ALAGAPPA UNIVERSITY

(Accredited with A+ Grade by NAAC (CGPA : 3.64) in the Third Cycle , Graded as Category-I University and granted autonomy by MHRD-UGC)

DIRECTORATE OF COLLABORATIVE PROGRAMMES

Diploma in Broiler Breeder Production

Regulations and Syllabus

[For those who join the Course in July 2023 and after]

CHOICE BASED CREDIT SYSTEM

SUGUNA INSTITUTE OF POULTRY MANAGEMENT

UDUMALPET – 642 207

REGULATIONS AND SYLLABUS

Name of the Institution: **Suguna Institute of Poultry Management**
Name of the Subject / Discipline**: Diploma in Broiler Breeder Production**

Vision and Mission of the Institutions

VISION

Planned education contributes to increase in the cultural richness, positive attitude towards technology, increases efficiency, opens new horizons for an individual, provides new aspirations and develop new values.

MISSION

The mission is to help rural students, educators, scholars and researchers, and to advance the profession of education, through research on the science and art of teaching and learning, the application.
Name of the Subject Discipline: Diploma in Broiler Breeder Production
Programme of Level: Diploma

1. Choice-Based Credit System

A Choice-Based Credit System is a flexible system of learning. This system allows students to gain knowledge at their tempo. Students shall decide on electives from a wide range of elective courses offered by the Departments/institutions in consultation with the committee. Students undergo additional courses and acquire more than the required number of credits. They can also adopt an inter-disciplinary and intra-disciplinary approach to learning, and make the best use of the expertise of available faculty.

2. Programme:

"Programme" means a course of study leading to the award of a Diploma in Broiler Breeder Production, is a Diploma programme and duration is one year that spread over two semesters. The course deals with the study about Broiler Breeder Chicken Production Management.

3. Courses

'Course' is a component (a paper) of a programme. Each course offered by the Department is identified by a unique course code. A course contains lectures/ tutorials/laboratory work/seminars/project work / practical training/report writing /Viva- voce, etc, or a combination of these, to meet effective teaching and learning needs.

4. Credits

The term "credit" refers to the weight age given to a course, usually about the instructional hours assigned to it. Normally in each of the courses credits will be assigned based on the number of lectures/tutorials/laboratory and other forms of learning required to complete the course contents in a 15-week schedule. One credit is equal to one hour of lecture per week. For laboratory/field work one credit is equal to two hours.

5. Semesters

An academic year is divided into two Semesters**.** In each semester, courses are offered in a minimum of 15 teaching weeks and the remaining 3-5 weeks are to be utilized for

conduct of examination and evaluation purposes. Each week has 30 working hours spread over 5 days a week.

6. Departmental/institutional committee

The Departmental/Institutional Committee consists of the faculty of the Department/institution. The committee shall be responsible for admission to all the programmes offered by the Department including the conduct of entrance tests, verification of records, admission, and evaluation. The committee determines the deliberation of courses and specifies the allocation of credits semester-wise and course wise. For each course, it will also identify the number of credits for lectures, tutorials, practicals, seminars, etc. The courses (Core/Discipline Specific Elective/Non-Major Elective) are designed by teachers and approved by the Committees. Courses approved by the committees shall be approved by the Board of Studies. A teacher offering a course will also be responsible for maintaining attendance and performance sheets (CIA -I, CIA-II, assignments, and seminar) of all the students registered for the course. The department coordinators for Non-major elective (NME) and MOOCs (SLC) courses are responsible to submit the performance sheet to the Head of the department. The Head of the Department consolidates all such performance sheets of courses about the programmes offered by the department. Then forward the same to be Controller of Examinations.

7. Programme Educational bjectives - (PEO)

PGO-1	To Start Diploma Programme in the area of breeder production technology
PGO-2	To fulfill the demand for the ever growing poultry sector by skilled man power
PGO-3	To educate the rural youths in the area for better employment opportunities
PGO-4	To bridge the gap of demand on changing scenario in Poultry sector requirements through quality education
PGO-5	To develop entrepreneurs in the area of poultry Production and Management

8. Programme Specific Objectives-(PSO)

PSO-1	To educate the student with all scientific information and advancements in Breeder Housing, Equipment and Automation.
PSO-2	To impart in- depth knowledge in Chicken Anatomy, Incubation & Hatchery Management.
PSO-3	To develop the students to become an expert in Breeder Flock Management.
PSO-4	To provide an in - depth knowledge on various diseases of breeder chicken and its management.
PSO-5	To make the students to undergo in - plant training to know about the various breeder production activities.

