

Academic:

1. Degree Offered –UG, PG

Title of degree:

Duration:

Eligibility Criteria:

Intake Capacity:

Opportunities:

2. Academic Regulations:

UG , PG, PhD (VCI, ICAR, IV, V Dean's and Corrigendum) – PDF Copies

3. Admissions:

UG, PG, PhD

List of Admitted Students – First Year to Final Year (Veterinary Year wise / Fishery and Dairy Semester wise):

Sr. No.	Name of Student	Enrl. No.	Email Address	Name of Advisor
---------	-----------------	-----------	---------------	-----------------

4. Course offered :: UG, PG , PhD - Semester / Year wise

- List of UG Courses (B.V.Sc & AH) As per latest MSVE Guidelines)
, B.Tech. (D.T.) and B.F.Sc as per ICAR – V Deans Committee – 2016.

Sr No	Course No.	Title	Credit	Course offered in the Year
1	-	1. Paper-I (New VCI-2016 syllabus for Unit-I & Unit- II) 2. Paper-II (for Unit- III & Unit-IV)	3+1= 04	Since 2016

- List of PG Courses (MVSc) and M.Tech. (Dairy Technology)

Sr No	Course No.	Title	Credit	Semester
1	ANN-601	Animal Nutrition-Energy & Protein	3+0 = 03	I
2	ANN-602	Animal nutrition – minerals, vitamins and feed additives.	3+1 = 04	I

3	ANN-603	Feed Technology.	1+1 = 02	I
4	ANN-604	Feed Conservation, Storage & Quality Control.	2+2 = 04	II
5	ANN-605	Ruminant Nutrition.	2+1 = 03	II
6	ANN-606	Non-ruminant nutrition.	1+1 = 02	II
7	ANN-607	Nutrition of companion, laboratory, wild & zoo animals.	2+1 = 03	II
8	ANN-608	Research Techniques in Animal Nutrition.	1+3 = 04	III
9	ANN-609	Non-conventional feedstuffs & toxic constituents/ anti-metabolites in animal feedstuffs.	2+1 = 03	III
10	ANN-699	Masster's Research	0+05 = 05	III
11	ANN-699	Masster's Research	0+15 = 15	IV

5. Lecture Schedule – UG, PG , PhD - Theory / Practical Schedule – Approved by BoS – Subject wise

UG Lecture Schedule

UNIT – 1: Title of Unit: Principles of Animal Nutrition and Feed Technology

Sr. No.	Topics
1	History of Animal Nutrition.
2	Importance of nutrients in animal production and health.
3	Composition of animal body and plants
4	Nutritional terms and their definitions
5	Nutritional aspects of carbohydrates, Protein, Fat
6	Role and requirements of water, metabolic water
7	General importance of minerals in animal health and production, Classification of minerals.
8	Major minerals, Importance of Calcium and Phosphorus in animal health and production, their requirement and supplementation in feed.

9	Importance of Sodium, Potassium, Chlorine, Sulfur and Mg in animal health and production, their requirement and supplementation in feed.
10	Trace minerals, Importance of Iron, Copper, Cobalt and Selenium in animal health and production, their requirement and supplementation in feed.
11	Importance of Iodine, Zinc, Mn, Fluorine and Molybdenum in animal health and production, their requirement and supplementation in feed.
12	General importance of vitamins in animal health and production, Classification of vitamins.
13	Fat soluble vitamins, Importance of Vitamin A and D in animal health and production, their requirement and supplementation in feed.
14	Importance of Vitamin E and K in animal health and production, their requirement and supplementation in feed.
15	Importance of Thiamine, Riboflavin, Niacin and Pantothenic acid in animal health and production, their requirement and supplementation in feed.
16	Importance of Biotin, Pyridoxine, Folic acid, Cyanocobalamin, Choline & Vit. C in animal health and production, their requirement and supplementation in feed.
17	Common feeds and fodders and its classification,
18	Various types of concentrates and roughages, its importance for livestock health and production and availability.
19	Measures of food energy and their applications, gross energy, digestible energy, metabolizable energy and net energy.
20	Total digestible nutrients, Starch equivalent
21	Food units and physiological fuel value.
22	Direct calorimetry.
23	Indirect calorimetry, Carbon nitrogen balance studies.
24	Protein evaluation of feeds- Measures of protein quality in non-ruminants, Biological value of protein, protein efficiency ratio, protein equivalent.
25	Calorie protein ratio and nutritive ratio.
26	Measures of protein quality in ruminants- Digestible crude protein, RDP and UDP, metabolizable protein.
27	Introduction to feed technology- feed industry. Processing of concentrates and roughages.
28	Various physical methods of feed processing for improving the nutritive value of inferior quality roughages.
29	Various chemical and biological methods of feed processing for improving the nutritive value of inferior quality roughages
30	Preparation, storage and conservation of livestock feed through silage and its use in livestock feeding.
31	Preparation, Storage and conservation of livestock feed trough hay and its use in livestock feeding.

