BAG301: CROP PRODUCTION TECHNOLOGY-I (*Kharif Crops*)

Course Code	Course Name	TEACHING & EVALUATION SCHEME							
		THEORY			PRACTICAL		L	P	CREDITS
		END SEM University Exam	Two term exam*	Teachers Assessment*	END SEM University Exam	Teachers Assessment*			
BAG301	**CROP PRODUCTION TECHNOLOGY-I (Kharif Crops)**	50	30	00	15	05	1	1	2

Legends: **L** - Lecture; P – Practical; **C**-Credit;
***Teacher Assessment shall** be based on following components: Quiz / Assignment / Project / Participation in Class,

Course Objective: Basic knowledge of production technology of Kharif crops

Course Outcomes:
1. Students will able know about origin, distribution, and importance of Kharif crops
2. Students will able know about cultivation practices of Kharif crops

Unit-1
Origin, geographical distribution, economic importance, soil and climatic requirements, varieties, cultural practices and yield of **Cereals**- rice, maize, sorghum, pearl millet and finger millet.

Unit-2
Origin, geographical distribution, economic importance, soil and climatic requirements, varieties, cultural practices and yield of **Pulses**-pigeon pea, mungbean and urdbean.

Unit-3
Origin, geographical distribution, economic importance, soil and climatic requirements, varieties, cultural practices and yield of **Oilseeds**-groundnut, and soybean.

Unit-4
Origin, geographical distribution, economic importance, soil and climatic requirements, varieties, cultural practices and yield of **Fibrecrops**- cotton& jute.

Unit-5
Origin, geographical distribution, economic importance, soil and climatic requirements, varieties, cultural practices and yield of **Forage crops**-sorghum, cowpea, cluster bean and napier.

BAGL 301: Practical:

Rice nursery preparation, transplanting of rice, sowing of soybean, pigeon pea and mungbean. Maize, groundnut and cotton, effect of seed size on germination and seedling vigour of *kharif* season crops, effect of sowing depth on germination of *kharif* crops, identification of weeds in *kharif* season crops, top dressing and foliar feeding of nutrients, study of yield contributing characters and yield calculation of *kharif* season crops, study of crop varieties and important experiments at experimental farm. Study of forage experiments, morphological description of *kharif* season crops, visit to research centers of related crops.

Books:

1. Rajendra Prasad (ed.), 2006. Text Book of Field Crop Production, ICAR, New Delhi.
2. Reddy, S.R. and ReddiRamu.5th edition. Agronomy of Field Crops, Kalyani Publishers, Ludhiana.
3. Gururaj Hunsigi and Krishna K.R. 2007. Scientific Field Crop Production, Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi.

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BAG 302: Fundamentals of Plant Breeding

Course Code	Course Name	TEACHING & EVALUATION SCHEME							
		THEORY			PRACTICAL		L	P	CREDITS
		END SEM University Exam	Two term exam*	Teachers Assessment*	END SEM University Exam	Teachers Assessment*			
BAG302	Fundamentals of Plant Breeding	50	30	00	15	05	2	1	3

Legends: **L** - Lecture; **P** – Practical; **C**-Credit;
***Teacher Assessment** shall be based on following components: Quiz / Assignment / Project / Participation in Class,
Course Objective: To study the principle, objective, methods and use of plant breeding
Course Outcomes

1. Student will able to understand different scientific methods to provide improved crop varieties to the farmers /mass
2. Student will able to understand advanced technology of plant breeding

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, self-incompatibility and male sterility-genetic consequences, cultivar options.

Unit-2: Domestication, Acclimatization and Introduction; Centers of origin/diversity, components of Genetic variation; 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, Concept of population genetics and Hardy- Weinberg Law.

Unit-3: Genetic basis and methods of breeding cross pollinated crops, modes of selection; Population improvement scheme – Ear to row methods, Modifies Ear to Row; recurrent selection schemes; Heterosis and inbreeding depression, development of inbred lines and hybrids, composite and synthetic varieties.

