to present day agriculture.

UNIT-5-description of Indian civilization and agriculture by travelers from China, Europe and United States, our journey in agriculture, green revolution and its impact and concerns, vision for the future.

References

1. Principles of Agronomy - S.R. Reddy (1999), Kalyani Publication, New Delhi
2. Hand Book of Agriculture (2006) - ICAR Publication
3. Introductory Agriculture ICAR-e Course, AGRIMOON.COM
4. Introductory Agriculture- K.L. Nandeha, Kushal Publication and Distributors, Varanasi

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SUBJECT CODE-AG 109

Credit: 2(2+0)

Rural Sociology & Educational Psychology w.e.f.-2016-2017

UNIT-1. Sociology and Rural sociology: Definition and scope.

UNIT-2. Sociology and Rural sociology: its significance in agriculture extension, Rural society, Social Groups, Social Stratification, Culture concept, Social Institution, Social Change & Development.

UNIT-3. Educational psychology: Meaning & its importance in agriculture extension.

UNIT-4. Behavior: Cognitive, affective, psychomotor domain, Personality, Learning, Motivation.

UNIT-5. Behavior: Theories of Motivation, Intelligence.

References

1. Extension Communication and Management – G.L.Ray

2. Rural Sociology and Educational Psychology – Dr. B.D. Tyagi & Dr Manju Tyagi

3. Agriculture Extension, Training & Management- Dr Unimed Singh

4. Extension Education and Information – Dr. Jitendra Chauhan

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NON-GRADIAL COURSES

SUBJECT CODE-AG 110
Human Values & Ethics

Credit: 1(1+0)
w.e.f.-2016-2017

UNIT-1 Values and Ethics-An Introduction, Goal and Mission of Life.

UNIT-2 Values and Ethics -Vision of Life, Principles and Philosophy.

UNIT-3 Self Exploration, Self Awareness, Self Satisfaction, Decision Making.

UNIT-4 Motivation, Sensitivity, Success, Selfless Service, Case Study of Ethical Lives. Positive Spirit.

UNIT-5 Body, Mind and Soul, Attachment and Detachment, Spirituality Quotient, Examination.

References

1. Professional Ethics and Human Values - M.Govindarajan, S. Natarajan & V.S. Senthil Kumar
2. Human values - A.N. Tripathi
3. Human Values and Professional Ethics S. B. Gogate
4. Ethics Integrity and Aptitude – P.D. Sharma
5. Manviya mulya avam pashewar natikta – Sanjeev kumar Bhalla & Rupa Bhalla

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SUBJECT CODE-AG 111 **Credit: 0(0+0)**

National Service Scheme (NSS) **w.e.f.-2016-2017**

UNIT-1-Introduction and basic components of NSS: Orientation: history, objectives, principles, symbol, badge; regular programmes under NSS, organizational structure of NSS, code of conduct for NSS volunteers, points to be considered by NSS volunteers awareness about health

UNIT-2-Understanding youth NSS programmes and activities Definition, profile, profile, categories, issues and challenges of youth; and opportunities for youth who is agent of the social change Concept of regular activities, special camping, day camps, basis of adoption of village/slums, conducting survey, analyzing guiding financial patterns of scheme, youth programme/ schemes of GOI, coordination with different agencies and maintenance of diary

UNIT-3-Community mobilization Mapping of community stakeholders, designing the message as per problems and their culture; identifying methods of mobilization involving youth-adult partnership

UNIT-4-Social harmony and national integration Indian history and culture, role of youth in nation building, conflict resolution and peace-building **Volunteerism and shramdan** Indian tradition of volunteerism, its need, importance, motivation and constraints; shramdan as part of volunteerism

UNIT-5-Citizenship, constitution and human rights Basic features of constitution of India, fundamental rights and duties, human rights, consumer awareness and rights and rights to information **Family and society** Concept of family, community (PRIs and other community based organizations) and society

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Scheme of Examination

School of Agriculture

Bachelor of Science (B.Sc.) (Hons.) Agriculture

Semester-III as per Fifth Dean Committee, w.e.f. 2016-17

S.No	SUBJECT CODE	Subject Name	Maximum Marks Allotted					Period/hour/week			Credits	Total Marks
			Theory Slot			Practical Slot						
			End Sem.	Mid Tests	Quiz, Assignments	End Sem. Practical & Viva	Practical record/quiz /Assignment	L	T	P		
1	AG 301	Farm Power and machinery	50	30	-	15	5	1	-	2	2	100
2	AG 302	Agricultural Finance and cooperation	50	30	-	15	5	2	-	2	3	100
3	AG 303	Production Technology of Vegetable and Spices	50	30	-	15	5	1	-	2	2	100
4	AG 304	Livestock and poultry management	50	30	-	15	5	2	1	2	4	100
5	AG 305	Crop production Technology-I (kharif crops)	50	30	-	15	5	1	-	2	2	100
6	AG 306	Agri-informatics	50	30	-	15	5	1	-	2	2	100
7	AG 307	Environmental studies and disaster management	50	30	-	15	5	2	-	2	3	100
8	AG 308	Introductory Agro metrology & climate change	50	30	-	15	5	1	-	2	2	100
9	AG 309	Fundamental of Plant Breeding	50	30	-	15	5	2	-	2	3	100
10	AG 310	Entrepreneurship development & business communication	50	30	-	15	5	1	-	2	2	100
			500	**300**		150	**50**	**14**	**1**	**20**	**25**	**1000**

Note: - Minimum passing marks in each theory and practical separately is 50%

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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

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Subject Code-AGi-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, differentiat 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. Jagdishwor 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. Power, Vijay V. Aware
5. Farm Machinery and Power Engineering- Manisha Sahu, Ajay sharma

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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

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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. Shanmughavelu 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

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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

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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-I (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

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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 Manos, Nico Polman and Dvid Viaggi

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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.

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Subject Code-AG-308

Credit 3(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.

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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

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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 – Akbari, 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 Entreprencurship – Agrawal R.C., Laxmi Narayan Agrawal, Agra (U.P.)

