Dairy Science -1

Total Marks-150

Theory-100

Practical-50

Computer Code

Subject Code:

T	P	C
2	3	3

Objectives:

- Concept of dairy science
- Management of dairy cattle
- Milk composition and importance
- Milk preservation and processing techniques

Brief description:

Dairy Science, Dairy breeds, Housing, Feeding, Care of dairy cow, calf, heifer, Composition and importance of milk and colostrum, Structure of mammary gland

Details Description:

1. Concept of dairy science

1.1 Define dairy science

1.2 Scope of dairy science in Bangladesh

1.3 Brief description of common dairy breeds

1.4 Name of top milk producing countries

2. Management of dairy cattle:

2.1 Description of housing of dairy cattle

2.2 Description of feeding of dairy cattle

2.3 Care of calf, heifer, cow, pregnant cow

2.4 Description of grooming, trimming and dehorning

2.5 Structure of mammary gland and cleaning of udder

2.6 Selection and culling of dairy cow

2.7 Prevention and control of common diseases of dairy cattle

2.7 Bio security of dairy Farm.

3. Milk composition and importance

3.1 Definition of milk

3.2 Importance of milk

3.3 Physical properties of milk

3.4 Composition of milk of different dairy species

4. Milk preservation processing technique

4.1 Recommended milking procedure

4.2 Hygienic milk collection, preservation and distribution

4.3 Pasteurization (LTLT, HTST, UHT)

4.4 Milk homogenization, cooling, and packaging

4.5 Cleaning of dairy equipment

4.6 Prevention and control of milk borne diseases

PRACTICAL

1. Identification of body parts of dairy cow
2. Design of dairy house
3. Ration formulation for dairy cow and calf
4. Observation of parturition
5. Milking of dairy cow
6. Use of lactometer in milk
7. Clot-on-boiling test (COB) test of milk

Diploma in livestock
5th semester, Subject Code: 7253
Subject: Poultry Science -1

T	P	C
2	3	3

Course Objectives:

After completing the course the students will be able

1. To know the basic concepts of poultry and poultry science.
2. To learn the importance of poultry industry.
3. To know the different breeds, varieties and strains of chicken.
4. To learn the housing, feeding, hatchery and other management of poultry farm.
5. To know the bio-security, disease prevention and control in poultry farm.

Short Description:

This course is designed to equip students with knowledge and skills of poultry science. This course is also focused on elementary concept of poultry science, origin and distribution, feeding, hatchery operation, management, prevention and control of poultry diseases.

Details Description (Theory)

Chapter 01: Basic concept of poultry and poultry science

1.1 Definition of poultry and poultry science
1.2 Terminology related to poultry
1.3 History of poultry domestication
1.4 Origin and distribution of different species of poultry

Chapter 02: Importance of Poultry Industry

2.1 Chronological development of poultry industry in Bangladesh
2.2 Statistics of poultry and poultry industry in Bangladesh
2.3 Importance of poultry products and by-products
2.4 History and importance of backyard poultry in Bangladesh

Chapter 03: Breeds and varieties of Chicken

3.1 Definition of breed, variety and strain of chicken
3.2 Classification of chicken breeds on the basis of origin and purpose
3.3 Description of chicken breeds
3.4 Name of commercial strains available in Bangladesh

Chapter 04: Poultry Housing

4.1 Site selection of poultry farm
4.2 Advantage and disadvantage of poultry housing
4.3 Different types of poultry house
4.4 Different types of poultry rearing systems
4.5 Principles and requirements of poultry house
4.6 Litter management of poultry house

Chapter 05: Feeding and Nutrition of Poultry

5.1 Definition and classification of poultry feeds
5.2 Essential feed nutrients of chicken
5.3 Common feed ingredients used in poultry ration
5.4 Ration formulation for commercial chicken

Chapter 06: Hatchery Management

6.1 Definition of table egg, hatching egg, fertility, hatchability, incubator and incubation
6.2 Selection of hatching egg and their storage
6.3 Incubation period of different species of poultry
6.4 Management of hatchery born diseases