Unit-4: Breeding methods in asexually propagated crops, Clonal selection and hybridization; Maintenance of breeding record and data collection; Wide hybridization and pre breeding; Polyploidy in relation to plant breeding, mutation breeding –methods and uses; breeding for important biotic and abiotic stresses.

Unit-5 : Biotechnological tools -DNA markers and marker assisted selection. Participatory plant breeding, Intellectual Property Rights, Patenting, Plant breeders & Farmer`s Rights.

BAGL 302: Practical

Plant Breeder's kit, Study of germplasm of various crops. Study of floral structure of self- pollinated and cross pollinated crops. Emasculation and hybridization techniques in self and cross pollinated crops.Consequences of inbreeding on genetic structure of resulting populations.Study of male sterility system.Handling of segregation populations.Methods of calculating mean, range, variance, standard deviation, heritability. Designs used in plant breeding experiments, analysis of Randomized Block Design. To work out the mode of pollination in a given crop and extent of natural out-crossing.Prediction of performance of double cross hybrids.

Books:

1. Essentials of Plant Breeding , Phundhan Singh, Kalyani Publishers 2018
2. Plant Breeding, Principles and methods , Kalyani Publishers 2017

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BAG303: AGRICULTURAL FINANCE AND CO-OPERATION

Course Code	Course Name	TEACHING & EVALUATION SCHEME							
		THEORY			PRACTICAL		L	P	CREDITS
		END SEM University Exam	Two term exam*	Teachers Assessment*	END SEM University Exam	Teachers Assessment*			
BAG303	Agricultural Finance And Co-Operation	50	30	00	15	05	2	1	3

Legends: **L** - Lecture; **P** – Practical; **C**-Credit;
***Teacher Assessment** shall be based on following components: Quiz / Assignment / Project / Participation in Class,

Course Objective: Basic knowledge of Agriculture Finance and Co-operation

Course Outcomes:
1. Student will able to understand scope and significance of Agriculture Finance
2. Student will able to understand significance of cooperatives in Indian agriculture.

Unit-1
Agricultural Finance- meaning, scope and significance, credit needs and its role in Indian agriculture. Agricultural credit: meaning, definition, need, classification. Credit analysis: 4R's and 3C is of credits.

Unit-2
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-3
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-4
Agricultural Cooperation – Meaning, brief history of cooperative development in India, objectives, principles of cooperation, significance of cooperatives in Indian agriculture.

Unit-5

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.

BAGL: 303Practical

Determination of most profitable level of capital use. Optimum allocation of limited amount of capital among different enterprise. Analysis of progress and performance of cooperatives using published data. Analysis of progress and performance of commercial banks and RRBs using published data. 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. 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. Preparation of Bankable projects for various agricultural products and its value added products. Seminar on selected topics.

Books:

1. Johil, S.S. and C.V.More.1970.Essentials of Farm Financial Management. Today and Tomorrow Printers and Publishers, New Delhi
2. John, J. Hamptron.1983. Financial decision making: Concepts, Problems and Cases of India. New Delhi
3. Mamoria,C.B. and R.D. Saksena. 1973. Co-Operatives in India.KitabMahal, Allahabad.
4. Mukhi, H.R. 1983. Cooperation in India and Abroad. New Heights Publishers, New

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BAG304: AGRI- INFORMATICS

Course Code	Course Name	Teaching & Evaluation Scheme							
		Theory			Practical		L	P	Credits
		End Sem University Exam	Two Term Exam*	Teachers Assessment*	End Sem University Exam	Teachers Assessment*			
BAG304	**Agri- Informatics**	50	30	00	15	05	1	1	2

Legends: **L** - Lecture; **P** – Practical; **C**-Credit;
***Teacher Assessment** shall be based on following components: Quiz / Assignment / Project / Participation in Class,

Course Objective: basic knowledge of information technology in Agriculture

Course Outcomes:
1. Student will able to learn computer application for the development of agriculture
2. **Student will able to learn IT tools for the development of agriculture**

Unit-1
Introduction to Computers, Operating Systems, definition and types, Applications of MS-Office for document creation & Editing, Data presentation, interpretation and graph creation, statistical analysis, mathematical expressions, Database, concepts and types.