9. Programme Outcome-(PO)

PO-1	On the successful completion of the course, students will be able to understand the various rearing systems followed in the poultry farming.
PO-2	Students will be able to know about the basic concepts of poultry housing, equipment and automation required for rearing of chicken.
PO-3	Understand the basic anatomical structure and functions of Poultry.

PO-4	Create skill in the field of feed mill technology to improve the employment opportunities.
PO-5	Students are familiar with good laboratory partices on the estimation of proximate analysis and acquire basic skill on feed formulation
PO-6	On the successful completion of the course the students will able to understand the breeder industry.
PO-7	Analyze the performance monitoring of the breeders for production augmentation.
PO-8	Gain information on bacterial, viral, fungal and parasitic diseases of poultry and their control measures.
PO-9	Develop the attitude in the basic bio-security measures, medication and vaccination schedules to be followed in the breeder farm.
PO-10	Implement the skill in incubation and hatchery management and its operations.
PO- 11	Gain knowledge in farm, hatchery, feed mill practices and acquire basic skill on laboratory techniques.

10. Programme Specific Outcome-(PO)

PO-1	Enrich the knowledge level on all scientific information and advancements in Breeder Housing, Equipment and Automation.
PO-2	Gain in- depth knowledge in Chicken Anatomy, Incubation & Hatchery Management.
PO-3	Supply skilled technocrats to the industry of broiler breeder.
PO-4	Gain relevant knowledge on various diseases of breeder chicken and its management.
PO-5	By undergoing in - plant training students are familiar with breeder production activities.

11. Eligibility for admission

A minimum pass in Higher Secondary Examination (HSC)/PUC/Intermediate or Equivalent, or an examination accepted as equivalent thereto by the Syndicate for admission to **Diploma in Broiler Breeder Production.**

12. Minimum Duration of Programme:

The programme is for One year and shall consist of two semesters viz. Odd and Even semesters. Odd semesters shall be from June / July to October / November and even semesters shall be from November / December to April / May. Each semester there shall be 90 working days consisting of 6 teaching hours per working day (5 days /week).
The course shall extend over a period of **One year** under the Semester pattern.

13. Medium of instruction

The medium of instruction is English.

14. Teaching Methods

The classroom teaching would be through conventional lectures, the use of Power Point presentation, and novel innovative teaching ideas like television, smart board, and computer aided instructions. Periodic field visit enables the student for gathering practical experience and up-to-date industrial scenario. Student seminars would be arranged to improve their communicative skills. In the laboratory, safety measures instruction would be given for the safe handling of chemicals and instruments. The lab experiments shall be

conducted with special efforts to teach scientific knowledge to students. The students shall be trained to handle advanced instrumental facilities and shall be allowed to do experiments independently. The periodic test will be conducted for students to assess their knowledge. Slow learners would be identified and will be given special attention by remedial coaching. Major and electives would be held in the Department and for Non-major electives students have to undertake other subjects offered by other departments.

15. Components

A Diploma in Broiler Breeder Production programme consists of several courses. The term "course" is applied to indicate a logical part of the subject matter of the programme and is invariably equivalent to the subject matter of a "paper" in the conventional sense. The following is the various category of the courses suggested for the programmes:

Core courses (CC) - "Core Papers" means "the core courses" related to the programme concerned including practicals and project work offered under the programme and shall cover core competency, critical thinking, analytical reasoning, and research skill.

Course Requirements:

Each student should have taken **36** credits as core courses, including project work, thus totaling atleast **36** credits required to **complete the Diploma in Broiler Breeder Production course.**

Attendance:

Students must have earned 75% of attendance in each course for appearing on the examination. Students who have earned 74% to 70% of attendance need to apply for condonation in the prescribed form with the prescribed fee. Students who have earned 69% to 60% of attendance need to apply for condonation in the prescribed form with the prescribed fee along with the Medical Certificate. Students who have below 60% of attendance are not eligible to appear for the End Semester Examination (ESE). They shall re-do the semester(s) after completion of the programme.

Examination

The examinations shall be conducted separately for theory and practical to assess (remembering, understanding, applying, analyzing, evaluating, and creating) the knowledge required during the study. There shall be two systems of examinations viz., internal and external examinations. The internal examinations shall be conducted as Continuous Internal Assessment tests I and II (CIA Test I & II).

A. **Internal Assessment**

The internal assessment shall comprise a maximum of 25 marks for each course. The following procedure shall be followed for awarding internal marks.