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Scheme of Examination

School of Agriculture

Bachelor of Science (B.Sc.) (Hons.) Agriculture

Semester-V as per Fifth Dean Committee, w.e.f. 2016-17

S.No.	SUBJECT CODE	Subject Name	Maximum Marks Allotted					Period/hour/week			Credits	Total Marks
			Theory Slot			Practical Slot						
			End Sem.	Mid Tests	Quiz, Assignment	End Sem. Practical & Viva	Practical record/quiz/Assignment	L	T	P		
1	AG 501	Principles of Integrated Pest and Disease Management	50	30	-	15	5	2	-	2	3	100
2	AG 502	Manures, Fertilizers & Soil Fertility Management	50	30	-	15	5	2	-	2	3	100
3	AG 503	Pests of Crops & Stored Grain and their Management	50	30	-	15	5	2	-	2	3	100
4	AG 504	Diseases of Field & Horticultural Crops and their Management-I	50	30	-	15	5	2	-	2	3	100
5	AG 505	Crop Improvement-I(Kharif crops)	50	30	-	15	5	1	-	2	2	100
6	AG 506	Geoinformatics & Nano-technology and Precision	50	30	-	15	5	1	-	2	2	100
7	AG 507	Practical Crop Production-I (Kharif Crops)	-	-	-	80	20	-	-	4	2	100
8	AG 508	Intellectual Property Rights	50	40	10	-	-	1	-	-	1	100
9	AG 509(A)	Agribusiness Management	50	30	-	15	5	2	-	2	3	100
	AG 509(B)	Foods safety and Standards										
	AG 509(C)	Agricultural Journalism										
			400	**250**	**10**	**185**	**55**	**13**	-	**18**	**22**	**900**

Note: - Minimum passing marks in each theory and practical separately is 50%

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SRI SATYA SAI UNIVERSITY OF TECHNOLOGY & MEDICAL SCIENCES, SEHORE

B.Sc. (Ag.) (3rd) Year

(5th) Semester 2016-2017 w.e.f.-2016-17

Subject Code	Subject Name		Credits
AG- 501	Principles of Integrated Pest and Disease Management		3(2+1)
AG -502	Manures, Fertilizers and Soil Fertility Management		3(2+1)
AG -503	Pests of Crops and Stored Grains and their Management		3(2+1)
AG -504	Diseases of Field & Horticultural Crops & their Management-I		3(2+1)
AG -505	Crop Improvement – I (*Kharif Crops*)		2(1+1)
AG -506	Geo-informatics and Nano-technology for Precision Farming		2(1+1)
AG -507	Practical Crop Production-I *(Kharif Crops)*		2(0+2)
AG -508	Intellectual Property Rights		1(1+0)
AG-509(A)	Elective Course	Agri-business Management	3(2+1)
AG-509(B)		Food Safety and Standards	
AG-509(C)		Agricultural Journalism	
Total			22

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Subject-Code AG-501

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

Principles of Integrated Pest and Disease Management

UNIT-1. Categories of insect pests and diseases, IPM: Introduction, history, importance, concepts, principles and tools of IPM.

UNIT-2. Economic importance of insect pests, diseases and pest risk analysis. Methods of detection and diagnosis of insect pest and diseases. Calculation and dynamics of economic injury level and importance of Economic threshold level.

UNIT-3. Methods of control: Host plant resistance, cultural, mechanical, physical, legislative biological and chemical control. Ecological management of crop environment.

UNIT-4. Introduction to conventional pesticides for the insect pests and disease mgt. Survey surveillance and forecasting of Insect pest and diseases. Development and validation of IPM module.

UNIT-5. Implementation and impact of IPM (IPM module for Insect pest and disease. Safety issues in pesticide uses. Political, social and legal implication of IPM. Case histories of important IPM programmes.

Practical

1.Methods of diagnosis and detection of various insect pests, and plant diseases,
2.Methods of insect pests and plant disease measurement,
3.Assessment of crop yield losses, calculations based on economics of IPM,
4.Identification of bio-control agents, different predators and natural enemies.
5.Mass multiplication of *Trichoderma, Pseudomonas, Trichogramma*, NPV etc.
6. Identification and nature of damage of important insect pests and diseases and their management.
7.Crop (agro-ecosystem) dynamics of a selected insect pest and diseases.
8.Plan & assess preventive strategies (IPM module) and decision making.
9.Crop monitoring attacked by insect, pest and diseases . Awareness campaign at farmers fields.

References

1. Imms General text book of Entomology – Richards, O.W. and Davies, E.C.
2. Text Book of Entomology – Pruthi, H.S.
3. Agricultural Entomology for Indian – Khanna, S.S. Students
4. General and Applied Entomology – Nayar, K.K., Ananthakrishnan, T.N. and David,
5. The Insect Structure and function – Chapman, R.F.
6. Text book of Entomology – Mathur and Upadhyaya
7. The science of Entomology – Romoser, W.S. (1981) II & III edition Macmillan Publishing Company, New York

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Subject-Code AG-502

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

Manures, Fertilizers and Soil Fertility Management

UNIT-1. Introduction and importance of organic manures, properties and methods of preparation of bulky and concentrated manures. Green/leaf manuring.

UNIT-2. Integrated nutrient management. Chemical fertilizers: classification, composition and properties of major nitrogenous, phosphatic, poussic fertilizers, secondary & micronutrient fertilizers,

UNIT-3. Complex fertilizers, Nano-fertilizers Soil amendments, Fertilizer Storage, Fertilizer Control Order. History of soil fertility and plant nutrition. criteria of essentiality. role, deficiency and toxicity symptoms of essential plant nutrients, Mechanisms of nutrient transport to plants,

UNIT-4. Factors affecting nutrient availability to plants. Chemistry of soil nitrogen, phosphorus, potassium, calcium, magnesium, sulphur and micronutrients. Soil fertility evaluation, Soil testing. Critical levels of different nutrients in soil.

UNIT-5. Forms of nutrients in soil, plant analysis, rapid plant tissue tests. Indicator plants. Methods of fertilizer recommendations to crops. Factor influencing nutrient use efficiency (NUE), methods of application under rainfed and irrigated conditions.

Practical

1.Introduction of analytical instruments and their principles,
2.Alibration and applications, Colorimetry and flame photometry.
3.Estimation of available N in soils.
4.Estimation of available P in soils.
5.Estimation of available K. Estimation of available S in soils.
6.Estimation of available Ca and Mg in soils.
7.Estimation of available Zn in soils. Estimation of N in plants. Estimation of P in plants.
8.Estimation of K in plants. Estimation of S in plants.

References

1. The Nature Properties of Soil – Brady, N.C. & Weil R.R.
2. Fundamentals of Soil Science
3. Soil Fertility and Fertilizers – Nelson Tisdale
4. Methods of Soil Fertilization – A.J. Pieters
5. Organic Farming – N.S. Subbarao

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Subject-Code AG-503

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

Pests of Crops and Stored Grains and their Management

UNIT-1. General account on nature and type of damage by different arthropods pests.

UNIT-2. Scientific name, order, family, host range, distribution, biology and bionomics, nature of damage, and management of major pests and scientific name, order, family, host range, distribution, nature of damage and control practice other important arthropod pests of various field crop, vegetable crop,

UNIT-3. fruit crop, plantation crops, ornamental crops, narcotics, spices and condiments. Factors affecting losses of stored grain and role of physical, biological, mechanical and chemical factors in deterioration of grain.

