

DIPLOMA IN BREEDER FLOCK AND HATCHERY MANAGEMENT

Curriculum & Scheme of Examination

Academic Year 2016-2017 onwards

BHARATHIAR UNIVERSITY
COIMBATORE- 641 046

CENTRE FOR COLLABORATION OF INDUSTRY AND INSTITUTION (CCII)
DIPLOMA IN BREEDER FLOCK AND HATCHERY MANAGEMENT
(For the CCII candidates admitted from the Academic Year 2016-2017 onwards)

| Sl. No. | Name of the Course | Total Marks |
|--------------------|---|--------------------|
| SEMESTER I | | |
| 1 | Broiler Breeder Housing and Management | 100 |
| 2 | Breeder Management | 100 |
| 3 | Breeder Nutrition and Feeding | 100 |
| 4 | Breeder Flock Health and Biosecurity Measures | 100 |
| 5 | Breeder Production Economics | 100 |
| 6 | Practical I | 100 |
| SEMESTER II | | |
| 7 | Location and construction of Hatchery | 100 |
| 8 | Hatchery operation | 100 |
| 9 | Egg formation, fertilization, and embryonic development | 100 |
| 10 | Hatchery sanitation, medication and vaccination | 100 |
| 11 | Hatchery economics and marketing | 100 |
| 12 | Practical II | 100 |
| 13 | In-Plant Training (3 months in Industry) | 100 |
| TOTAL | | 1300 |

SEMESTER - I

1 – BROILER BREEDER HOUSING AND MANAGEMENT

Total Marks: 100

Total Hours: 75

Objective:

To make the students to understand about the basic concepts of poultry production systems, housing, automation and equipments.

UNIT-I

(15 HRS)

System of rearing-backyard system, semi-intensive system, intensive system-cage, deep litter and slat system, floor space, watering and feeding space requirements for different age groups under different rearing conditions.

UNIT-II

(15 HRS)

Selection of site and location of poultry farm – importance of poultry housing and equipment. Principles of housing – location of poultry houses – basic principles of construction of poultry houses.

UNIT-III

(15 HRS)

Types of houses: environmentally controlled houses and open sided houses – deep litter, slat system, wire floor, cage houses and raised platform cage houses. Cages –types of cages –flat deck, Californian cages, “A” type cages, tier cages and furnished cages.

UNIT-IV

(15 HRS)

Fundamentals of ventilation-ventilation system – tunnel ventilation, duct ventilation and windowless house. Types of roof and materials used. Insulating materials for poultry houses-R-Value. Poultry farm equipments – brooding, feeding and watering equipments, nest boxes filler flats, vaccinators, dubbing, debeaking, and other equipments.

UNIT-V

(15 HRS)

Introduction – concept of automation in poultry industry –applications of automation in poultry industry. Automatic climate control system –automatic feeders and drinkers. automation in egg and manure collection system – automation in egg and meat processing plant.

Textbook

1. Sreenivasaiyah., P. V., 2015. Textbook of Poultry Science. 1st Edition. Write & Print Publications, New Delhi
2. Jull A. Morley, 2007. Successful Poultry Management. 2nd Edition. Biotech Books, New Delhi.
3. Singh, R. A., 2011. Poultry Production. 3rd Edition. Kalyani Publishers, New Delhi.

References

1. Hurd M. Louis, 2003. Modern Poultry Farming. 1st Edition. International Book Distributing Company, Lucknow.
2. Jadhav N. V., and Siddique M. F., 2007. Handbook of Poultry Production and Management. 2nd Edition. Jaypee Brothers Medical Publishers Pvt. Ltd., New Delhi.

SEMESTER-I

2 – BREEDER MANAGEMENT

Total Marks: 100

Total Hours: 60

Objectives:

To make the student understand about the fundamental principles involved in Layer Production.

UNIT I

(12 HRS)

Size and structure of broiler breeder industry – commercial strains of broiler breeder, broiler breeder production standards. System of broiler breeder farming – layout of the farm – system of housing – important economic traits of broiler breeder.