Unit-2
Uses of DBMS in Agriculture, World Wide Web (WWW): Concepts and components. Introduction to computer programming languages, concepts and standard input/output operations.

Unit-3
e-Agriculture, concepts and applications, Use of ICT in Agriculture. Computer Models for understanding plant processes. IT application for computation of water and nutrient requirement of crops.

Unit-4
Computer-controlled devices (automated systems) for Agri.-input management, Smartphone Apps in Agriculture for farm advises, market price, postharvest management etc.Geospatial technology for generating valuable agri.-information.

Unit-5

Decision support systems, concepts, components and applications in Agriculture, Agriculture Expert System, Soil Information Systems etc. for supporting Farm decisions. Preparation of contingent crop planning using IT tools.

BAGL :304 Practical

Study of Computer Components, accessories, practice of important DOS Commands. Introduction of different operating systems such as windows, UNIX/ Linux, Creating, Files & Folders, File Management. Use of MS-WORD and Power point for creating, editing and presenting a scientific Document. MS-EXCEL - Creating a spreadsheet, use of statistical tools, writing expressions, creating graphs, analysis of scientific data.MS-ACCESS: Creating Database, preparing queries and reports, demonstration of Agri.-information system. Introduction to World Wide Web (WWW).Introduction of programming languages. Hands on Crop Simulation Models (CSM) such as DSSAT/Crop-Info/CropSyst/ Wofost; Computation of water and nutrient requirements of crop using CSM and IT tools. Introduction of Geospatial Technology for generating valuable information for Agriculture. Hands on Decision Support System. Preparation of contingent crop planning.

Books:

1. John Walkenbach, Herb Tyson, Michael R.Groh, FaitheWempen, Microsoft Office 2010 Bible
2. Bangia,LearningMs Office 2010
3. Prof. Satish Jain and M.Geetha, MS-Office 2010 Training Guide
4. Kate Shoup, Microsoft Office 2010
5. Melanie Gass, It's All about You! Office 2010
6. Nancy Conner and Matthew MacDonald, Office 2010: The Missing Manual

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BAG 305: FARM MACHINERY AND POWER

Course Code	Course Name	TEACHING & EVALUATION SCHEME							
		THEORY			PRACTICAL		L	P	CREDITS
		END SEM University Exam	Two term exam*	Teachers Assessment*	END SEM University Exam	Teachers Assessment*			
BAG305	**Farm Machinery And Power**	50	30	00	15	05	1	1	2

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C**-Credit;
***Teacher Assessment** shall be based on following components: Quiz / Assignment / Project / Participation in Class, given that no component shall exceed more than 10 marks.

Course Objective: Basic knowledge of farm machinery and power

Course Outcomes

1. Student will able to understand use of different farm machinery in Agriculture
2. Student will able to understand significance of power to operate farm machinery

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: clutch, gear box, differential and final drive of a tractor

Unit-4

Tractor types, Cost analysis of tractor power and attached implement, Familiarization with Primary and Secondary Tillage implement, Implement for hill agriculture, implement for intercultural operations,

Unit-5

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.

BAGL: 305Practical

Study of different components of I.C. engine. To study air cleaning and cooling system of engine, Familiarization with clutch, transmission, differential and final drive of a tractor, 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, Implements for hill agriculture, Familiarization with different types of primary and secondary tillage implements: mould plough, disc plough and disc harrow . Familiarization with seed- cum-fertilizer drills their seed metering mechanism and calibration, planters and transplanter Familiarization with different types of sprayers and dusters Familiarization with different inter- cultivation equipment, Familiarization with harvesting and threshing machinery.

