

BOS Animal Husbandry & Dairying

An online meeting of board of studies of CSJM University, Kanpur was held on 15th May 2021 from 1:30 to 3:00 PM to discuss the syllabus of Animal Husbandry & Dairying as per NEP – 2020 for the course of B.Sc. (Honours) Agriculture. Prof. Nand Lal, Deptt. of Life Science, CSJM University Kanpur was present in the meeting as a university representative apart from following, the external and internal honourable members are,

1. Dr. M.P. Yadav, Janta College Bakewar, Etawah (Convenor)
2. Prof. M.P. Yadav, Former V.C., S.V.B.P. Agri. University Meerut (U.P.).
3. Dr. V.P. Varshney, Prof. Emeritus, IVRI, 70 Mandal Vihar, Opp. IVRI Izatnagar, Bareilly (U.P.).
4. Prof. S.K. Garg, Dean college of Vet. & Animal Husbandry D.U.V.A.S. University, Mathura (U.P.)
5. Dr. Y.P. Singh, Ex. Dean, Veterinary, Sardar Vallabh Bhai Patel University & Tech. Meerut (U.P.)
6. Dr. S.C. Dubey, Ex. Joint Director, High Security Animal Disease Laboratory, Anand Nagar, Bhopal (M.P.)
7. Dr. Viresh Singh Bhadauria, Janta Mahavidhyalaya Ajitmal, Auraiya (U.P.)
8. Dr. Aditya Kumar, Janta College Bakewar, Etawah (U.P.)
9. Dr. Pankaj Dwivedi, Senior Teacher, A.H. & Dairy, Janta Mahavidhyalaya Ajitmal, Auraiya (U.P.)

The following suggestions/recommendations were offered by honourable members in the online conducting meeting.

1. Only Dentition is added in practical course of Introductory Animal Husbandry (Course Code : AG-107).
2. Theory Course of Dairy Science (Course Code : AG-311) Nutritive value of Milk Products is clarified i.e. Dahi, Cream, Butter, Ghee, Chhena, Paneer and Khoa.



3. Bird Flu disease is added in theory course of poultry production and management (Course Code : AG-411).
4. The course title of 12 elective course– composition cum Duck/(and) Quail/(and) Rabbit culture (Course Code : AGE-66) does not seem appropriate. So course title should be restructure 'commercial farming of Fishery, Duck, Quail and Rabbit.'
5. All the members suggested that no major change should be made in the syllabus.

Therefore, I am sending this file for your kind approval after including the valuable suggestions offered by all members of BOS. Kindly approve it.

With regards



Dr. M.P. Yadav

Dean/Convener

CSJM University Kanpur

NEW SYLLABUS AS NEP 2020 (NEW AND RESTRUCTURED) UNDER GRADUATE CURRICULA & SYLLABUS B.Sc. (Hons.) Agriculture 2020

Semester System as per ICAR Vth Deans Committee Report

Name	Designation	Affiliation
Steering Committee		
Mrs. Monika S. Garg, (I.A.S.) Chairperson Steering Committee	Additional Chief Secretary	Dept. of Higher Education U.P., Lucknow
Prof. Poonam Tandan	Professor, Dept. of Physics	Lucknow University, U.P.
Prof. Hare Krishna	Professor, Dept. of Statistics	CCS University Meerut, U.P.
Dr. Dinesh C. Sharma	Associate Professor, Dept. of Zoology	K.M. Govt. Girls P.G. College Badalpur, G.B. Nagar, U.P.
Supervisory Committee-Science Faculty		
Dr. Vijay Kumar Singh	Associate Professor, Dept. of Zoology	Agra College, Agra
Dr. Santosh Singh	Dean, Dept. of Agriculture	Mahatma Gandhi Kashi Vidhyapeeth, Varanasi
Dr. Baby Tabussam	Associate Professor, Dept. of Zoology	Govt. Raza P.G. College Rampur, U.P.
Dr. Sanjay Jain	Associate Professor, Dept. of Statistics	St. John's College, Agra