Theory - 25 marks

Sr. No.	Content	Marks
1	Average marks of two CIA tests	15
2	Seminar / group discussion / quiz., etc.,	5
3	Assignment /field trip report / case study reports	5
	Total	25

Practical - 25 marks

Sr. No.	Content	Marks
1	Average marks of two CIA tests (Practical) Experiments - Major, Minor and Spotter	15
2	Observation note book	10
	Total	25

B. **External Examination**

- There shall be examinations at the end of each semester, for odd semesters in October / November; for even semesters in April / May.
- A candidate who does not pass the examination in any course (s) may be permitted to appear in such failed course (s) in the subsequent examinations to be held in October / November or April / May. However, candidates who have arrears in practical shall be permitted to take their arrear Practical examination only along with regular practical examination in the respective semester.
- A candidate should get registered for the first - semester examination. If registration is not possible owing to a shortage of attendance beyond the condonation limit / regulation prescribed or belated joining or on medical grounds, the candidates are permitted to move to the next semester. Such candidates shall re-do the missed semester after completion of the programme.
- For the Dissertation Work, the maximum marks will be 100 marks for thesis evaluation and the Viva-Voce 50 marks.
- For the internship, the maximum mark will be 50 marks for project report evaluation and for the Viva-Voce it is 25 marks
- Viva-Voce: Each candidate shall be required to appear for the Viva-Voce Examination (in defense of the Dissertation Work/internship).

Practical - Maximum 75 marks

Section A	Major experiment	15 Marks
Section B	Minor experiment	10 Marks
Section C	Experimental setup	5 Marks
Section D	Spotters- (5 spotters x 5 marks)	25 Marks
Section E	Record Note	10 Marks
Section F	Viva-voce	10 Marks

Passing minimum

- A candidate shall be declared to have passed each course if he / she secures not less than 40% marks in the End Semester Examinations and 40% marks in the Internal Assessment and not less than 40% in the aggregate, taking Continuous assessment and End Semester Examinations marks together.
- The candidates not obtained 40% for the Internal Assessment are permitted to improve their Internal Assessment marks in the subsequent semesters (2 chances will be given) by writing the CIA tests and by submitting assignments.
- Candidates, who have secured the pass marks in the End-Semester Examination and the CIA but failed to secure the aggregate minimum pass mark (E.S.E + CI.A), are permitted to improve their Internal Assessment mark in the following semester and/or in University examinations.

- A candidate shall be declared to have passed the Project Work if he /she gets not less than 40% in each of the Project Report and Viva-Voce and not less than 40 % in the aggregate of both the marks for Project Report and Viva-Voce.
- A candidate who gets less than 40% in the Project Report must resubmit the Project Report. Such candidates need to take again the Viva-Voce on the resubmitted Project.
- Each student should have taken **36** credits as core courses, including project work, thus totaling atleast **36** credits required to **complete the Diploma in Broiler Breeder Production course.**

DIPLOMA IN BROILER BREEDER PRODUCTION
PROGRAMME STRUCTURE
Course Structure for Diploma in Broiler Breeder Production

	Course Code	Courses	Title of the Paper	T/P	Cr.	Hrs./ Week	Max. Marks		
							Int.	Ext.	Total
Sem. I	80211	**CC-I**	Breeder Housing, Equipment and Automation	T	4	6	25	75	100
	80212	**CC-II**	Chicken Anatomy, Incubation and Hatchery Management	T	3	4	25	75	100
	80213	**CC-III**	Breeder Flock Management	T	3	4	25	75	100
	80214	**CC-IV**	Practical in Breeder Housing and Management	P	4	8	25	75	100
	80215	**CC-V**	Inplant Training	I	4	8	25	75	100
			Total		**18**	**30**	**125**	**375**	**500**
Sem. II	80221	**CC-VI**	Breeder Nutrition and Feed Milling Technology	T	4	6	25	75	100
	80222	**CC-VII**	Breeder Flock Health and Bio-Security	T	3	4	25	75	100
	80223	**CC-VIII**	Diseases of Broiler Breeder Chicken	T	3	4	25	75	100
	80224	**CC-IX**	Practical in Breeder Nutrition and Flock Health	P	4	8	25	75	100
	80225A 80225B	**CC-X**	Project work / In-Plant training	PR/ I	4	8	25	75	100
			Total		**18**	**30**	**125**	**375**	**500**
			Grand Total		**36**	**60**	**250**	**750**	**1000**

T – Theory **1credit = 1 hour for Theory Paper**
P – Practical **1credit = 2 hours Practical Paper**
Minimum Credit load = 36

