

**NEW SYLLABUS AS NEW EDUCATION POLICY (NEP) 2020 (NEW AND
RESTRUCTURED)
UNDER GRADUATE, POST GRADUATE & PhD SYLLABUS**

DEPARTMENT OF ANIMAL HUSBANDRY AND DAIRYING

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) |
| AGE-55 | Food Safety and Standards | 3(2+1) |
| AGE-66 | Composition cum Fishery, Duck and Rabbit culture | 3(2+1) |

ANIMAL HUSBANDRY AND DAIRY SCIENCE**1. 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. Mendelian rules and its importance in live stock improvement and variations. Male and female reproductive organs. Digestive tract Breeding methods & systems, Artificial inseminations , Semen collection and semen preservations. Mechanism of gametogenesis and oestrus cycle Care and Management of pregnant and milch cow, Raising of calves, Management of heifers and bulls. Ration and its kind. 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 : Principle of Major and contagious Disease Common animal diseases of cattle, buffalo, goat, sheep and swine viz. Anthrax. BQ, HS, Brucellosis, Mastitis, Milk fever. Retained of placenta, Tympany of rumen Swine fever and Enterotoximeia, Vaccination schedule, Immunity.

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, 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. 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.. Kinds of Pasteurization and Homogenization of milk. Cooling and chilling of milk, Toned, double toned and flaboured milk.

Manufacturing of common dairy product viz. Cream, Butter, Ghee, Dahi, Yoghurt, Shrikhand & Ice-cream. Khoa, Paneer and Chhena

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. Problem on neutralization of milk and cream.
4. problem on over run.
5. Calculation of Ice cream mix.

3. DAIRY SCIENCE 3(2+1) AG-311

GENERAL : Concept of Dairying, Dairying in India. 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 .Platform tests, Filtration .Straining and Clarification of milk. Standardization, Milk adulteration and its detection. Legal standards of milk. Factors affecting the quality and quantity of milk, Nutritive value of milk and milk product. Physico-chemical properties of milk.

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. 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, 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 fir showing internal body parts.

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, Function, Classification, Requirement, Availability and source of Carbohydrate, Fat, Proteins Mineral, Vitamins and Water. Functions and Nutritional deficiency disease of minerals and vitamins. Flavours and colours used in food. Physio chemical properties of milk. Composition and processing of egg, meat, Milk chicken, feed additives, antibiotics, enzymes and hormones. Role of food microbiology in nutritions.

Practical

1. Sampling of milk.
2. Specific gravity of milk by lactometer. .
3. Study of Nutritional deficientic conditions.
4. Study of Nutritional disorders.

5. 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 01

1. Food Safety and Standards 3(2+1) AG-55

Theory

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, OMPs, 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.

ELECTIVE 02

2. Composition cum Fishery, Duck and Rabbit culture 3(2+1) AG 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 enemies of fishes, use of Duck/quality beats on fish feeds.

Duckry:

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, duckry 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.

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.