Syllabus Developed by:

S.No.	Name	Designation	Department	College/University
1.	Dr. Santosh Singh	Dean	Agriculture	Mahatma Gandhi Kashi Vidhyapeeth, Varanasi
2.	Dr. Sant Bahadur Singh	Associate Professor	Agronomy	R.B.S. College, Agra
3.	Dr. Laxman Singh	Associate Professor	A.H. and Dairying	R.B.S. College, Agra

M. Yadav

DEPARTMENT OF ANIMAL HUSBANDRY AND DAIRY SCIENCE

Course Code	Course Title	Credit Hours
AG-107	Introductory Animal husbandry	3(2+1)
AG-209	Dairy Processing and Safety Issues	3(2+1)
AG-311	Dairy Science	3(2+1)
AG-411	Poultry production and management	3(2+1)
AG-510	Principles of Food Science and Nutrition	3(2+1)



ANIMAL HUSBANDRY AND DAIRY SCIENCE

I. Introductory Animal husbandry

3(2+1) AG-107 GENERAL :

Importance of livestock in Agriculture and Economy. Dairying under specialized and mixed farming. Livestock and milk production statistics.

DAIRY CATTLE AND BUFFALOES MANAGEMENT : Cattle and buffalo Breeds. Breeding methods & systems, Care and Management of pregnant and milch cow, Raising of calves, Management of heifers and bulls. Maintenance of livestock records, Milking methods and principles, Clean milk production, Feeds and feeding, Conservation of fodder, Housing for dairy animals.

PIG MANAGEMENT : Importance, Important breeds, Raising of piglets up to age of slaughter, General aspects of breeding, Care of sow and boar.

SHEEP AND GOAT MANAGEMENT : Importance, Important breeds, Raising of kids and lambs, Breeding, Feeding of goats and sheep.

HEALTH MANAGEMENT : Common animal diseases of cattle, buffalo, goat, sheep and swine viz. Anthrax. BQ, HS, Brucellosis, Mastitis, Milk fever. Bloat. Swine fever and Enterotoxemia, Vaccination schedule.

Practical

Study of external body parts, Study of phenotypic and physiological difference between cow and buffaloes. Estimation of body weight by measurements, Identification of animals. Castration, Dehorning, Dentition, Estimation of cost of milk production, Problems on computation of ration, casting and throwing, Grooming, Scheme of fodder production round the year, Recording temperature, pulse rate and respiration rate of animals.

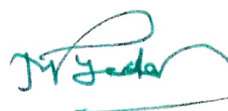
2. Poultry production and management

3(2+1) AG-411

GENERAL : Importance of poultry industry in India, Poultry production and marketing statistics of eggs and chicken. Historical development in poultry birds potential.

BREEDING : Male and female reproductive system of chicken, Breeds and strains of broilers and layers of chicken. duck and quails, General aspects of breeding for better egg production and body weight gain. Selection and culling, Artificial insemination.

GENERAL MANAGEMENT : Establishment of poultry farm. Housing and equipment, incubation and hatching of eggs, Broiler and layer management. Lighting schedule for poultry.



FEEDS AND FEEDING : Digestion, Digestive system of chicken. Feed ingredients, Availability of CP and ME in ingredients. Feed processing. Formulation of feed viz. Starter. Grower, Layer, Finisher and Breeder ration, FCR, CP ratio, Nutritional deficiency conditions.

HEALTH MANAGEMENT : Vaccination schedule for poultry, Common poultry diseases, i.e. Ranikhet, Bird Flu, Marex, Chicken pox, Gumboro, Infectious bronchitis and CRD. Control of internal and external parasites.

POULTRY PRODUCTS : Preservation and storage of eggs, Grading of eggs, AGMARK standard of egg. Egg powder, Slaughtering and processing of chicken, Marketing of poultry products.

Practical

Neat and clean diagram of hen showing external body parts. structure of egg, Formulation of ration viz. Broiler starter ration, Broiler finisher ration. Chick starter ration, Grower ration, Layer ration and Breeder ration. Vaccination schedule for broiler and layers. Debeaking, Candling of eggs. Dissection of bird for showing internal body parts.