Semester - I					
CC		**Core**	**T/P**	**Credits**	**H/W**
Course code:	**80211**	**Breeder Housing, Equipment and Automation**	**T**	**4**	**6**
Objectives	1. To study about the various rearing systems followed in poultry rearing. 2. To make the students to know about the basic concepts of poultry housing, equipment and automation required for rearing of chicken. 3. To know about the Overview of Breeder Industry 4. To make the student to understand about the various brooding, feeding, watering, litter management and other skills involved in breeder production. 5. To study about Performance monitoring parameters.				
Unit -I	**System of Rearing:** Common Terminology – Breeder industry in India - Systems of Poultry rearing – All in all out and Multiple batch system - Floor space, watering and feeding space requirements of Breeder				
Unit-II	**Breeder Farm Location and Layout:** Breeder farm Location and layout – Marco and Micro environment – Comfort zone - Water quality - Importance of Poultry housing and equipment - Principles of poultry house construction				
Unit III	**Breeder Housing System:** Types of housing system - Open sided houses – Deep litter and slatted housing system – Floor, Cage and raised platform cage houses - Environmentally controlled housing system - Fundamentals of ventilation - Ventilation system – Tunnel ventilation, duct ventilation – Pad cooling - Litter Management.				
Unit IV	**Breeder Farm Equipment:** Brooding equipment – Feeding and watering equipment – Cage types – Classification - Conventional, Californian and Battery cages – Nest Box – Vaccinators – AI Equipment – Sprinklers and foggers – Flame gun Curtain - Transport cages – Egg filler flats – Fumigation equipment				
Unit V	**Breeder Farm Automation:** Introduction – Concept and application of automation in poultry production – Climate control system - Automation in housing system – Automation in feeding and watering system – Automation in Egg Collection and Grading – Automation in hatchery – Automation in manure collection system – Automation in feed production system				

Reference and Textbooks:

Bell D. Donald and Weaver D. William Jr., 2007. Commercial Chicken Meat and Egg Production. 5th Edition. Springer India Pvt. Ltd., Noida.

RajiniAsha R., 2011. Simply….Poultry Science. 1st Edition. Alfa Publications, New Delhi.

Singh, R. A., 2011. Poultry Production.3rd Edition.Kalyani Publishers, New Delhi.

Sreenivasaiah, P. V., 2006. Scientific Poultry Production-A unique encyclopedia. International Book Distributing Co., Lucknow, India

Sreenivasaiah, P. V., 2015. Textbook of Poultry Science. 1st Edition. Write & Print Publications, New Delhi

Suguna Management System: Standard Operating Manual – Feed Lab, 2012. Suguna Foods Pvt. Ltd.

Taylor W. Lewts, 2003. Fertility and Hatchability of Chicken & Turkey Eggs. 1st Edition. International book Distributing Co., Lucknow, India.

Outcome	1. On the successful completion of the course, students will be able to understand the various rearing systems followed in the poultry rearing. 2. Students will be able to know about the basic concepts of poultry housing, equipment and automation required for rearing of chicken.

	3. Students will be able to understand about breeder Industry 4. Students will be able to understand about the various brooding, feeding, watering, litter management and other skills involved in breeder production. 5. Students will be able to understand about Performance monitoring parameters of breeders.