Chapter 07: Management of Lighting, Debeaking and Watering

7.1 Lighting schedule of commercial broiler and layer farm
7.2 Importance, causes and methods of debeaking
7.3 Water requirements and management in broiler and layer farm

Chapter 08: Biosecurity and Disease management

8.1 General biosecurity measures in commercial poultry farm
8.2 General prevention and control of poultry diseases
8.3 Vaccination schedule of broiler and layer and their application

Details Description (Practical)

1. Demonstration of external body parts of cock and hen with diagram
2. Identification of different species of poultry
3. Structure of an egg
4. Selection of hatching egg
5. Incubation of egg
6. Brooding of chicks
7. Debeaking of chicken
8. Ration formulation of commercial chicken
9. Handling and storage of table egg and hatching egg

10. Poultry farm and hatchery visit

Refferences :

1. A Text Book of Animal Husbandry, G C Banarjee.
2. Practical Animal Science, M M Hossain and S Akhtar.
3. পশু চিকিৎসা বিদ্যা- ড. এম এ. সামাদ
4. উচ্চতর পশুবিজ্ঞান, ইমাম হোসেন
5. Poultry- G C Banarjee.

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Diploma in Livestock

Syllabus-5th Semester

Subject-5th Parasitology-1

Subject Code:-7251

T	P	C
2	3	3

Objectives:

- To get an idea on parasitology and its importance.
- To have overview on the harmful effects of Parasites.
- To have an idea on the clinical signs induced by the Parasites.
- To have an idea on parasite control and risk factors associated with Parasite infection.
- To have an idea on diagnostic techniques of parasites.

Short Description : (Theory)

Defination, Animal association, Defination and example of Host, Types of parasites, Sources of parasitic infection, Transmission of parasitic infection, Harmful effects of parasites (Nematode, Trematode, Cestode). Classification of helminthes.

Detail Description :

1.0 Defination :

1.1 Parasitology

1.2 Parasite.

2.0 Animal association :

2.1 Commensalism

2.2 Mutualism

2.3 Parasitism.

2.4 Symbiosis

2.5 Predation

2.6 Phoresis

3.0 Defination and classification of Host :

3.1 Final host

3.2 Intermediate host

3.3 Paratenic/Trasport host

3.4 Vector

3.5 Reservoir/carrier host

4.0 Types of parasites :

4.1 Ectoparasite

4.2 Endoparasite

4.3 Facultative parasite

4.4 Obligatory parasite

5.0 Sources of parasitic infection :

5.1 Faces
5.2 Sputum/Nasal secretion
5.3 Urine/Genital secretion
5.4 Blood Lymph
5.5 Skin /tissue

6.0 Transmission of parasitic infection :

6.1 Ingestion
6.2 Contact
6.3 Transplacental transmission
6.4 Transovarian transmission
6.5 Skin penetration

7.0 Harmful effects of parasites (Nematode, Trematode, Cestode) :

7.1 Utilization of host's food.
7.2 Removal of host's blood and tissue fluids
7.3 Destruction of host's tissue
7.4 Mechanical interference
7.5 Abnormal growth of host tissue
7.6 Excreting harmful substances
7.7 Introduction of other pathogenic bacteria viruses and protozoa

8.0 Classification of helminthes

9.0 Trematode (Fasciola,paramphistomum and Schistosoma) :

9.1 Life cycle
9.2 Clinical signs
9.3 Control

Practical

1. Collection of adult trematodes and eggs.
2. Faecal sample examination (Direct smear method).
3. Gross and Microscopic examination of Fasciola.
4. Gross and Microscopic examination of Paramphistomum.

References :

1. Urquhart, G.M., Almour, J., Duncan, J.L, Dunn, A.M and Jennings, F.W (1996). Veterinary Parasitolgy. Blackwell Science, USA (2nd Edition)
2. Soulsby, E.J.L. (1982). Helminths, artropods and Protozoa of domesticated animals. Bailiere Tindall and cascell Ltd. london (7th edition)
3. Animal husbandry and Veterinary Science by M.A Samad

Diploma in Livestock

Pathology

Subject Code: - 7256

T	P	C
2	3	3

Objectives:

- To know the definition, importance and application of pathology
- To know the abnormalities of animal and poultry.
- To know the basic facts and knowledge of pathogenesis of diseases.
- To understand in general post mortem examination.