UNIT II

(12 HRS)

Broiler breeder farm equipments. brooder, grower and layer management – All in – all out system – multiple batch system – Pre-laying and laying management – feeding types, layers in cages, slat, slat cum deep litter and deep litter houses, Nest box management – male and female management.

UNIT III

(12 HRS)

Pre-peak, peak and post-peak laying period management, phase feeding, watering – lighting programme – intensity of light, colour, duration. Culling of unproductive birds – moulting – forced moulting – monitoring egg production curve – record keeping – flock uniformity.

UNIT IV

(12 HRS)

Breeder farm operation and routine, management of breeders for optimal egg production, artificial insemination, and breeder farm records. Biosecurity, vaccination and medication schedule.

UNIT V

(12 HRS)

Seasonal management of breeder birds – summer, winter and monsoon. Environmentally controlled sheds – design, equipments and productivity.

Text Book

1. Leeson. S., and Summers J. D., 2001. Broiler Breeder Production. 1st Edition. International Book Distributing Company, Lucknow.

2. Youn Michael, 2013. Encyclopedia of Broiler Breeder Production: Production, Feeding and Management Techniques. Vol. 1, 2 & 3. Anmol Publications Pvt. Ltd., New Delhi.

References

1. Sreenivasaiiah., P. V., 2015. Textbook of Poultry Science. 1st Edition. Write & Print Publications, New Delhi
2. Bell D. Donald and Weaver D. William Jr., 2007. Commercial Chicken Meat and Egg Production. 5th Edition. Springer India Pvt. Ltd., Noida.
3. Rajini Asha R., 2011. Simply....Poultry Science. 1st Edition. Alfa Publications, New Delhi.

SEMESTER – I

3 – BREEDER NUTRITION AND FEEDING

Total Marks: 100

Total Hours: 75

Objectives:

To make the student to understand about the basic principles of nutrition and different kinds of feeds and their feeding methods in poultry.

UNIT-I

(15 HRS)

Nutrient requirements and feeding for broiler breeder. Classification of feed ingredients- conventional feeds and non-conventional poultry feeds-energy sources, vegetable protein sources, animal protein sources.

UNIT-II

(15 HRS)

Feed ingredients, composition, feed storage technique – milling and quality control, processing of feed – types & forms of feeds— mash, pellet & crumble feed preparation and feeding methods. Feeding chicks, growers, layers, broiler and breeders –feeding in different seasons.

UNIT-III

(15 HRS)

System of feeding – restricted and controlled feeding – use of additives and non-additives – enzymes, probiotics, prebiotics and antibiotics, herbs, performance enhancers – Utilization of non – conventional feedstuff.

UNIT-IV

(15 HRS)

Feed mill design and equipments –feed production methods – grinding, mixing, condition, pelletizing, crumbling, sieving process and premixing methods, feed storage – weighment - transport.

UNIT-V

(15 HRS)

Physical and sensory evaluation of feed ingredients – sampling techniques for ingredients and compounded feed – estimation of proximate principles of feed and feed ingredients –commonly occurring anti nutrients and toxicants in poultry feed ingredients – Mycotoxins and their prevention.

Textbook

1. Ensminger. M. E., 2015. Poultry Science. 3rd Edition. International Book Distribution Co., Lucknow, India.
2. Taneja. V. K. and Trivedi. T. P., 2011. Handbook of Animal Husbandary. 3rd Edition. Indian Council of Agricultural Research (ICAR), Chandu Press, New Delhi.
3. Reddy Ramasubba V., and Bhosale T. Dinesh, 2004. Handbook of Poultry Nutrition. 1st Edition. International Book Distribution Co., Lucknow, India.

References

1. Bell D. Donald and Weaver D. William Jr., 2007. Commercial Chicken Meat and Egg Production. 5th Edition. Springer India Pvt. Ltd., Noida.
2. Leeson S., & Summers J. D., 2001. Scott's Nutrition of the Chicken. 4th Edition. University Books, Canada

SEMESTER – I

4 - BREEDER FLOCK HEALTH AND BIOSECURITY MEASURES

Total Marks: 100

Total Hours: 60

Objectives:

To make the student understand about the process and principle involved in biosecurity and flock health.