Books:

1. Jagdiswar Sahay – Elements of Agricultural Engineering
2. Surendra Singh- Farm machinery –Principles and applications, ICAR, New Delhi
3. Jain, S.C. and C.R.Rai. Farm Tractor and maintenance and repair. Standard Publishers, 1705-B, Naisarak,. Delhi- 110006
4. Ojha, T.P. and A.M.Michael, A.M. Principles of Agricultural Engineering. Vol.I. Jain brothers, 16/893, East Park Road, Karol Bagh, New Delhi -110005

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BAG 306: PRODUCTION TECHNOLOGYFOR VEGETABLEANDSPICES

Course Code	Course Name	TEACHING & EVALUATION SCHEME							
		THEORY			PRACTICAL		L	P	CREDITS
		END SEM University Exam	Two term exam*	Teachers Assessment*	END SEM University Exam	Teachers Assessment*			
BAG306	Production Technology For Vegetable and spices	50	30	00	15	05	1	1	2

Legends: **L** - Lecture; **P** – Practical; **C**-Credit;
***Teacher Assessment** shall be based on following components: Quiz / Assignment / Project / Participation in Class,

Course Objective: Basic knowledge of production technology of Vegetable and spices

Course Outcomes

3. Student will able to understand importance of vegetable and spices in nutrition and economy
4. Student will able to learn cultivation of vegetable and spices

Unit-1:

Importance of vegetables & spices in human nutrition and national economy, kitchen gardening. Brief about origin, area, climate, soil, improved varieties and cultivation practices such as time of sowing, transplanting techniques, planting distance, fertilizer requirements, irrigation, weed management, harvesting and yield, physiological disorders of vegetable and spices of: Root crops such as Carrot, Radish, Beetroot;

Unit-2:

Brief about origin, area, climate, soil, improved varieties and cultivation practices such as time of sowing, transplanting techniques, planting distance, fertilizer requirements, irrigation, weed management, harvesting and yield, physiological disorders of vegetable and spices: Tomato, Brinjal, Chili, Capsicum,

Unit-3

Brief about origin, area, climate, soil, improved varieties and cultivation practices such as time of sowing, trans planting techniques, planting distance, fertilizer requirements, irrigation, weed management, harvesting and yield, physiological disorders of important vegetable and spices: Cucumber, Melons, Gourds, Pumpkin

Unit-4

Brief about origin, area, climate, soil, improved varieties and cultivation practices such as time of sowing, transplanting techniques, planting distance, fertilizer requirements, irrigation, weed management, harvesting and yield, physiological disorders of important vegetable and spices: French bean, Peas; Cole crops such as Cabbage, Cauliflower, Knol-khol;

Unit-5

Brief about origin, area, climate, soil, improved varieties and cultivation practices such as time of sowing, transplanting techniques, planting distance, fertilizer requirements, irrigation, weed management, harvesting and yield, physiological disorders of vegetable and spices: Bulb crops such as Onion, Garlic; Tuber crops such as Potato; Leafy vegetables such as Amaranth, Palak. Perennial vegetables.

Spices: Blackpepper, Cardamom, Corriander, Cumin, Fenugreek, Turmeric, Ginger

BAGL 306: Practical

Identification of vegetables & spice crops and their seeds. Nursery rising. Direct seed sowing and transplanting. Study of morphological characters of different vegetables & spices. Fertilizers applications. Harvesting & preparation for market. Economics of vegetables and spices cultivation.

Books:

1. PranabHazra, A.Chattopadhyay, K.Karmakar and S.Dutta.2010.Modern Technology in Vegetable Production. New India Publishing Agency,New Delhi

2. Shanmugavelu,K.G., N.Kumar and K.V.Peter 2005, Production Technology of Spices and Plantation Crops. Agrobios (India), Jodhpur.