Short Description : Cell injury, cell degeneration, Necrosis, gangrene, infection, hemorrhage, congestion, edema, anemia, atrophy, hypertrophy, hyperplasia, inflammation, tumor, neoplasia. Pathology of most common bacterial, viral, parasitic and nutritional diseases of farm animal and poultry. Examination of blood, urine and faeces. Sample collection, preservation and shipment, disposal of carcasses.

Detail Description (Theory):

1.0 Introduction

1.1 Definition classification importance and scope of pathology

1.2 Some Common terms of pathology (Cell injury, cell degeneration, Necrosis, gangrene, infection, hemorrhage, congestion, edema, anemia, atrophy, hypertrophy, hyperplasia, inflammation, tumor, neoplasia)

2.0 Pathology of most common bacterial diseases of farm animal.

2.1: Anthrax, Black quarter,

2.2: Hemorrhagic Septicemia, Colibacillosis, Brucellosis.

2.3: Tuberculosis.

3.0 Pathology of most common viral diseases of farm animal.

3.1: Foot and mouth disease, Ephemeral Fever.

3.2: Peste des petits ruminants.

4.0 Pathology of most common fungal diseases of farm animal.

4.1: Ringworm, Aspergillosis,

4.2: Candidiasis, Rhinosporidiosis

5.0 Pathology of most common parasitic diseases of farm animal.

5.1: Fascioliasis, Paramphistomasis,

5.2: Stomach worm infestation, Ascariasis, Stephanofilariasis.

5.3: Coccidiosis, Anaplasmosis, Theileriosis, Babesiosis.

6.0 Pathology of most common nutritional diseases of farm animal.

6.1: Milk-fever, Ketosis, Grass tetany, Rickets.

7.0 Avian pathology.

7.1: Pathology of most common bacterial diseases.

(Salmonellosis. Colibacillosis. Pasteurellosis. Infectious coryza)

7.2: Pathology of most common viral diseases.

(Newcastle Disease, Avian influenza, Infectious bursal diseases, Fowl pox, Infectious bronchitis)

7.3: Pathology of most common fungal diseases.(Aspergillosis, Candidiasis)

7.4: Pathology of most common parasitic diseases. (Ascaridiasis, coccidiosis)

7.5: Pathology of avian mycoplasmosis.

7.6: Pathology of most common nutritional deficiency diseases.

Detail Description (Practical):

1. Selection, collection, preservation and shipment of pathological specimens for diagnosis of diseases or disease conditions.
2. Techniques of postmortem examination of farm animals: interpretations of post mortem findings.
3. Techniques of postmortem examination of poultry: interpretations of post mortem findings.
4. Microscopic examination of blood, urine and faeces.
5. Microscopic examination of blood.
6. Microscopic examination of urine.
7. Microscopic examination of faeces.
8. Methods of disposal of carcasses.
9. Methods of recording of necropsy findings and writing report

Books recommended

1. Veterinary Pathology. By Jones. T.C., Hunt, R.D. and King, N.W. 6th edition, Williams and Wilkins, Philadelphia, USA. 1997.
2. Textbook of Veterinary Clinical Pathology, By M. Jackson, 2007 Blackwell.
3. Veterinary Technician's Handbook of Laboratory Procedures. By Bellwood and Andrasik Cotton Willey, Blackwell 2014.
4. Manual of Poultry diseases. By Piconx, Vaillancourt, Bouzouaia, Shivaprasad, Venne (AFAS), 2015.
5. Animal Husbandry and Veterinary Science 2008. By Prof. Dr. M. A. Samad.
6. Colour Atlas of Histopathology. By Curran, R. C. 2nd Edition (reprinted). Harvey Miller Publishers, London, England. 1981.
7. Pathology of Domestic Animals, Vol. 1, 2 and 3. By Jubb, K.V.F., Kennedy, P.C. and Palmer, N. 4th Edition. Academic Press, Inc., New York, USA. 1993.
8. Avian Disease Manual. By Charlton, B.R. [Editor]. 5th edition. American Association of Avian Pathologists, Pennsylvania, USA. 2000.
9. Avian Histopathology. By Riddell, C. The American Association of Avian Pathologists. University of Pennsylvania, USA. 1987