Semester - I					
CC		**Core**	**T/P**	**Credits**	**H/W**
Course code:	**80212**	**Chicken Anatomy, Incubation and Hatchery Management**	**T**	**3**	**4**
Objectives	1. To understand the basic anatomy of chicken. 2. To provide in-depth knowledge skeletal, respiratory, digestive and reproductive system 3. To create awareness on the commercial egg formation 4. To know the care and management of hatching eggs. 5. To understand the incubation principles and practices.				
Unit -I	**Avian Anatomy and Physiology:** Introduction - Terminology - Classification and breeds of chicken - External Anatomy - Integumentary parts of chicken - Feather patterns - Feather tracts - Comb pattern of chicken - Role of skin, Feather, Scales, Nails, Plumage and Beak in poultry - Thermoregulation in chicken - Physiological standards of poultry				
Unit-II	**Digestive and Reproductive System:** Digestive System - Excretory system - Role of kidney ureter and cloaca – Muscular and Skeletal system of chicken – Reproductive System-Male and Female Reproductive System - Egg formation - Egg Structure and its Composition.				
Unit III	**Respiratory and Endocrine System:** Respiratory system - Nasal cavity, larynx, Syrinx, Trachea, Bronchi, Lungs, Air sacs and its function - Endocrine system - Immune system.				
Unit IV	**Hatchery Overview and Incubation Requirements:** Terminology- Hatchery Lay out, Design and Construction - Methods of Incubation - Care of Hatching eggs - Fumigation of hatching Eggs - Incubation Periods of Poultry Species- Chicken Embryonic development Physical requirements of incubation.				
Unit V	**Incubators and Hatchery Operations:** Incubators – Types of incubators – Single stage and Multistage incubators – Setter management – Hatcher Management - Pedigree hatching - Chicks pull out - Grading – Chick sexing - Packing and Chick dispatch.				
Reference and Textbooks: Bell D. Donald and Weaver D. William Jr., 2007. Commercial Chicken Meat and Egg Production. 5 th Edition. Springer India Pvt. Ltd., Noida. RajiniAsha R., 2011. Simply….Poultry Science.1st Edition. Alfa Publications, New Delhi Sathapathy S., Singh M. K., and Joshi S. K., 2015. *A Handbook on Anatomy & Physiology of Domestic Animals and Birds.* Sathish Serial Publishing House, New Delhi, India. Sreenivasaiah, P. V., 2015. Textbook of Poultry Science. 1st Edition. Write & Print Publications, New Delhi Taylor W. Lewts, 2003. *Fertility and Hatchability of Chicken and Turkey Eggs*. 1st Edition. International book Distributing Co., Lucknow, India.					
Outcome	On the successful completion of the course, students may 1. Able to understand the basic anatomy of chicken. 2. Students will be able to get deeper knowledge in skeletal and respiratory system. 3. Students will acquire in depth knowledge on digestive, reproductive and egg formation. 4. Acquire in depth knowledge on care and management of hatching eggs. 5. Understand the hatchery management and its operations.				

Semester I					
CC/DSE/NME/ SEC		**Core**	**T/P**	**Credits**	**H/W**
Course Code:	**80213**	**Theory - III** **Breeder Flock Management**	**T**	**3**	**4**
Objectives	1. To understand the chicken breeder industry 2. To know the broiler breeder maintenance and its performance 3. To Impart knowledge on breeder housing and feeding 4. To provide in depth knowledge on breeder male management 5. To teach on the collection and care of hatching eggs				
Unit - I	**Breeder Industry:** Breeder Terminology - Size and structure of breeding industry – Breeder chicken integration - Pure line - GGP - GP Parent – Commercial Broilers and layers - Commercial strains of broilers and layers – Production standards				
Unit - II	**Brooding Management:** Bio security - Shed preparation – Brooding arrangements – Brooding of chicks - Beak trimming - Stocking density - Crop score - Lighting management of chicks – Feeding and watering of chicks – Vaccination and medication schedule for breeder chicks				
Unit - III	**Growing Management:** Growing of Male and Female breeders - Grading – Uniformity – Feeding of breeder grower – Restricted feeding - Sex separate feeding- and watering management – Identification of Sexing Error and Culling - Sex separate rearing – Selection of males - Vaccination and medication - Transfer to layer house				
Unit - IV	**Laying Management:** Management of Nest box - Litter management - Lighting management – Breeder female management Pre-peak - Peak and Post-peak laying period management – Feeding and watering management- Vaccination and medication schedules for laying breeders - Breeder male management – Male Female Ratio - Spiking - Fertility - Artificial insemination - Care of hatching eggs- Collection, Selection, Sanitation, Fumigation and storage of hatching eggs - Egg cool room, Packing and dispatch of hatching eggs - Seasonal management of breeder flocks –Flock depletion				
Unit - V	**Performance Monitoring:** Importance of record keeping - Records in breeder production and management - Performance parameter monitoring – Hen Day Egg Production (HDEP)- Hen Housed Egg Production(HHEP) - Hen Housed Hatching Eggs (HHHE) - Hatchability - Livability - Feed efficiency - Fertility, Cost of production of hatching eggs, Day old chicks				

Reference and Text books:

Bell D. Donald and Weaver D. William Jr., 2007. *Commercial Chicken Meat and Egg Production*. 5th Edition. Springer India Pvt. Ltd., Noida.

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

Rajini Asha R., 2011. *Simply Poultry Science*. 1st Edition. Alfa Publications, New Delhi

Sreenivasaiah., P. V., 2015. *Textbook of Poultry Science.* 1st Edition. Write & Print Publications, New Delhi

Taylor W. Lewts, 2003. *Fertility and Hatchability of Chicken and Turkey Eggs.* 1st Edition. International book Distributing Co., Lucknow, India.