UNIT I (12 HRS)

Vaccination principles, Broiler breeder vaccination schedule - type, methods, pre and post vaccination care, vaccination failure. Immunity.

UNIT II (12 HRS)

Medication - types of administration – general principles and precautions of medication through water and feed.

UNIT III (12 HRS)

Signs of disease – Measures to prevent disease outbreak – fly and rodent control – general farm hygiene – sanitation procedures – quarantine, isolation, shed cleaning and disinfection procedures.

UNIT IV (12 HRS)

Litter, carcass and hatchery waste disposal. Water sanitation – sanitizers, disinfection - types of disinfectants, mode of action, recommended procedure, precaution and handling.

UNIT V (12 HRS)

Biosecurity – Proactive measures to minimize entry of infection vs agents, farm premises – farm fencing – disinfectant, pits, personnel management and restriction of movement – conceptual (isolation), structural and operational (sanitation) biosecurity in poultry farms.

Text Book

1. Bell D. Donald and Weaver D. William Jr., 2007. Commercial Chicken Meat and Egg Production. 5th Edition. Springer India Pvt. Ltd., Noida.
2. Nesheim C., and Austic E., 1972. Poultry Production.

References

1. Sreenivasaiyah., P. V., 2015. Textbook of Poultry Science. 1st Edition. Write & Print Publications, New Delhi
2. Thyagarajan. D., 2011. Diseases of Poultry. 1st Edition. Satish Serial Publishing House, New Delhi, India.
3. Narahari D., and Kumararaj R., 2008. Handbook of applied Broiler Production. 1st Edition. Poultry Punch Publication (I) Pvt. Ltd., New Delhi.

SEMESTER – I

5 – BREEDER PRODUCTION ECONOMICS

Total Marks: 100

Total Hours: 75

Objectives:

To make the student understand about the poultry economics and strategies involved in marketing.

UNIT I

(15 HRS)

Economics of poultry production – analysis of production cost, methods and criteria for cost calculation, broader economic framework for analysis. Marketing – definition and activities, objectives of poultry marketing.

UNIT II

(15 HRS)

Marketing of eggs, organizational structure of egg marketing – NECC, ACIL, NAFED, challenges and suggestions. Marketing of poultry meat, Organizational structure of poultry meat marketing – BROMARK, BCC, NMPPB, Marketing channels for poultry meat, challenges, suggestions and opportunities for marketing of poultry products.

UNIT III

(15 HRS)

Breeder cull bird, hatching eggs and rejected eggs – marketing methods and cost, Income generation to farmer – Selling – poultry manure, used gunny bags.

UNIT IV

(15 HRS)

Breeder Farm administration – farm expenditures and maintenance, farm records and register maintenance, Breeder contract farming – business process, cost of infrastructure development – deep litter – slat shed, cage, EC and Battery Cage shed. Customer relationship management.

UNIT V

(15 HRS)

Breeder production parameters (visual control system – graph and schedule display), weekly, monthly, yearly and batch wise budget and report preparation.

Text Book

1. Sapkota D., Narahari D., and Mahanta J. D., 2014. Avian (Poultry) Production – A text book. New India Publishing Agency, New Delhi.
2. Rao K. Suresh and Rawat Sanjana, 2013. Economic Importance of Poultry Farming. 1st Edition. Campus Book International, New Delhi.

References

1. Sreenivasiah., P. V., 2015. Textbook of Poultry Science. 1st Edition. Write & Print Publications, New Delhi
2. Bell D. Donald and Weaver D. William Jr., 2007. Commercial Chicken Meat and Egg Production. 5th Edition. Springer India Pvt. Ltd., Noida.

SEMESTER – I

PRACTICAL I

Total Marks: 100

Objectives:

To have a practical and hands on experience in Breeder flock management.