UNIT-4. Insect pests, mites, rodents, birds and microorganisms associated with stored grain and their management.

UNIT-5. Storage structure and methods of grain storage and fundamental principles of grain store management.

Practical

1. Identification of different types of damage.
2. Identification and study of life cycle and seasonal history of various insect pests attacking crops and their produce: (a) Field Crops (b) Vegetable Crops (c) Fruit Crops (d) Plantation, Gardens, Narcotics, Spices & condiments.
3. Identification of insect pests and Mites associated with stored grain.
4. Determination of insect infestation by different methods.
5. Assessment of losses due to insects.
6. Calculations on the doses of insecticides application technique.
7. Fumigation of grain store / godown. Identification of rodents and rodent control operations in godowns.

References

1. Storage Pest Management – Sharma, S. and Choudhary, A.
2. Management of Insect Pests of – Gupta, H.C.L. Horticultural Crops
3. Text book of Entomology – Pruthi, H.S.
4. Cotton pests and Bio control agents – Sathe, T.V.
5. Economic and Applied Entomology – Ashok Kumar and Prem Mohan Nigam
6. A Text book of Applied Entomology – K.P. Shrivastava (Vol. II)

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Subject-Code AG-504

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

Diseases of Field & Horticulrural Crops & their Management-I

UNIT-1.Symptoms, etiology, disease cycle and management of major diseases of following Crops.

UNIT-2.Field Crops: Rice: blast, brown spot, bacterial blight, sheath blight, false smut, khaira and tungro; Maize: stalk rots, downy mildew, leaf spots; Sorghum: smuts, grain mold and anthracnose.

UNIT-3.Bajra :downy mildew and ergot; Groundnut: early and late leaf spots, wilt Soybean: Rhizoctonia blight, bacterial spot, seed and seedling rot and mosaic;
Pigeonpea: Phytophthora blight, wilt and sterility mosaic; Finger millet: Blast and leaf spot; black & green gram: anthracnose, Cercospora leaf spot and anthracnose, web blight and yellow mosaic; Castor.

UNIT-4.Phytophthora blight; Tobacco: black shank, black root rot and mosaic. Horticultural Crops: Guava: wilt and anthracnose; Banana: Panama wilt, bacterial wilt, Sigatoka and bunchy top; Papaya: foot rot, leaf curl and mosaic, Pomegranate: bacterial blight; Cruciferous vegetables:

UNIT-5.Alternaria leaf spot and black rot; Brinjal: Phomopsis blight and fruit rot and Sclerotinia blight; Tomato: damping off, wilt, early and late blight, buck eye rot and leaf curl and mosaic; Okra: Yellow Vein Mosaic; Beans: anthracnose and bacterial blight; Ginger: soft rot; Colocasia: Phytophthora blight; Coconut: wilt and bud rot; Tea: blister blight; Coffee rust.

Practical
1.Identification and histopathological studies of selected diseases of field and horticulural crops covered in theory.
2.Field visit for the diagnosis of field problems.
3.Collection and preservation of plant diseased specimens for Herbarium;
Note: Students should submit 50 pressed and well-mounted specimens.

References
1. Diseases of Vegetable crops - R.S. Singh
2. Diseases of Plantation crops – Kulkarni and their management
3. Diseases of Fruits and Plantation - Jahagirdar. Shamora crops and their management, A modern perspective
4. Diseases of Plantation Crops - V.K. Gupta
5. Diseases of Vegetable Crops - J.C. Walker
6. Diseases of Fruit Crops - V.K. Gupta

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Subject-Code AG-505

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

Crop Improvement – I (*Kharif Crops*)

UNIT-1. Centers of origin, distribution of species, wild relatives in different cereals; pulses; oilseeds; fibers; fodders and cash crops.

UNIT-2.vegetable and horticultural crops; Plant genetic resources, its utilization and conservation Floral biology, study of genetics of qualitative and quantitative characters.

UNIT-3. Important concepts of breeding self pollinated, cross pollinated and vegetative propagated crops; Major breeding objectives and procedures including conventional and modern innovative approaches for development of hybrids and varieties for yield.

UNIT-4. adaptability, stability, abiotic and biotic stress tolerance and quality (physical, chemical, nutritional); Seed production technology in self pollinated, cross pollinated and vegetatively propagated crops.

UNIT-5. Hybrid seed production technology in Maize, Rice, Sorghum, Pearl millet and Pigeonpea, etc. Ideotype concept and climate resilient crop varieties for future.

Practical

1. Emasculation and hybridization techniques in different crop species; viz., Rice, Maize, Sorghum, Pearl Millet, Ragi, Pigeonpea, Urdbean, Mungbean, Soybean, Groundnut, Seasame , Caster, Cotton, Cowpea, Pearl millet and Tobacco.
2. Maintenance breeding of different kharif crops.
3. Handling of germplasm and segregating populations by different methods like pedigree, bulk and single seed decent methods.
4. Study of field techniques for seed production and hybrid seeds production in Kharif Crops.
5. Estimation of heterosis, inbreeding depression and heritability; Layout of field Experiments.
6. Study of quality characters, donor parents for different characters;
7. Visit to seed production plots; Visit to AICRP plots of different field crops.

References

1. Omics Technologies and Crop Improvement- Noureddine Benkeblia
2. Molecular Approaches in Plant Abiotic Stress- rajashri Kumar gour and Pradeep sharma
3. Translational Genomics for Crop Breeding: Biotic Stress- Rajeev Varsney, Roberto Tuberosa
4. Marker Assisted Plant Breeding- B D Singh and A K Singh
5. Plant Breeding principles & Methods - B D Singh

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Subject Code AG-506

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

Geo-informatics and Nano-technology for Precision Farming

UNIT-1. Precision agriculture: concepts and techniques; their issues and concerns for Indian agriculture; Geo-informatics- definition, concepts, tool and techniques, their use in Precision Agriculture.

UNIT-2 Crop discrimination and Yield monitoring, soil mapping; fertilizer recommendation using geospatial technologies; Spatial data and their management in GIS; Geodesy and its basic principles.

UNIT-3. Remote sensing concepts and application in agriculture; Image processing and interpretation; Global positioning system (GPS), components and its functions; System Simulation- Concepts and principles.

UNIT-4. Introduction to crop Simulation Models and their uses for optimization of Agricultural Inputs; STCR approach for precision agriculture; Nanotechnology. definition, concepts and techniques, brief introduction about Nano scale effects.