Diploma in Livestock

5th Semester

Animal Genetics, Breeding and Reproduction

(কৌলিবিজ্ঞান, পশু প্রজনন এবং বংশবিস্তার)

T	P	C
2	3	3

Objectives:

1. Primary knowledge about genetics
2. Brief description of Gregor Johan Mendel's
3. Short description on breed development
4. Knowledge about different breeding techniques and technologies
5. Detail knowledge on artificial insemination
6. Knowledge about some reproductive biotechnologies

Short Description:

Genetical terminology, Gregor Johan Mendel and his contribution in genetics, concept of animal breeding, breeding methods & technologies, variation, selection.

Detail description:

Theory:

1. Basic concept about genetic
   a. Some common genetical terminology
   b. Concept, branches and application of genetics
2. Knowledge about Gregor Johan Mendel
   a. Gregor Johan Mendel and his contribution in genetics
   b. Mendel's law and its application
   c. Sex determination and sex related inheritance
   d. Sex linked, sex influenced, sex limited traits in farm animals
3. Knowledge about chromosome and gametogenesis
   a. Chromosome number of different farm animals
   b. Gametogenesis and fertilization of farm animals
4. Knowledge about animal breeding
   a. Basic/ primary knowledge about animal breeding
   b. Breed, strain, line and type
   c. Genetic constitution of population: gene and genotype frequency

5. Phenotypic variation of farm animals
    a. Component of phenotypic and genotypic variation
    b. Genotype- environment interaction
6. Breeding methods
    a. Inbreeding, line breeding, out breeding, out crossing, up grading, heterosis or hybrid vigor
    b. Selection objectives and criteria, aids to selection, methods of selection
7. Basic knowledge about artificial insemination, breeding policy
    a. Definition of Artificial Insemination(AI), gestation, conception rate, repeat breeding , AI index, Pregnancy rate
    b. Advantage and disadvantage of AI
    c. Knowledge about reproductive systems of animals and birds
    d. AI techniques
    e. Instruments and appliances used in AI
8. Characteristics of bred able cow/heifer
    a. Heat detection: sign and symptoms
    b. Timing of AI
    c. Major reproductive diseases
9. Modern technologies and techniques of breed development
    a. Different methods of breed development
    b. Advantages and disadvantages of different breeding methods
    c. Synchronization of heat
    d. Embryo transfer and MOET
    e. Characteristics and management of donor and recipient cows

Practical:

1. Semen collection
2. Semen evaluation (mass activity, physical & Enumeration test)
3. Semen thawing method
4. Demonstration reproductive systems
5. Rectal palpation exercise
6. Bull station visit

References:

1. Reproduction in farm Animal-E.S.E Hafez, B. Hafez
2. Animal husbandry-GC Banarjee
3. Genetics-P.S Verma and V.K Agarwal

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Diploma in livestock

Subject: Veterinary Public Health and Food Safety

Subject code: 7255, 5th semester

T	P	C
2	3	3

Objectives:

- To know the basic principle of veterinary public health and food safety.
- To know the food and water borne diseases.
- To understand the aspects of zoonotic diseases.
- To understand principle in hygiene of eggs, milk and edible animal products.
- To know preventive and control measures of food-borne and zoonotic diseases.

Short descriptions:

Veterinary Public Health, Zoonoses, Environmental Hygiene, Food Safety

Description:

1. Veterinary Public Health: Definition, scopes, objectives of Veterinary Public Health. The common basis for veterinary and Public Health practices. Human-animal interaction & animal production systems & veterinary public health.

Zoonoses: Concepts and classification. Factors affecting the spread of zoonotic diseases. Impact of zoonosis on health. Role of reservoir host and vectors in transmitting zoonotic diseases. Emergent zoonotic diseases. Prevention, control and eradication of zoonotic diseases and their control program.

Environmental Hygiene: Water and air pollution and their remediation. Water related infections. Indicator bacteria and their characteristics. Effect of climatic change on health of man and animal.