3. DAIRY SCIENCE

3(2+1) AG-311

GENERAL : Concept of Dairying, Dairying in India, Dairy development in different five year plans. Dairy production statistics. Cleaning and sanitization of dairy equipment.

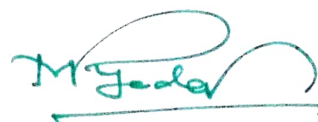
Dairy cooperatives, Functioning of dairy cooperatives societies, Functioning of Anand Pattern, White revolution, Objectives and achievements of operation flood.

Milk and its secretion, Transportation and milk distribution, pricing policy of milk. platform tests, Filtration. Straining and Clarification of milk. Standardization, Milk adulteration and its detection, Common preservatives of milk and their detection, Legal standards of milk. Factors affecting the quality and quantity of milk, Nutritive value of milk and milk products (Dahi, Cream, Butter, Ghee, Chhena, Paneer and Khoa).

Basic principles of refrigeration and cold storage of milk and milk product. Common adulterants of ghee, khoa and their detection.

Practical

1. Sampling of milk.
2. C.O.B. Test
3. M.B.R. Test
4. Sediment test.



5. Problems on Standardization.
6. Detection of adulterants viz. water, starch, sucrose, urea, detergent and refined oil
7. Problems on adulteration.
8. Hansa Test.
9. Detection of preservatives.
10. Alcohol test.
11. Acidity of milk.

4. Dairy Processing and Safety Issues

3(2+1) AG-209

GENERAL : Definition of food, Constituents of foods : Water, Carbohydrate, Fat, Protein, Vitamins and Minerals with reference to milk, Detailed composition of milk and colostrum.

FOOD PROCESSING : Pasteurization, Sterilization, Bactofugation, Uperization, Stassanization. U.H.T. pasteurization and Homogenization of milk, Neutralization of milk, Cream, Cooling and chilling of milk.

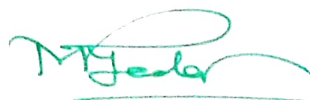
Manufacturing of common dairy product viz. Cream, Butter, Ghee, Dahi, Yoghart, Shrikhand & Ice-cream.

Manufacturing of Khoa, Evaporated milk, condensed milk, WMP, SMP, Paneer, Cheese, Chhena, Cheddar cheese and. Mozzarella cheese (Pizza cheese).

FOOD SAFETY : Definition, Importance, Scope, Hazards and risks. Food safety management, HACCP, ISO Series, TQM-Concept and need for quality component of TQM. Basic water tests.

Practical

1. Demostration of Cream separation.
2. Preparation of indigenous dairy products viz. Dahi. Chhena. Khoa, Paneer, Cream, Ghee, shrikhand.
3. Water quality analysis.
4. Problem on neutralization of milk and cream.
5. Preparation of plants for implementation of HACCP and ISO series,
6. Problems on over run.
7. Calculation of Ice cream mix.



5. Principles of Food Science and Nutrition

3(2+1) AG-510

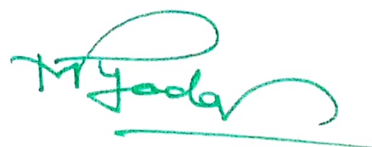
GENERAL :

Definition of food and food science. Composition of food, Foods of animal origin, Digestive system of Ruminants. Definition, Chemistry and Function of Carbohydrate, Fat, Proteins and Water. Requirement. Availability. Functions and Nutritional deficiency disease of minerals and vitamins. Flavours and colours used in food. Food microbiology with special reference to milk, Physio Chemical properties of milk.

Composition and processing of egg, meat and chicken, feed additives, antibiotics, enzymes and hormones.