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

Outcome:	On successful completion of the course, the students could 1. Understand the existing broiler breeding policies and performance 2. Acquire in depth knowledge on grading and feeding of breeder chicks 3. Understand the cock management for better fertility 4. Understand the importance of artificial insemination and method 5. Acquire better knowledge on breeder farm performance assessment and hatching egg production.

Semester - I					
CC		**Core**	**T/P**	**Credits**	**H/W**
Course code:	**80214**	**Practical In Breeder Housing and Management**	**P**	**4**	**8**
Objectives	1. To study about the various rearing systems followed in the poultry rearing 2. To make the students to know about the basic concepts of poultry housing, equipment and automation required for rearing of chicken. 3. To know about the Overview of Broiler Breeder Industry 4. To make the student to understand about the various management and other skills involved in breeder production. 5. To study about Performance monitoring parameters				
	1. Breeder farm design, layout and construction 2. Shed cleaning procedure – wet and dry cleaning procedure. 3. Equipment – Farm and Hatchery. 4. Structure and function of reproductive system. 5. Digestive system of Fowl. 6. Egg structure and its composition. 7. Hatchery plan, layout, design and construction. 8. Hatchery sanitation and fumigation methods. 9. Physical requirements of incubation, 10. Chick - pullout 11. Preparation of Checklist for brooding. 12. Grading 13. Artificial Insemination. 14. Sexing error 15. Identification of Good and Poor layer				
Outcome	On the successful completion of the practical, students will be able to understand the breeder management.				

<table>
<tr><th colspan="6">Semester - I</th></tr>
<tr><td colspan="2">CC</td><td colspan="2">Core</td><td>T/P</td><td>Credits</td><td>H/W</td></tr>
<tr><td>Course code:</td><td>80215</td><td colspan="2">In-plant Training</td><td>I</td><td>4</td><td>8</td></tr>
<tr><td>Objectives</td><td colspan="6">To understand the daily routines of the farm and also involved in skilled operations</td></tr>
<tr><td rowspan="5">Directions</td><td colspan="6">❖ Students are allocated to undergo training at different units on rotational basis.
❖ They will be exposed to daily routines of the unit and also involved in skilled operations.</td></tr>
<tr><td>Units</td><td colspan="5">Activity</td></tr>
<tr><td>Breeder farm</td><td colspan="5">Bio security, Brooding, Growing and Laying Management, Water management, Feed management, Male management, Artificial insemination, Vaccination, Medication and Post mortem</td></tr>
<tr><td>Hatchery</td><td colspan="5">Biosecurity, Egg receiving, Storage, Grading, Loading of eggs in Setter, Candling, Hatching, Pull-out, Chick Grading, Vaccination, Sexing, Packing and Dispatch</td></tr>
<tr><td>Feed mill</td><td colspan="5">Biosecurity, receiving raw materials, Sampling, Storage, raw materials analysis, Batching, Grinding, Mixing, Pelleting, Packing and Dispatch.</td></tr>
<tr><td colspan="6">❖ After the in-plant training students will prepare an in-plant training report which will be evaluated by the Faculty of SIPM along with External Examiner.</td></tr>
<tr><td>Outcome</td><td colspan="6">1. On the successful completion of the in plant training, students will be able to handle the breeder farm efficiently.
2. Students will be able to know about the routine operations of the hatchery.
3. Students will be able to prepare feed for the breeder flock.
4. Students will be able to gain knowledge on the processing plant activities.</td></tr>
</table>

Semester - II					
CC		**Core**	**T/P**	**Credits**	**H/W**
Course code:	**80221**	**Breeder Nutrition and Feed Milling Technology**	**T**	**4**	**6**
Objectives	1. To understand the Classification of feed ingredients 2. To study about the nutrient requirements and feeding of breeder flock. 3. To study about the feed additives and supplements used in feed formulations. 4. To make the students to know about the basic concepts of feed mill design and equipment. 5. To make the student to understand about the Estimation of Proximate Principles.				
Unit -I	**Feed Ingredients:** Classification of Nutrients and feed ingredients - Conventional and non-conventional feed resources - Energy sources - Vegetable and animal protein sources – Mineral sources of feed ingredients - Nutrient requirement and BIS standards for Breeders.				
Unit-II	**Feeds and Feeding Systems:** Feed ingredients and composition - Feed formulation - Types and Forms of Feed – Mash Feed - Pellet Feed – Crumble Feed – Feeding methods – *Ad libitum* feeding – Phase feeding –Restricted feeding				
Unit III	**Feeding of Breeders:** Feeding of breeder chick, Grower and Breeders – Feeding based on body weight – Water Management - Sex separate feeding – Supplementary feeding - Feed increment and reduction - Feeding management of males - Feed supplements.				
Unit IV	**Feed Milling:** Feed mill design and equipment - Feed production methods – Grinding, Pre mixing , Mixing, Conditioning, Pelletizing, Crumbling, Sieving process and - Feed storage, weighment and transport.				
Unit V	**Feed Quality Control:** Physical and sensory evaluation of feed ingredients – Feed sampling techniques for ingredients and compounded feed - Common adulterants - Mycotoxin and Pesticide toxin.				
Reference and Textbooks: Bell D. Donald and Weaver D. William Jr., 2007. Commercial Chicken Meat and Egg Production. 5 th Edition. Springer India Pvt. Ltd., Noida. Leeson S., & Summers J. D., 2001. Scott's Nutrition of the Chicken.4th Edition. University Books, Cananda					
Outcome	1. On the successful completion of the course, students will be able to Classify the feed ingredients 2. Students will be able to understand nutrient requirements and feeding of breeder 3. Students will be able to learn important feed additives used for feed formulations 4. Students will be able to understand about the basic concepts of feed mill design and equipment 5. Students will be able to understand about the Proximate Principles				