UNIT-5. Nano-particles, Nano-pesticides, Nano-fertilizers, Nano-sensors, Use of nanotechnology in tillage, seed, water, fertilizer, plant protection for scaling-up farm productivity.

Practical

1. Introduction to GIS software, spatial data creation and editing.
2. Introduction to image processing software.
3. Visual and digital interpretation of remote sensing images.
4. Generation of spectral profiles of different objects. Supervised and unsupervised
5. Classification and acreage estimation.
6. Multispectral remote sensing for soil mapping.
7. Creation of thematic layers of soil fertility based on GIS.
8. Creation of productivity and management zones.
9. Fertilizers recommendations based of VRT and STCR techniques.
10. Crop stress (biotic/abiotic) monitoring using geospatial technology.

References

1. Geo-informatics and Nano-technology for Precision Farming by- S R Reddy.
2. Precision Farming - Premjit Sharma
3. Precision Farming a New Approach- Ram, Tulsa & Lohan, Shiv Kumar & Singh, Ranveer & Singh, Purshotam
4. Adoption of Precision Farming Technologies- Sangeetha Vidwan A.S. Panchapakesa Iyer
5. Foundations of Information Technology- Sangeeta Panchal and Alka Sabharwal

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Subject-Code AG-507

Credit 2(0+2)
W.e.f.-2016-2017

Practical Crop Production-I *(Kharif Crops)*

Practical

1. Crop planning, raising field crops in multiple cropping systems.
2. Field preparation, seed, treatment, nursery raising, sowing, nutrient, water and weed Management.
3. Management of insect-pests diseases of crops.
4. Harvesting, threshing, drying winnowing, storage and marketing of produce.
5. The emphasis will be given to seed production, mechanization, resource conservation and Integrated nutrient.
6. Insect-pest and disease management technologies.
7. Preparation of balance sheet including cost of cultivation, net returns per student as well as per team of 8-10 students.

References

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

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SRI SATYA SAI UNIVERSITY OF TECHNOLOGY & MEDICAL SCIENCES, SEHORE

Subject-Code AG-508

Credit 1(1+0)
W.e.f.-2016-2017

Intellectual Property Rights

UNIT-1. Introduction and meaning of intellectual property, brief introduction to GATT, WTO, TRIPs and WIPO, Treaties for IPR protection: Madrid protocol, Berne Convention, Budapest treaty, etc.

UNIT-2. Types of Intellectual Property and legislations covering IPR in India:-Patents, Copyrights, Trademark, Industrial design, Geographical indications, Integrated circuits, Trade secrets.

UNIT-3. Patents Act 1970 and Patent system in India, patentability, process and product patent, filing of patent, patent specification, patent claims, Patent opposition and revocation, infringement, Compulsory licensing, Patent Cooperation Treaty, Patent search and patent database.

UNIT-4. Origin and history including a brief introduction to UPOV for protection of plant varieties, Protection of plant varieties under UPOV and PPV&FR Act of India, Plant breeders rights, Registration of plant varieties under PPV&FR Act 2001, breeders, researcher and farmers rights.

UNIT-5. Traditional knowledge-meaning and rights of TK holders. Convention on Biological Diversity, International treaty on plant genetic resources for food and agriculture (ITPGRFA). Indian Biological Diversity Act, 2002 and its salient features, access and benefit sharing.

References

1. Intellectual Property Rights by Yadav R.K. Dr. Shweta.

2. An introduction to intellectual property rights- Venkataraman M

3 Law Relating to Intellectual Property Rights- M. K. Bhandari

4. Intellectual Property Rights-II- Kriti Sharma

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SRI SATYA SAI UNIVERSITY OF TECHNOLOGY & MEDICAL SCIENCES, SEHORE

Elective Course

Subject-Code AG-509 (A)

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

Agri-business Management

UNIT-1. Transformation of agriculture in to agribusiness, various stakeholders and components of agribusiness systems. Constraints in establishing agro-based industries. Agri-value chain: Understanding primary and support activities and their linkages. Business environment: PEST & SWOT analysis. Management functions: Roles & activities, Transformation of agriculture into agribusiness, various stakeholders and components of agribusiness systems.

UNIT-2. Importance of agribusiness in the Indian economy and New Agricultural Policy. Distinctive features of Agribusiness Management: Imporuance and needs of agro-based industries, Classification of industries and types of agro based industries.

UNIT-3. Institutional arrangement, procedures to set up agro based industries. Constraints Organization culture. Planning, meaning, definition, types of plans. Purpose or mission, goals or objectives, Strategies, polices procedures, rules, programs and budget.

UNIT-4. Components of a business plan, Steps in planning and implementation. Organization staffing, directing and motivation. Ordering, leading, supervision, communications, control. Capital Management and Financial management of Agribusiness. Financial statements and their importance.

UNIT-5. Marketing Management: Segmentation, targeting & positioning. Marketing mix and marketing strategies. Consumer behaviour analysis, Product Life Cycle (PLC). Sales & Distribution Management. Pricing policy, various pricing methods. Project Management definition, project cycle, identification, formulation, appraisal, implementation, monitoring and evaluation. Project Appraisal and evaluation technique

Practical

1. Study of agri-input markets: Seed, fertilizers, pesticides. Study of output markets: grains, fruits, vegetables, flowers.
2. Study of product markets, retails trade commodity trading, and value added products.
3. Study of financing institutions- Cooperative, Commercial banks, RRBs, Agribusiness Finance Limited, NABARD.
4. Preparations of projects and Feasibility reports for agribusiness entreprencur.
5. Appraisal/evaluation techniques of identifying viable project- Non-discounting techniques.
6. Case study of agro-based industries. Trend and growth rate of prices of agricultural Commodities.Net present worth technique for selection of viable project. Internal rate of return.

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References

1. Agribusiness Management – W. David Downey and Steven P. Erickson
2. Introduction of Agril. Business – Davis, J. and Gold Berg Management
3. Project Management and Control – Rao
4. Project Management – S. Choudhary, Hill Publication Company, New Delhi
5. Project Management – Nagaraja
6. Agri. Business Management – Broadway, Himalaya Publication House, New Delhi
7. Project Planning, Analysis, Selection, – Chandra Implementation and Review

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Subject Code AG-509 (B)

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

Food Safety and Standards

UNIT-1. Food Safety – Definition, Importance, Scope and Factors affecting Food Safety. Hazards and Risks, Types of hazards - Biological, Chemical, Physical hazards. Management of hazards - Need. Control of parameters.

UNIT-2. Temperature control. Food storage. Product design. Hygiene and Sanitation in Food Service Establishments- Introduction. Sources of contamination and their control. Waste Disposal. Pest and Rodent Control. Personnel Hygiene. Food Safety Measures.