Practical

1. Sampling of milk.
2. Specific gravity of milk by lactometer.
3. Water quality test.
4. Study of Nutritional deficient conditions.
5. Study of Nutritional disorders.
6. Quality parameters for egg, meat and chicken.
7. Fat test by Gerber's method.
8. T.S. & S.N.F. percentage by Richmond's scale and formula.



(Elective Course)

No.-6 Food Safety and Standards

Theory

3(2+1) AGE-55

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. 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. Food Safety Management Tools- Basic concepts. PRPs, GHPs, GMPs, SSOPs etc. HACCP. ISO series. TQM - concept and need for quality. components of TOM. Kaizen. Risk Analysis. Accreditation and Auditing. Water Analysis, Surface Sanitation and Personal Hygiene. Food laws and Standards-Indian Food Regulatory Regime, FSSAI. Global Scenario CAC. Other laws and standards related to food. Recent concerns- New and Emerging Pathogens. Packaging, Product labeling and Nutritional labeling. Genetically modified foods\ transgenics. Organic foods. Newer approaches to food safety. Recent Outbreaks. Indian and International Standards for food products.

Practical

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



12. Composition cum Duck/ (and) Quail/ (and) Rabbit culture 3(2+1) AGE-66

Fishery :

Definition, common characteristics and position of fish in Animal Kingdom, fishery statistics preparation and management of fish pond, physical and chemical condition of water for fishery, feeds and feeding of fishes, breeding of fish, diseases and predators of fishes, use of Duck/quality beats on fish feeds.

Duckery:

Definition, common features and advantages, breeds, incubation and hatching feeding of ducks, care and managements of ducking, grower, layer/broiler ducks. Characteristics of duck eggs, common diseases and vaccination schedule, duck statistics.

Quail:

Definition, common features of quail farming, advantages, breeds, incubation and hatching, feeding of quails. care and managements of quail chick, grower/layer/broilers. Quail product technology, common diseases and vaccination schedule.

Rabbitry:

Introduction, scope and advantages of rabbit farming, breeds, breeding, housing, care and management of young and adult rabbit. feeds and feeding for rabbits, common problems of rabbitry including vaccination schedule, fur and meat production technology.

Practical -

1. Fishery units, visit, Demonstration and report formulation.
2. Different type of fishes, deep water, middle water, and surface water.
3. Evaluation of Duck Egg (candling) and Grading.
4. Vaccination schedule for duck and Quail.
5. Preparation Ration for Duck, Quail. Rabbit and Fish.
6. Preparation of different products from eggs.

Elective Courses Books

Food Safety and Standard (AGE-55)

1. Food Safety and Standards Act, Rules and Regulations by Akalank Kumar Jain & Vidhi Jain, Published by Akalank Publications-New Delhi.
2. Food Safety and Standards Act 2006 by Virag Gupta, Published by Commercial Law Publishers (India) Pvt. Ltd., Delhi.
3. The Food Safety and Standards Act 2006, Published by Universal Law Publication, New Delhi.
4. Microbiological Quality & Safety in Dairy Industry by Naresh Goel and H.V. Raghu, Suja Senan and P. Jayaram, published website [www. agrimoon.com](http://www.agrimoon.com)

12. Composition cum Duck/(and) Quail/(and) Rabbit culture AGE-66

1. A Text Book of Animal Husbandry by G.C. Banerjee, Publication Oxford & IBH Published Co. Pvt., New Delhi.
2. Hand Book of Animal Husbandry Published By ICAR New Delhi.
3. A Text Book of Fishery Science & Indian Fishery by C.B.L. Srivastava and Sushma Srivastava, Published by Kitab Mahal, New Delhi.
4. Hand Book of Fisheries & Aquaculture, Published by ICAR, New Delhi.
5. Rabbit by Dr. J.M. Mahajan published by ICAR, New Delhi.
6. Poultry, Fisheries, Bee Keeping and Sericulture in India by Dr. Indra Bahadur Singh, published by Kushal Publications & Distributors, Varanasi (U.P.).
7. Duck Husbandry by Dr. B. Panda & Dr. A.K. Srivastava, published by ICAR, New Delhi.