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BAG 307: ENVIRONMENTAL STUDIES AND DISASTER MANAGEMENT

Course Code	Course Name	TEACHING & EVALUATION SCHEME							
		THEORY			PRACTICAL		L	P	CREDITS
		END SEM University Exam	Two term exam*	Teachers Assessment*	END SEM University Exam	Teachers Assessment*			
BAG307	Environmental studies and Disaster Management	50	30	00	15	05	2	1	3

Legends: **L** - Lecture; P – Practical; **C**-Credit;
***Teacher Assessment** shall be based on following components: Quiz / Assignment / Project / Participation in Class,

Course Objective: Basic knowledge of Environmental studies

Course Outcomes

5. Student will able to understand scope and importance of environmental studies
6. Student will able to understand Natural Disasters and it`s management

Unit-1: Multidisciplinary nature of environmental studies Definition, scope and importance. 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. 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. 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. Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification. Role of an individual in conservation of natural resources. • Equitable use of resources for sustainable lifestyles.

Unit-2: Ecosystems: Concept of an eco-system, 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. Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries).

Unit-3: Biodiversity and its conservation: - Introduction, definition, genetic, species & ecosystem diversity and bio geographical classification of India. Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values. Biodiversity at global, National and local levels, India as a mega-diversity nation. Hot-sports of biodiversity. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts. Endangered and endemic species of India. Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.

Unit-4: Environmental Pollution: definition, cause, effects and control measures of:

a. Air pollution

b.Water pollution
c. Soil pollution
d. Marine pollution
e. Noise pollution
f. Thermal pollution
g. Nuclear hazards.
Solid Waste Management: causes, effects and control measures of urban and industrial wastes. Role of an individual in prevention of pollution.
Social Issues and the Environment: From Unsustainable to Sustainable development, urban problems related to energy, Water conservation, rain water harvesting, watershed management. Environmental ethics :Issues and possible solutions, climate change, global warming, acid rain, ozone layer depletion, nuclear accident and holocaust. dies. Waste land reclamation.

Unit-5

Consumerism and waste products. Environment Protection Act. Air (Prevention and Control of Pollution) Act. Water (Prevention and control of Pollution) Act. Wildlife Protection Act. Forest Conservation Act. Issues involved in enforcement of environmental legislation. Public awareness. Human Population and the Environment: population growth, variation among nations, population explosion, Family Welfare Program. Environment and human health: Human Rights,ValueEducation,HIV/AIDS.WomenandChildWelfare.RoleofInformationTechnology in Environment and human health

Disaster Management: Natural Disasters-Meaning and nature of natural disasters, their types and effects. Floods, drought, cyclone, earthquakes, landslides, avalanches, volcanic eruptions, Heat and cold waves, Climatic change: global warming, Sea level rise, ozone depletion.

Man Made Disasters- Nuclear disasters, chemical disasters, biological disasters, building fire, coal fire, forest fire, oil fire, air pollution, water pollution, deforestation, industrial waste water pollution, road accidents, rail accidents, air accidents, sea accidents.

Disaster Management- Effect to migrate natural disaster at national and global levels. International strategy for disaster reduction. Concept of disaster management, national disaster management framework; financial arrangements; role of NGOs, community–based organizations and media. Central, state, district and local administration; Armed forces in disaster response; Disaster response; Police and other organizations.

BAGL 307: Practical

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

Books:

1. Bharucha, E. 2005. Text book of Environmental Studies for undergraduate courses. University Grants Commission, New Delhi.