UNIT-3. Food Safety Management Tools- Basic concepts. PRPs, GHPs, GMPs, SSOPs etc. HACCP. ISO series. TQM - concept and need for quality, components of TQM. Kaizen. Risk Analysis. Accreditation and Auditing. Water Analysis, Surface Sanitation and Personal Hygiene.

UNIT-4. Food laws and StandardsIndian Food Regulatory Regime, FSSA. Global Scenario CAC. Other laws and standards related to food. Recent concerns- New and Emerging Pathogens. Packaging. Product labeling and Nutritional labeling.

UNIT-5. Genetically modified foods\ transgenics. Organic foods. Newer approaches to food safety. Recent Outbreaks. Indian and International Standards for food products.

Practical

1. Water quality analysis physico-chemical and microbiological.
2. Preparation of different types of media.
3. Microbiological Examination of different food samples.
4. Assessment of surface sanitation by swab/rinse method.
5. Assessment of personal hygiene. Biochemical tests for identification of bacteria.
6. Scheme for the detection of food borne pathogens.
7. Preparation of plans for Implementation of FSMS - HACCP, ISO: 22000.

References

1. Food Safety and Standards Act, 2006- Lawman's
2. International Standards for Food Safety- Naomi Rees and David Watson
3. Food Science and Nutrition- Sunterra Roday
4. Food Safety Culture: Creating a Behavior-Based Food Safety Management System- Frank Yiannas

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SRI SATYA SAI UNIVERSITY OF TECHNOLOGY & MEDICAL SCIENCES, SEHORE

Subject Code AG-509(C)

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

Agricultural Journalism

UNIT-1. Agricultural Journalism: The nature and scope of agricultural journalism characteristics and training of the agricultural journalist, how agricultural journalism is similar to and different from other types of journalism.

UNIT-2. Newspapers and magazines as communication media: Characteristics; kinds and functions of newspapers and magazines, characteristics of newspaper and magazine readers. Form and content of newspapers and magazines.

UNIT-3. Style and language of newspapers and magazines. parts of newspapers and magazines. The agricultural story: Types of agricultural stories, subject matter of the agricultural story, structure of the agricultural story.

UNIT-4. Gathering agricultural information: Sources of agricultural information, interviews, coverage of events, abstracting from research and scientific materials, wire services, other agricultural news sources.

UNIT-5. Writing the story: Organizing the material, treatment of the story, writing the news lead and the body, readability measures. Illustrating agricultural stories: Use of photographs, use of artwork (graphs, charts, maps, etc.), writing the captions. Editorial mechanics: Copy reading, headline and title writing.

Practical

1. Practice in interviewing. Covering agricultural events.
2. Abstracting stories from research and scientific materials and from wire services.
3. Writing different types of agricultural stories.
4. Selecting pictures and artwork for the agricultural story.
5. Practice in editing, copy reading, headline and title writing, proofreading, layouting. Testing copy with a readability formula.
6. Visit to a publishing office.

References

1. Agricultural Extension and Farm Journalism- A K Singh
2. Needed, a Profession of Agricultural Journalism 1-Robert William Trullinger
3. Agricultural Communications: Changes and Challenges-Kristina Boone

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Registrar
Sri Satya Sai University of Technology & Medical Sciences Sehore (M.P.)

Sri Satya Sai
University of Technology and Medical Sciences

(Established under Govt. of M.P. Registered under UGC 2(F) 1956)

Bhopal-Indore Road, Opp. Pachama oilfed plant, Pachama, Dist.-Sehore M.P.PIN-466001
Ph. 07562-223647, Fax : 07562-223644, Web: www.sssutms.co.in, info@sssutms.co.in

Name of Faculty: School of Agriculture

Name of Department: Agriculture

Minutes of Board of Studies Committee Meeting Dated on 29.11.2018

The Board of Studies Committee Meeting was held in the room of Department of Agriculture at 2:30 PM, on 29.11.2018, Following members were present.

1. Mr.L.N.Pachwariya SDO, Dept. of Agriculture, (External Member)
2. Dr..Ashok Verma, (SSSUTMS, Sehore) Chairperson
3. Mr. Veerbal Kushwaha(SSSUTMS, Sehore)
4. Mr. Kamlesh Verma, (SSSUTMS, Sehore)
5. Mrs. Namita Singh (SSSUTMS, Sehore)

The Chairperson of Board of Studies Committee welcomes and appreciated the efforts put up by the faculty for progress of the departmental activities. The following Agenda points were discussed and resolved.

Agenda 1 Preparation of syllabus and Scheme for 2nd Semester, 4th Semester, 6th Semester. And 8th semester

Discussion

Bos member discuss the syllabus proposed for 2nd Semester, 4th Semester, 6th Semester. And 8th semester in detail and recommended.....

Resolution of the Discussion:

After discussion the Bos member agreed with the proposed 2nd Semester, 4th Semester, 6th Semester. And 8th semester Scheme and Syllabus...

Agenda 2 Any other agenda with the permission of chairman.

Discussion .....

Resolution of the Discussion:.....

The Chairman thanks the members for peaceful conduction of meeting.

Signature of All members (Including Chairperson)

1. Mr.L.N.Pachwariya
2. Dr. Ashok Verma,
3. Mr. Veerbal Kushwaha
4. Mr. Kamlesh Verma,
5. Mrs. Namita Singh

Registrar
Sri Satya Sai University of Technology & Medical Sciences Bhopal

Chairperson

School of Agriculture
SSSUTMS, Sehore

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Sri Satya Sai University of Technology and Medical Sciences, Sehore. M.P

Scheme of Examination

School of Agriculture

Bachelor of Science (B.Sc.) (Hons.) Agriculture

Semester-VIII as per Fifth Dean Committee, w.e.f. 2016-17

S.No.	Subject Code	Module	Maximum Marks Allotted					Module	Credits	Total Marks
			Theory Slot			Practical Slot				
1	AG-801 (A)	Seed Production and Technology	-	-	-	-	100	Module-I	10	100
	AG-801(B)	Mushroom Cultivation	-	-	-					
	AG-801 (C)	Dairy Technology	-	-	-					
	AG-801 (D)	Beekeeping	-	-	-					
	AG-801 (E)	Commercial Sericulture	-	-	-					
	AG-801 (F)	Soil, Plant, Water and Seed Testing	-	-	-					
2	AG-802 (A)	Floriculture and Landscaping	-	-	-	-	100	Module-II	10	100
	AG-802 (B)	Organic Production Technology	-	-	-					
	AG-802 (C)	Nursery Management	-	-	-					
	AG-802 (D)	Commercial Horticulture	-	-	-					
	AG-802 (E)	Poultry Production Technology	-	-	-					
	AG-802 (F)	Agriculture Waste Management	-	-	-					
							200		20	200

Modules for Skill Development and Entrepreneurship:

A student has to register 20 credits opting for two modules of (0+10) credits each (total 20 credits) from the package of modules in the VIII semester.