Semester - II					
CC		**Core**	**T/P**	**Credits**	**H/W**
Course code:	**80222**	**Breeder Flock Health and Bio-Security**	**T**	**3**	**4**
Objectives	1. To understand the Bio security procedures in the breeder flock 2. To study about the viral diseases in poultry 3. To make the student to know about the bacterial diseases in breeder 4. To create awareness about the parasitic and deficiency diseases 5. To make the student to understand about the vaccination and medication				
Unit -I	**Farm Bio Security:** Common Terminology – Biosecurity - Levels of Bio security- Importance of bio-security - Advantages of bio-security - Components of operational bio-security - Fly and rodent control- Weed control- Litter, carcass and hatchery waste disposal.				
Unit-II	**Disinfection and Sanitation:** Shed Cleaning and Disinfection- Water Sanitation - Disinfection and Disinfectants - Precaution and safety handling of disinfectants- Care during emergency - Fumigation – Importance and Procedure.				
Unit III	**Breeder Flock Vaccination:** Types of vaccines- Conventional vaccines, Live vaccines, Killed vaccines- Attenuated vaccines- Vaccination schedule for breeders - Different methods of vaccination- Pre and post vaccination care**.**				
Unit IV	**Breeder Flock Medication** Types of Medications – Route of Medication – Deworming and Delicing - General principles in feed and water medication				
Unit V	**Poultry Farm Waste Disposal:** Manure disposal – Composting - Dead bird disposal – Burial – Pit disposal – Incineration – Composting.				

Reference and Textbooks:

Bell D. Donald and Weaver D. William Jr., 2007. Commercial Chicken Meat and Egg Production. 5th Edition. Springer India Pvt. Ltd., Noida.

Narahari D., and Kumararaj R., 2008. Handbook of applied Broiler Production. 1st Edition. Poultry Punch Publication (I) Pvt. Ltd., New Delhi.

Saif., Y. M., *et al.,* 2013. Diseases of Poultry. 12th Edition. Blackwell Publishing, USA.

Sreenivasaiah, P. V., 2015. Textbook of Poultry Science. 1st Edition. Write & Print Publications, New Delhi

Thyagarajan. D., 2011. Diseases of Poultry. 1st Edition. Satish Serial Publishing House, New Delhi, India.

Outcome	1. On the successful completion of the course, students will be able to understand the Bio security procedures followed in the breeder flock 2. Students will be able to understand the viral diseases in poultry 3. Students will be able to know the important bacterial diseases 4. Students will be able to know about the parasitic and deficiency diseases 5. Students will be able to understand about the vaccination and medication