2. Food safety

Introduction to Food safety, Food safety regulation and act in Bangladesh,

Food preservation, storage and temperature control

Contamination of food, Food related hazard- biological, physical and chemical. Food poisoning and food borne diseases. HACCP (Hazard analysis Critical Control Point)

Practical

1. Applied techniques in sampling of foods of animal origin and other related materials for Microbiological studies:
   i) Sampling of solid, liquid and surface samples.
   ii) Detection and enumeration of pathogenic and toxigenic organisms.
2. Microbiological examination of specific foods:
   (i) Meat and Meat product. (ii) Liquid milk, dry milk and other milk products.
   (iii) Canned foods. (iv) Frozen foods. (v) Egg and egg products.
3. P^{H} determination of meat, chemical and organoleptic quality assessment.
4. Study on clinical cases; preparation of clinical case report.
5. Field trips to slaughterhouse, milk, meat and food processing plants.

References

1. Veterinary Medicine and Human Health. Schwabe. C.W., 1965. Baltimore, William and Wilkins Company.
2. The zoonoses. 1st edition. Johan C. Bell. Stephen. R., Palmer and Jack. M. Payne (1988). Edward Arnold.
3. Basic Food Hygiene, Ist edn, M.M. Rahman. 2003. Published from Department of Microbiology and Hygiene
4. Hygiene, Microbiology and Safety of foods of Animal origin, Ist edn. M.M. Rahman. 2003. Published from Department of Microbiology and Hygiene.
5. Food Safety Management. 1st Edition. A Practical Guide for the Food Industry. Yasmine Motarjemi Huub Lelieveld

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Diploma in livestock

5th semester, Code: 7257

Subject: Livestock Extension-1

T	P	C
2	3	3

Course Objectives:

After completing the course the students will be able -

1. To know the basic concepts of Livestock Extension
2. To learn the importance of Education and Learning
3. To know the different Extension Teaching Methods and Aids
4. To learn the Innovation of Livestock Extension
5. To know the Techniques of motivation

Short Description

This course is designed to equip students with knowledge and skills of Livestock Extension. This course is also focused on elementary concept of principles and phases of livestock extension, teaching aids, teaching-learning process, role of motivation, consequences of innovations.

Details Description (Theory)

1. **Livestock Extension**
   - i. Concept and Objectives of Livestock Extension
   - ii. Principles of Livestock Extension
   - iii. Importance of veterinary extension and livestock situation in Bangladesh
   - iv. Phases of extension work

2. **Education and Learning**
   - i. Definition and meaning of Education
   - ii. Types of education
   - iii. Adult education
   - iv. Teaching-learning process
   - v. Criteria for effective learning

3. **Extension Teaching Methods and Aids**
   - i. Meanings of extension teaching methods
   - ii. Steps in teaching
   - iii. Classification of extension teaching methods
   - iv. Advantages and limitations of different teaching methods
   - v. Meaning of extension teaching aids
   - vi. Classification of extension teaching aids
   - vii. Benefits and choice of extension teaching aids

4. **Motivation**
   - i. Concept of motivation
   - ii. Role of motivation in job performance
   - iii. Techniques of motivation
   - iv. Application of motivation in extension work
   - v. Motivating the village people and extension workers

5. **Innovation of Livestock Extension**
   - i. Meaning and definition of Innovation
   - ii. Types of innovation
   - iii. Factors influencing adoption of innovation
   - iv. Consequences of innovations
   - v. Innovativeness

Details Description (Practical)

1. An introduction to different organizations related to livestock development in Bangladesh
2. Orientation and visit to offices of selected GOs and NGOs
3. Preparation and practicing lecture
4. Preparation and use of Poster and Flash Cards
5. Farm and Home visit; and preparation of a report
6. Conducting Method Demonstration and Result Demonstration

References:

1. Krishi Samprosaron Parichiti – By Prof. Mohammad Hossain Bhuyiya.
2. Fundamentals of Agricultural Extension – By Prof. Mohammad Abul Kashem
3. Agricultural Extension Education – By Prof. Mohammad Hossain Bhuyiya.