NOTE. - One Module should be selected from each AG 801 & 802

L= Lecture, T= Tutorial & P= Practical

BOS Members

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Dean
School of Agriculture
SSSUTMS, Sehore

DEAN/HOD

SRI SATYA SAI UNIVERSITY OF TECHNOLOGY & MEDICAL SCIENCES, SEHORE

B.Sc. (Ag.) (4th) Year

(8th) Semester w.e.f. 2016-2017

VIII Semester (Experiential Learning Programme/ HOT)		
	Module	Credit Hr.
	1. Module-I	0+10
	2. Module-II	0+10
	Total	20 (0+20)

Modules for Skill Development and Entrepreneurship: A student has to register 20 credits opting for two modules of (0+10) credits each (total 20 credits) from the package of modules in the VIII semester.

Sr.	Title of the module	Credits
1.	Seed Production and Technology	0+10
2.	Mushroom Cultivation	0+10
3.	Dairy Technology	0+10
4.	Beekeeping	0+10
5.	Commercial Sericulture	0+10
6.	Soil, Plant, Water and Seed Testing	0+10
7.	Floriculture and Landscaping	0+10
8.	Organic Production Technology	0+10
9.	Nursery Management	0+10
10.	Commercial Horticulture	0+10
11.	Poultry Production Technology	0+10
12.	Agriculture Waste Management	

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Evaluation of Experiential Learning Programme/ HOT (Module-I)		
S.No.	Parameters	Max. Marks
1.	Project Planning and Writing	10
2.	Presentation	10
3.	Regularity	10
4.	Monthly Assessment	10
5.	Output delivery	10
6.	Technical Skill Development	10
7.	Entrepreneurship Skills	10
8.	Business networking skills	10
9.	Repen Writing Skills	10
10.	Final Presentation	10
	Total	100

Evaluation of Experiential Learning Programme/ HOT (Module-II)		
S.No.	Parameters	Max. Marks
1.	Project Planning and Writing	10
2.	Presentation	10
3.	Regularity	10
4.	Monthly Assessment	10
5.	Output delivery	10
6.	Technical Skill Development	10
7.	Entrepreneurship Skills	10
8.	Business networking skills	10
9.	Report Writing Skills	10
10.	Final Presentation	10
	Total	100

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Name of Faculty: School of Agriculture

Name of Department: Agriculture

Minutes of Board of Studies Committee Meeting Dated on 28.05.2018

The Board of Studies Committee Meeting was held in the room of Department of Agriculture at 2:30 PM. on 28.05.2018, Following members were present.

1. Mr.L.N.Pachwariya SDO, Dept. of Agriculture, (External Member)
2. Dr. Ashok Verma, (SSSUTMS, Sehore) Chairpersin
3. Mr. Veerbal Kushwaha(SSSUTMS, Sehore)
4. Mr. Kamlesh Verma, (SSSUTMS, Sehore)
5. Mrs. Namita Singh (SSSUTMS, Sehore)

The Chairperson of Board of Studies Committee welcomes and appreciated the efforts put up by the faculty for progress of the departmental activities. The following Agenda points were discussed and resolved.

Agenda 1 Preparation of syllabus and Scheme for 1st Semester, 3rd Semester, 5th Semester and 7th semester Discussion
Bos member discuss the syllabus proposed for 1st Semester, 3rd Semester, 5th Semester and 7th semester in detail and recommended.....

Resolution of the Discussion:

After discussion the Bos member agreed with the proposed 1st Semester, 3rd Semester, 5th Semester and 7th semester Scheme and Syllabus...
Agenda 2 Any other agenda with the permission of chairman.

Discussion .....
Resolution of the Discussion:.....

The Chairman thanks the members for peaceful conduction of meeting.

Signature of All members (Including Chairperson)

1. Mr.L.N.Pachwariya
2. Dr. Ashok Verma,
3. Mr. Veerbal Kushwaha
4. Mr. Kamlesh Verma,
5. Mrs. Namita Singh

Dean
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Registrar
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Chairperson

Sri Satya Sai University of Technology and Medical Sciences, Sehore, M.P

Scheme of Examination

School of Agriculture

Bachelor of Science (B.Sc.) (Hons.) Agriculture

Semester-VII as per Fifth Dean Committee, w.e.f. 2016-17

S.No.	SUBJECT CODE	Subject Name & Title	Maximum Marks Allotted						Field Training	Credits Alloted	
			Theory Slot			Practical Slot			No. of Week		
1	AG-701	General Orientation Programs	-	-	-	-	-	100	1	1	
2	AG-702	Village Attachment	-	-	-	-	-	100	8	8	
3	AG-703	Unit Attachment in Univ./College KVK/Research Station Attachment	-	-	-	-	-	100	5	5	
4	AG-704	Plant Clinic	-	-	-	-	-	100	2	2	
5	AG-705	Agro-Industrial Attachment	-	-	-	-	-	100	3	3	
6	AG-706	Project Report Preparation Presentation and Evaluation	-	-	-	-	-	100	1	1	Total
								600	**20**	**20**	**600**

- Agro- Industrial Attachment: The students would be attached with the agro-industries for a period of 3 weeks to get an experience of the industrial environment and working.
- Educational tour will be conducted in break between IV & V Semester or VI & VII Semester
- Minimum passing marks in each theory and practical separately is 50%

BOS Members

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SRI SATYA SAI UNIVERSITY OF TECHNOLOGY & MEDICAL SCIENCE SEHORE (MP) 2021-22

B.Sc. (Ag.) DEGREE PROGRAMME
4TH Year

(7th) Semester (RAWE) w.e.f.-2016-17

Subject Code	Subject Name	Credits
AG- 701	General Orientation Programs	1(0+1)
AG -702	Village Attachment	8(0+8)
AG -703	Unit Attachment in Univ./College KVK/Research Station Attachment	5(0+5)
AG -704	Plant Clinic	2(0+2)
AG -705	Agro-Industrial Attachment	3(0+3)
AG -706	Project Report Preparation Presentation and Evaluation	1(0+1)
	Total	20

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SRI SATYA SAI UNIVERSITY OF TECHNOLOGY & MEDICAL SCIENCE SEHORE (MP) 2021-22

SUBJECT CODE-AG 701

General Orientation Programs
Rural Agricultural Work Experience Programme (RAWE)

Sri satya sai university and medical science, Sehore on the recommendation of fourth Deans' Committee (ICAR) has introduced Rural Agricultural Work Experience programme as an essential requirement for B.Sc. (Ag) degree. The committee in order to make higher agricultural education relevant to present day changing needs, and develop professionalism felt for reorienting agricultural education. In view of globalization and development of new technologies, it is essential that the students meet international quality standards. One of the pillars for quality assurance in agricultural education is the curriculum, which takes are of contemporary needs, provides for analytical skill, entreprenourship and experiential learning for having confidence to do profitable farming. In the programme students will be placed in the villages for intensive training and field experience with farm families. During stay in the villages, they will get an opportunity to study the different the problems and suggest the appropriate measures to solve them for improvement in the existing practices. Students will also develop confidence in applying the knowledge gained during the course of the studies and fine-tune their skill with the Experience and knowledge of host farmers. Under this programme, RAWE model first has been adopted in the University.