2. Anjaneyalu, Y. 2004. Introduction to Environmental Science, BS Publications, Hyderabad, A.P.,India.

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BAG308: STATISTICAL METHODS

Course Code	Course Name	TEACHING & EVALUATION SCHEME							
		THEORY			PRACTICAL		L	P	CREDITS
		END SEM University Exam	Two term exam*	Teachers Assessment*	END SEM University Exam	Teachers Assessment*			
BAG308	**STATISTICAL METHODS**	50	30	00	15	05	1	1	2

Legends: **L** - Lecture; **P** – Practical; **C**-Credit;
***Teacher Assessment** shall be based on following components: Quiz / Assignment / Project / Participation in Class,

Course Objective: Basic knowledge of statistics in agriculture
Course Outcomes:
1. Student will be able to understand statistics approach in agriculture research

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.

Unit-3: Karl Pearson's Coefficient of Correlation. Linear Regression Equations. 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. Introduction to Sampling Methods, Sampling versus Complete Enumeration, Simple Random Sampling with and without replacement.

Unit-5: Use of Random Number Tables for selection of Simple Random Sample.

BAGL 308: Practical:
Graphical Representation of Data. Measures of Central Tendency (Ungrouped data) with Calculation of Quartiles, Deciles & Percentiles. Measures of Central Tendency (Grouped data) with Calculation of Quartiles, Deciles & Percentiles. Measures of Dispersion (Ungrouped Data).Measures of Dispersion (Grouped Data).Moments, Measures of Skewness & Kurtosis (Ungrouped Data).Moments, Measures of Skewness & Kurtosis (Grouped Data).Correlation &

Regression Analysis. 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. Analysis of Variance One-Way Classification. Analysis of Variance Two Way Classification. Selection of random sample using Simple Random Sampling.

Books:

1. NageswaraRao, G 2007.Statistics for Agricultural Sciences. B.S Publications, Hyderabad
2. Rangaswamy,R 1995. A Text Book of Agricultural Statistics.New Age International (P) Ltd., Publishers, Hyderabad.
3. Chandel SRS, Hand Book of Agricultural Statistics. AchalPrakashanMandir Publications, New Delhi.
4. Agrawal,B.L. programmed Statistics. 2nd Edition, New Age International Publishers, Hyderabad.

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BAG309: LIVESTOCK & POULTRY MANAGEMENT

Course Code	Course Name	TEACHING & EVALUATION SCHEME							
		THEORY			PRACTICAL		L	P	CREDITS
		END SEM University Exam	Two term exam*	Teachers Assessment*	END SEM University Exam	Teachers Assessment*			
BAG309	Livestock & Poultry Management	50	30	00	15	05	3	1	4

Legends: **L** - Lecture; **P** – Practical; **C**-Credit;
***Teacher Assessment** shall be based on following components: Quiz / Assignment / Project / Participation in Class,

Course Objective: Basic knowledge of livestock and poultry in agriculture

Course Outcomes:

1. Student will able to understand role of livestock in agriculture economy

2. Student will able to able to learn management livestock and poultry

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 milch 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. Feeding of livestock and poultry.

Unit-5

Introduction of livestock and poultry diseases. Prevention (including vaccination schedule) and control of important diseases of livestock and poultry.

BAGL 309: Practical:

External body parts of cattle, buffalo, sheep, goat, swine and poultry. Handling and restraining of livestock. Identification methods of farm animals and poultry. Visit to IDF and IPF to study breeds

of livestock and poultry and daily routine farm operations and farm records. Judging of cattle, buffalo and poultry. Culling of livestock and poultry. Planning and layout of housing for different types of livestock. Computation of rations for livestock. Formulation of concentrate mixtures. Clean milk production, milking methods. Hatchery operations, incubation and hatching equipments. Management of chicks, growers and layers. Debeaking, dusting and vaccination. Economics of cattle, buffalo, sheep, goat, swine and poultry production

Books:

1. A Textbook of Animal Husbandry – G.C. Benerjee
2. Livestock Production and Management – N.S.R. Sastri, C.K. Thomas, R.A. Singh
3. Essentials of Animal Production and Management – R. Singh
4. A Handbook of Animal Husbandry – ICAR
5. A Textbook of Livestock Production Management in Tropics – D.N. Verma

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