1. Breeder house designs and layout (Demo)
2. Shed dimension measurement, area calculation and roof materials
3. Farm visit – Breeder ration formulation, manufacturing, storage and distribution of feed
4. Breeder brooding, growing and layer equipments – drinker, feeder, curtains, pipeline arrangements.
5. Breeder selection and culling – characteristics of non-layer, layer, good and poor layer
6. Nest box - dimensions, holes, nest materials, anti-perch
7. Hatching eggs – collection, selection, grading and disinfection process
8. Farm visit – Biosecurity measures followed in breeder farms
9. Fumigation, storage and packaging of eggs
10. Breeder farm visit - Sexing error identification (Demo)
11. Semen collection and Artificial insemination
12. Breeder farm vaccination and medication and dosage calculation
13. Breeder cost of production/ bird - brooding, growing and laying period
14. Calculations – Mortality%, Livability%, FCR for eggs, HD%, HE%, HHHE%, HHE%, Egg Mass, chick per parent (CPP)
15. Breeder farm records, registers and visual control system – graph and schedule preparation

SEMESTER – II

6 – LOCATION AND CONSTRUCTION OF HATCHERY

Total Marks: 100

Total Hours: 60

Objective:

To understand the basis of hatchery design, their location for establishment and layout.

UNIT-I

(12 HRS)

Introduction – Hatchery design, layout and location. Environmental factors for setting hatchery. Chick Hatchery and size of hatchery.

UNIT-II

(12 HRS)

Location for setting Hatchery – Criteria for setting, basic biosecurity measures prior to establishment, legal issues and the business process.

UNIT-III

(12 HRS)

Design of Hatchery – determination of cost and budget, production capacity vs. land area. Measures in providing proper ventilation system and basic floor plans for hatchery.

UNIT-IV

(12 HRS)

Hatchery Construction – Truss design, Width of Hatchery, Measurement of side walls, ceiling height measurement, wall construction and precautionary measures, door arrangements, electrical lining and power supply and Water lines.

UNIT-V

(12 HRS)

Clean to dirt arrangements in Hatchery – Egg receiving room, eggs holding room, fumigation room. Setter room, Hatcher room, Chick handling and packaging room, Wash room.

Text Book

1. Saxena, H. C., 2009. Hatchery Practice and Management. 1st Edition. International Book Distribution Co., Lucknow, UP.
2. Bell D. Donald and Weaver D. William Jr., 2007. Commercial Chicken Meat and Egg Production. 5th Edition. Springer India Pvt. Ltd., Noida.
3. Sreenivasaiyah., P. V., 2015. Textbook of Poultry Science. 1st Edition. Write & Print Publications, New Delhi

References

1. Singh, R. A., 2011. Poultry Production. 3rd Edition. Kalyani Publishers, New Delhi.
2. Jull A. Morley, 2007. Successful Poultry Management. 2nd Edition. Biotech Books, New Delhi.
3. Hurd M. Louis, 2003. Modern Poultry Farming. 1st Edition. International Book Distributing Company, Lucknow.

SEMESTER – II

7 – HATCHERY OPERATIONS

Total marks: 100

Total Hours: 75

Objectives:

To make the student understand about the basic concepts involved in the hatchery operation.

UNIT I

(15 HRS)

Types of incubators – incubator handling and maintenance – conventional machines, modern machines. Incubation principles – temperature, humidity, turning, ventilation, position, and etc.

UNIT II

(15 HRS)

Package and transportation of hatching eggs. Selection, care, and storage of hatching eggs. Egg shell temperature – monitoring and recording, calculating egg moisture loss.

UNIT III

(15 HRS)

Pre-warming, setting, candling, monitoring of moisture loss during incubation, transferring, pulling, vaccination and sexing. Chick processing – Pedigree hatching, wing banding, beak trimming, detoeing, dubbing – grading, packaging.

UNIT IV

(15 HRS)

Chick dispatch – objectives, planning of dispatch, Chick packaging, quality control parameters, Chick holding room arrangements. Storage and arrangement of packed chick boxes. Transport of day old chicks.