Objectives

1. To understand of rural community life and the current situation prevailing in villages with special reference to agriculture and allied enterprises.
2. To familiarize with the socio-economic conditions of farmers and their problems with reference to agricultural development.
3. To make students understand farm technologies as adopted by farmers and also to help farmers to prepare sound farm plans matching to available resources.
4. To facilitate development of communication skills in students through use of extension teaching methods for transfer of technology.
5. To acquaint the students with the on-going extension and rural development programmes and to understand the activities of Krishi Vigyan Kendra.
6. To develop confidence and competence in students for solving teaching problems related to agriculture and allied enterprises.

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7. To develop understanding regarding high-tech agricultural technology and factors affecting in the adoption of modern methods of agriculture by the farmers.

SUBJECT CODE-AG 702

Village attachment

Rural Economics

The students shall take-up tech-economic survey of the village as per the prescribed questionnaire. The students shall be required to collect the data on economic condition of village, resource endowment and its utilization, problems of labour and employment and other important economic aspects detailed in the schedule. The student shall also conduct a farm survey and workout the cost of cultivation of principal crops grown on the farm allotted to them. He will also maintain a farm record book and analyze the data. On the basis of the results students will formulate a number of alternative plans in consultation with the farmers and the

Extension Programme

The students shall involve themselves in the following extension education programmes –

I. Identification of agricultural problems of the village and training needs of the farmers.
II. Conducting method demonstrations of improved practices.
III. Organization of short duration farmers training, camps, field visits and agricultural exhibitions.
IV. Study of the on-going extension programmes in the villages.
V. Arrange farmers meeting the discuss agricultural aspects.
VI. Visit to village institutions and study their role in development programmes and other extension activities.
VII. Motivate farmers through different extension teaching methods.
VIII. Documentation of success stories. Each student will prepare a report with respect to the activities indicated above and submit it to the Chairman of Advisory Committee for its evaluation. The students shall be given an opportunity to acquaint themselves with ongoing programmes and activities of research, development, marketing, extension agencies and organizations in the village. The students will submit report on the institutions he/she has visited.

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School of Agriculture
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SRI SATYA SAI UNIVERSITY OF TECHNOLOGY & MEDICAL SCIENCE SEHORE (MP) 2021-22

SUBJECT CODE- AG 703

Unit Attachment in Univ. /College KVK/Research Station Attachment

Student will conduct the bench mark survey & PRA of KVK villages. Assisting in conducting F.L.D., organizing farmers meeting Kisan mela, Exhibition, Monthly Workshop, Organizing field visits. Training programmes for farmers and farm women, study of crop cafeteria, visit of line departments viz., Agriculture, Horticulture Dairy, Poultry etc. to enquire about farmers welfare about respective department and visit of digontic team.

SUBJECT CODE-AG 704

Plant Clinic

Crop Production

The students shall involve themselves in actual day-to-day agricultural operations alongwith their host farmers. He/she will also involve in production technology and management of various crops. The student shall maintain a record of work done in prescribed proforma. In fruits and vegetables crops, the students shall involve themselves in field operations viz., seedbed preparation, nursery management, propagation etc, along with their host farmers. The student shall maintain a record of work done and will submit it at the end of the semester.

Crop Protection

Under this the students are exposed to various plant and soil disorders and learn to diagnose major plant diseases, insect-pests, and nutrient deficiency, soil related constrains, physiological disorders and prescribe remedial measures.

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SRI SATYA SAI UNIVERSITY OF TECHNOLOGY & MEDICAL SCIENCE SEHORE (MP) 2021-22

SUBJECT CODE-AG 705

Agro Industrial Attachment

1. Students shall be placed in Agro-and Cottage industries and Commodities Boards for 03 weeks. y
2. Industries include Seed/Sapling production, Pesticides-insecticides, Post-harvest-processing value addition, Agri-finance institutions, etc.

Activities and Tasks during Agro-Industrial Attachment Programme

1. Acquaintance with industry and staff y
2. Study of structure, functioning, objective and mandates of the industry y
3. Study of various processing units and hands-on trainings under supervision of industry staff y
4. Ethics of industry y
5. Employment generated by the industry y
6. Contribution of the industry promoting environment y
7. Learning business network including outlets of the industry y
8. Skill development in all crucial tasks of the industry y
9. Documentation of the activities and task performed by the students y
10. Performance evaluation, appraisal and ranking of students

SUBJECT CODE-AG 706

Project Report Preparation, Presentation, Evaluation and Viva Voice

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SRI SATYA SAI UNIVERSITY OF TECHNOLOGY & MEDICAL SCIENCES

(Established Under Act. 06 of 2014 by Govt. of Madhya Pradesh)
Approved by Madhya Pradesh Private University Regulatory Commission

SH-18, Bhopal-Indore Road, Opposite Oil Fed Plant, Pachama, Sehore (M.P.) Pin Code – 466001

Name of faculty: School of Agriculture
Name of Department :Agriculture
Minutes of Board of studies committee meeting dated on 22.06.2019
The Board of studies committee meeting was held in the room of department of agriculture at 2:30 PM. on 22.06.2019, Following members were present

1. Dr. M.D.Singh (Chairman)
2. Miss Anupama Awadhiya (Member)
3. Shri Veerbal Kushwaha (Member)
4. Dr.K.K.Nema (External Member)
5. Mr. Rajmal Ateriya (Member)

The chairperson of Board of studies committee welcomes and apprececiated the efforts put up by the faculty for progress of the deparlmental activities . The following agenda points were discussed and resolved .

Agenda 1 Syllabus and scheme for 1st semester , 3rd semester , 5th semester ,and 7th semester in detail was put before committee.

Resolution of the discussion :

After discussion the BOS member agreed with the proposed 1st semester , 3rd semester , 5th semester ,and 7th semester Scheme and syllabus of B.Sc. (Hons.)Agriculture program

Agenda 2 Any other agenda with the permission of chairman

Discussion was held on manual for RAWE activities .