Semester - II					
CC		**Core**	**T/P**	**Credits**	**H/W**
Course code:	**80223**	**Diseases of Broiler Breeder chicken.**	**T**	**3**	**4**
Objectives	1. To provide in depth knowledge on the viral diseases of poultry 2. To understand the control measures of bacterial diseases of poultry 3. To have an in depth knowledge parasitic diseases preventive measures 4. To provide in depth knowledge on fungal diseases of poultry 5. To understand the nutritional deficiency diseases of poultry				
Unit -I	**Bacterial Diseases:** Bacterial Diseases – Etiology - Host and Transmission - Signs and lesions - Morbidity and Mortality - Diagnosis - Treatment - Prevention and control - Colibacillosis - Mycoplasmosis - Salmonellosis - Fowl cholera, Infectious Coryza, Bumble foot and Necrotic enteritis.				
Unit - II	**Viral Diseases:** Viral Diseases – Etiology, transmission, signs, lesions, diagnosis, treatment, prevention and control – Ranikhet disease, Infectious Bursal disease, Mareks' disease, Infectious laryngotracheitis, Infectious Bronchitis, Fowl Pox and Avian Influenza.				
UNIT - III	**Parasitic and Mycotic Diseases:** **Parasitic diseases** - Etiology, transmission, clinical signs, postmortem lesions, diagnosis, treatment, control and prevention of Endoparasites, Ectoparasites - Protozoan infection – Coccidiosis – Litter management - Aspergillosis - Mycotoxicosis – Aflatoxicosis and Ochratoxicosis – Pesticide toxicity in poultry – House fly control measures				
Unit - IV	**Nutritional Disorders:** Rickets – Cage Layer fatigue – Exudative diathesis - Curled toe paralysis - Crazy Chick disease - Perosis – Star gazing in chicks - Bowed leg syndrome – Poly neuritis - Gout – Ascites - Sudden Death Syndrome – Fatty Liver hemorrhagic Syndrome (FLHS) - Fatty liver and kidney syndrome (FLKS) – Common Vices of chicken.				
Unit - V	**Disease Prevention and Control:** Feed and water quality testing – Maintaining Salmonella and Mycoplasma free breeding flock –Application of HACCP and Good Management Practices (GMP) in hatchery – Maintenance of Health Records.				
Reference and Text books:	Crawford, R.D. (Ed.). 1993. Poultry Breeding and Genetics.Amsterdam :Elsevier. David E. Swayne., Martine Boulianne., Catherine M. Logue., Larry R. McDougald., Venugopal Nair., & David L. Suarez .(Eds). (2020). Diseases of Poultry, (14th ed). USA: Blackwell Publishing, Ames, Iowa Mack O. North.,&Donald D. Bell.1990.Commercial Chicken Production Manual,(4thed). Connecticut:AVI Publ. Co. Inc., Westport. Saif,Y.M., Fadly, A. M., Glisson, J. R., McDougald, L. R., Nolan, L. K.& Swayne D. E. (Eds). 2008. Diseases of Poultry, (12th ed). USA: Blackwell Publications Ames, Iowa. Thyagarajan, D. 2011. Diseases of Poultry. (1sted). New Delhi: Satish Serial Publishing House. Vegad,J.L. 2016. Poultry Diseases:A guide for farmers and Poultry Professionals,(2nded). New Delhi: CBS Publishers & distributors Pvt. Ltd.				

Outcome	On successful completion of the course, the student could 1. Understand the control measures of viral diseases of poultry 2. Understand the control measures of bacterial diseases of poultry 3. Have an in depth knowledge on parasitic diseases preventive measures. 4. Acquire in depth knowledge on fungal diseases of poultry 5. Aware on the importance of nutritional deficiency diseases of poultry.

Semester - II					
CC		**Core**	**T/P**	**Credits**	**H/W**
Course code: 80224		**Practical in Breeder Nutrition and Flock Health**	**P**	**4**	**8**
Objectives	To enable the students to understand and have hands on experience in basic techniques involved in broiler management.				
	1. Identification, Physical and sensory evaluation of feed ingredients. 2. Sampling techniques for ingredients 3. Estimation of dry matter and moisture 4. Feed mill Design and layout. 5. Storage of feed ingredients and feed 6. Biosecurity measures 7. Vaccination methods and Schedule 8. Water sample analysis 9. Post mortem examination of chicken 10. Types of medication – route and dosage calculation. 11. Blood smear examination. 12. Faecal examination for endo parasitic eggs. 13. Mycotoxin analysis in feed and feed ingredients. 14. Visit to feed mill and feed analysis lab 15. Visit to Poultry Disease diagnosis laboratory.				
Outcome	On successful completion of the Practical, students will be able to carry out the breeder farm practices.				

Semester - II					
CC		**Core**	**T/P**	**Credits**	**H/W**
Course code: 80225A/ 80225B		**80225A Project work / 80225B In-Plant training**	**PR/I**	**4**	**8**
Objectives	To understand the daily routines of the farm and documentation of the same				
Directions	❖ Students are allocated to undergo training at different units on rotational basis and instructed to collect the production data ❖ Each student is allowed to prepare the report based on the data collected ❖ After the in-plant training students will prepare an in-plant training report which will be evaluated by the Faculty of SIPM along with External Examiner.				
Outcome	On the successful completion of the project in-plant training, students will be able to gain self-confidence to manage the breeder flock.				