UNIT V

(15 HRS)

Role of computer in modern hatchery operations – quality control. Major cause of eggs failing to hatch – post hatch break open study, malformation and malposition.

Text Books

1. Funk and Irwin. Incubation and Hatchery Practices.
2. Saxena, H. C., 2009. Hatchery Practice and Management. 1st Edition. International Book Distribution Co., Lucknow, UP.
3. Taylor W. Lewts, 2003. Fertility and Hatchability of Chicken & Turkey Eggs. 1st Edition. International book Distributing Co., Lucknow, India

References

1. Ensmiger. M. E., 2015. Poultry Science. 3rd Edition. International Book Distribution Co., Lucknow, India.
2. Bell D. Donald and Weaver D. William Jr., 2007. Commercial Chicken Meat and Egg Production. 5th Edition. Springer India Pvt. Ltd., Noida.
3. Singh, R. A., 2011. Poultry Production. 3rd Edition. Kalyani Publishers, New Delhi.

SEMESTER – II

8 - EGG FORMATION, FERTILIZATION, AND EMBRYONIC DEVELOPMENT

Total marks: 100

Total Hours: 60

Objectives:

To make the student understand and aware about the egg formation, fertilization and developing stages of embryo

UNIT I

(12 HRS)

Structure of female reproductive organ, structure of egg, growth of ovum, ovulation, fertilization. Movement of developing egg in the oviduct - albumin secretion and deposition, chalaza formation, membrane formation, shell formation and oviposition.

UNIT II

(12 HRS)

Structure of male reproductive organ, fertility in male, physiology of semen production, factors affecting semen production.

UNIT III

(12 HRS)

Fertilization – definition, super-numery sperm, process of fertilization, factors affecting fertilization, fertile and infertile eggs.

UNIT IV

(12 HRS)

Different stages of embryonic development – embryonic development – day by day – 1 to 21 days from fertilization to oviposition.

UNIT V

(12 HRS)

Embryo formation, embryo differentiation (1 to 6 days), organ development (7 to 17 days), maturation and preparation for hatching (18 to 21 days), critical development phase.

Textbook

1. Taylor W. Lewts, 2003. Fertility and Hatchability of Chicken & Turkey Eggs. 1st Edition. International book Distributing Co., Lucknow, India.
2. Saxena, H. C., 2009. Hatchery Practice and Management. 1st Edition. International Book Distribution Co., Lucknow, UP.

References

1. Hurd M. Louis, 2003. Modern Poultry Farming. 1st Edition. International Book Distributing Company, Lucknow.
2. Jadhav N. V., and Siddique M. F., 2007. Handbook of Poultry Production and Management. 2nd Edition. Jaypee Brothers Medical Publishers Pvt. Ltd., New Delhi

SEMESTER – II

9 – HATCHERY SANITATION, MEDICATION AND VACCINATION

Total marks: 100

Total Hours: 60

Objectives:

To make the student understand about the practices and principle involved in hatchery sanitation, medication and vaccination.

UNIT I

(12 HRS)

Biosecurity measures, sanitation and disinfection of hatchery premises and incubators – hatchery borne vertically transmitted diseases and control. Fumigation at different stages of incubation.

UNIT II

(12 HRS)

Vaccination and medication of day old chicks, factors affecting fertility and hatchability, egg break-out studies – unhatched eggs. In-ovo and In-hatch vaccination methods.

UNIT III

(12 HRS)

Care of baby chicks, rendering and disposal of hatchery waste, sanitation of hatchery equipment and hatchery hygiene.

UNIT IV

(12 HRS)

Hatchery failure and troubling shooting, hatchery borne infection and chick disease and chick quality. Hatchery sanitation and microbiological monitoring.

UNIT V

(12 HRS)

Various types of by-products and wastes generated by poultry industry and their utility. Design and Layout of rendering plant – Composition, rendering – hatchery waste.