The chairman thanks the members for peaceful conduction of meeting

Note-There is no change scheme and syllabus 22/06/2019.

Signature of all members (Including chairperson)

1. Dr. M.D.Singh
2. Miss Anupama Awadhiya
3. Shri Veerbal Kushwaha
4. Dr.K.K.Nema
5. Mr. Rajmal Ateriya

Registrar
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School of Agriculture
SSUTMS, Sehore

SRI SATYA SAI UNIVERSITY OF TECHNOLOGY & MEDICAL SCIENCES

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Name of faculty: School of Agriculture
Name of Department :Agriculture
Minutes of Board of studies committee meeting dated on 26.12.2019
The Board of studies committee meeting was held in the room of department of agriculture at 2:30 PM on 26.12.2019, Following members were present

1. Dr. M.D.Singh (Chairman)
2. Miss Sweta Kharole (Member)
3. Shri. Veerbal Kushwaha (Member)
4. Dr. K.K.Nema (External Member)
5. Mr. Rajmal Ateriya (Member)

The chairperson of Board of studies committee welcomes and apprececiated the efforts put up by the faculty for progress of the departmental activities . The following agenda points were discussed and resolved .

Agenda 1: Syllabus and scheme for 2nd semester , 4th semester , 6th semester ,and 8th semester in detail was put before committee.

Resolution of the discussion :

After discussion the BOS member agreed with the proposed 2nd semester , 4th semester , 6th semester ,and 8th semester Scheme and syllabus of B.Sc. (Hons.)Agriculture program

Agenda 2 Any other agenda with the permission of chairman

Discussion was held on ELP module.

The chairman thanks the members for peaceful conduction of meeting

Note-There is no change scheme and syllabus 26/12/2019.

Signature of all members (including chairperson)

1. Dr. M.D.Singh
2. Miss Sweta Kharole
3. Shri Veerbal Kushwaha
4. Dr. K.K.Nema
5. Mr. Rajmal Ateriya

Registrar
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Name of faculty: School of Agriculture
Name of Department :Agriculture
Minutes of Board of studies committee meeting dated on 20.08.2020
The Board of studies committee meeting was held in the room of department of agriculture at 2:30 PM on 20.08.2020, Following members were presem

1. Dr. M. D. Singh (Chairman)
2. Mr. Rajendra Baretha (Member)
3. Shri. Veerbal Kushwaha (Member)
4. Dr. K.K. Nemat(External (Member)
5. Mr. Vikram singh Jangda (Member)

The chairperson of Board of studies committee welcomes and apprececiated the efforts put up by the faculty for progress of the departmental activities. The following agenda points were discussed and resolved.

Agenda 1: Syllabus and scheme for 1st semester, 3rd semester, 5th semester ,and 7th semester in detail was put before committee.

Resolution of the discussion :

After discussion the BOS member agreed with the proposed 1st semester, 3rd semester, 5th semester ,and 7th semester Scheme and syllabus of B.Sc. (Hons.)Agriculture program

Agenda 2 Any other agenda with the permission of chairman

Discussion was held on manual for RAWE activities.

The chairman thanks the members for peaceful conduction of meeting

Note- There is no change scheme and syllabus 20/08/2020.

Signature of all members (Including chairperson)

1. Dr. M. D. Singh
2. Mr. Rajendra Baretha
3. Shri Veerbal Kushwaha
4. Dr. K.K. Nemat(External
5. Mr. Vikram singh Jangda

Dean
School of Agriculture
SSSUTMS, Sehore

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Name of faculty: School of Agriculture
Name of Department Agriculture
Minutes of Board of studies committee meeting dated on 26.07.2021
The Board of studies committee meeting was held in the room of department of agriculture at 2:30 PM. on 26.07.2021, Following members were present

1. Dr. Anil Kumar Dubey (Chairman)
2. Dr. N.P. Rathore (Member)
3. Shri Veerbal Kushwaha (Member)
4. Dr. B.K. Sharma (External Member)
5. Dr. M.D. Singh (Member)

The chairperson of Board of studies committee welcomes and apprececiated the efforts put up by the faculty for progress of the departmental activities . The fotlowing agenda points were discussed and resolved .

Agenda 1: Syllabus and scheme for 1st semester , 3rd semester , 5th semester ,and 7th semester in detail was put before committee.

Resolution of the discussion :

After discussion the BOS member agreed with the proposed 1st semester , 3rd semester , 5th semester ,and 7th semester Scheme and syllabus of B.Sc. (Hons.)Agriculture program

Agenda 2 Any other agenda with the permission of chairman

Discussion was held on manual for RAWE activities .

The chairman thanks the members for peaceful conduction of meeting

Note- There is no change scheme and syllabus 26/07/2021.

Signature of all members (Including chairperson)

1. Dr. Anil Kumar Dubey
2. Dr. N.P. Rathore
3. Shri Veerbal Kushwaha
4. Dr. B.K. Sharma
5. Dr. M.D. Singh

Dean
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Sehore

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Name of faculty: School of Agriculture
Name of Department :Agriculture
Minutes of Board of studies committee meeting dated on 28.12.2021
The Board of studies committee meeting was held in the room of department of agriculture at 2:30 PM. on 28.12.2021, Following members were present

1. Dr. Anil Kumar Dubey (Chairman)
2. Dr. N.P. Rathore (Member)
3. Shri. Veerbal Kushwaha (Member)
4. Dr. B.K. Sharma (External Member)
5. Mr. Kamlesh Verma (Member)

The chairperson of Board of studies committee welcomes and appreciated the efforts put up by the faculty for progress of the departmental activities . The following agenda points were discussed and resolved .

Agenda 1: Syllabus and scheme for 2nd semester , 4th semester , 6th semester ,and 8th semester in detail was put before committee.

Resolution of the discussion :

After discussion the BOS member agreed with the proposed 2nd semester , 4th semester , 6th semester ,and 8th semester Scheme and syllabus of B.Sc. (Hons.)Agriculture program

Agenda 2 Any other agenda with the permission of chairman

Discussion was held on ELP module.

The chairman thanks the members for peaceful conduction of meeting

Note-There is no change scheme and syllabus 28/12/2021.

Signature of all members (including chairperson)

1. Dr. Anil Kumar Dubey
2. Dr. N.P. Rathore
3. Shri Veerbal Kushwaha
4. Dr. B.K. Sharma
5. Mr. Kamlesh Verma

Dean
School of Agriculture
Sehore

Registrar
Sri Satya Sai University of Technology & Medical Sciences Sehore (M.P.)