Textbook

1. Taylor W. Lewts, 2003. Fertility and Hatchability of Chicken & Turkey Eggs. 1st Edition. International book Distributing Co., Lucknow, India.
2. Saxena, H. C., 2009. Hatchery Practice and Management. 1st Edition. International Book Distribution Co., Lucknow, UP.

References

1. Hurd M. Louis, 2003. Modern Poultry Farming. 1st Edition. International Book Distributing Company, Lucknow.
2. Jadhav N. V., and Siddique M. F., 2007. Handbook of Poultry Production and Management. 2nd Edition. Jaypee Brothers Medical Publishers Pvt. Ltd., New Delhi

SEMESTER – II

10 – HATCHERY ECONOMICS AND MARKETING

Total marks: 100

Total Hours: 60

Objectives:

To make the student aware about the principles of economics and management aspects involved in hatchery.

UNIT I

(12 HRS)

Cost of production of day old male and female chicks. Marketing of day old male and female chicks.

UNIT II

(12 HRS)

Value addition – various components of hatchery house waste/ by-product – poultry by-product meal, feather meal, egg shell meal. Solid waste management – rendering of hatchery waste/ poultry by-products.

UNIT III

(12 HRS)

Technique for preparation of Hatchery byproduct meal – dehydration technique, Nutrient composition of hatchery waste, Positive and Negative pressure waste removal system.

UNIT IV

(12 HRS)

Composition of hatchery waste meal, by-products – liquid waste management and effluent treatment plant. Waste disposal methods – waste storage reservoir construction – sanitary landfill, rendering plant, lagoon, composting and incineration.

UNIT V

(12 HRS)

Project preparation of hatchery, records keeping in hatchery operation, calculation of total hatchability and fertile hatchability.

Textbook

1. Funk and Irwin. Incubation and Hatchery Management.
2. Taylor W. Lewts, 2003. Fertility and Hatchability of Chicken & Turkey Eggs. 1st Edition. International book Distributing Co., Lucknow, India.
3. Saxena, H. C., 2009. Hatchery Practice and Management. 1st Edition. International Book Distribution Co., Lucknow, UP.

References

1. Hurd M. Louis, 2003. Modern Poultry Farming. 1st Edition. International Book Distributing Company, Lucknow.
2. Jadhav N. V., and Siddique M. F., 2007. Handbook of Poultry Production and Management. 2nd Edition. Jaypee Brothers Medical Publishers Pvt. Ltd., New Delhi

SEMESTER – II

PRACTICAL II

Total Marks: 100

Objective:

To understand the basis of hatchery design, equipment and their management

1. Visit to hatchery – Layout and design of hatchery
2. Selection, grading, disinfection and fumigation of hatching eggs
3. Storage, pre-warming and setting operations of hatching eggs in incubators
4. Candling of hatching eggs, infertile, dead germ.
5. Transfer of hatching eggs from setter to hatcher
6. Chicks pull out and break-out studies – dead in shell, malposition and malformation, microbiological examination of fluff.
7. Sexing of chick, grading, vaccination, packaging and distribution of chicks
8. Dissection: male and female reproductive system (Demo)
9. Observing various stages of embryonic development – 1 – 21 days
10. Hatchery visit – biosecurity measures at different levels. (Demo)
11. Cleaning and disinfection of setters, hatcher and other equipments – before and after hatch.
12. Vaccination & medication – route and dosage calculation
13. Economics of hatchery business - cost of production of day old chick – male and female (SDP Hatchery data)
14. Calculation of fertility, total hatchability% and fertile hatchability%
15. Different records and registers maintained in hatchery

SEMESTER II

IN-PLANT TRAINING AND VIVA VOCE

Total Marks: 100

DIRECTIONS

- Students are allocated at different sectors of Poultry Industries located at different places of India. They will be assigned under a Farm supervisor in their location and will be doing the practical training work for a period of three months.
- The students should have complete attendance for the period of their in-plant training which will be sent by the Manager or Farm Incharge from their location.
- After three months the students will prepare a report which will be evaluated by the Faculty at the SIPM along with External Examiner.