32	Harmful natural constituents and common adulterants in Roughages
33	Harmful natural constituents and common adulterants in Concentrates
34	Feed additives in the rations of livestock and their uses.
35	Feed additives in the rations of poultry and their uses.

UNIT – 2: Title of Unit: Applied Ruminant Nutrition- I

Sr. No.	Topics
36	Scientific feeding & its Importance.
37	Feeding experiments, different methods of feeding experiments.
38	Feeding experiments, different methods of feeding experiments.
39	Digestion & metabolism trials, norms adopted in digestion trial.
40	Norms adopted in digestion trial.
41	Measurement of digestibility by conventional methods.
42	Indicator method of determining digestibility.
43	Determining pasture consumption & its digestibility.
44	Factors affecting digestibility of feed.
45	Feeding standards and its classification.
46	Uses, significance, merits and demerits of various feeding standards with reference to ruminants.
47	Balanced ration & its characteristics.

UNIT – 3: Title of Unit: Applied Ruminant Nutrition- II

Sr. No.	Topics
48	Energy and protein requirement of livestock for maintenance.
49	Energy and protein requirement of livestock for production.
50	Methods adopted for arriving energy requirement for maintenance.
51	Methods adopted for arriving protein requirement for maintenance.
52	Methods adopted for arriving energy requirements for production in terms of growth and reproduction.
53	Methods adopted for arriving protein requirements for production in terms of growth and reproduction.
54	Methods adopted for arriving energy requirements for production in terms of milk and meat.
55	Methods adopted for arriving protein requirements for production in terms of milk and meat.

56	Methods adopted for arriving energy & protein requirements for production in terms of wool and draft purpose.
57	Feeding of dairy cattle & buffalo- Calf stage (up to weaning)
58	Feeding of dairy cattle & buffalo- Growth stage and adult animal
59	Feeding of dairy cattle & buffalo- pregnant, dry and lactating animals
60	Feeding of dairy cattle & buffalo- breeding bulls & working animals.
61	General principles of computation of rations.
62	Formulation of ration for dairy cattle.
63	Formulation of ration for dairy cattle
64	Formulation of ration for lactating buffaloes.
65	Formulation of ration for cattle & buffalo- breeding bulls & working animals
66	Feeding of high yielding animals and role of bypass nutrients.
67	Feeding of goat- kid, grower, adult, pregnant, lactating goat and buck.
68	Formulation of ration for goat.
69	Feeding of sheep - pregnant, lactating ewes.
70	Formulation of ration for sheep and lambs.
71	Metabolic disorders and nutritional interventions in ruminants.
72	Importance and utilization of NPN compounds for ruminants.

UNIT – 4: Title of Unit: Applied Non-ruminant Nutrition

Sr. No.	Topics
73	Methods adopted for arriving at energy requirement for maintenance.
74	Methods adopted for arriving at protein requirement for maintenance.
75	Methods adopted for arriving at energy requirement for growth, reproduction, egg, meat and work
76	Methods adopted for arriving at protein requirement for growth, reproduction, egg, meat and work
77	Feeding standards for poultry.
78	Energy requirement for maintenance and production for Poultry.
79	Protein requirement for maintenance and production for Poultry
80	Feeding of poultry- Broiler (with conventional and un-conventional feeds).
81	Feeding of poultry- Broiler (with conventional and un-conventional feeds).
82	Feeding of poultry- Layer (with conventional and un-conventional feeds).

83	Feeding of poultry- Layer (with conventional and un-conventional feeds).
84	Feeding of duck, quail and turkey.
85	Formulation of ration for poultry as per BIS and ICAR specifications.
86	Formulation of ration for poultry as per BIS and ICAR specifications
87	Feeding standards for non-ruminants
88	Energy requirement for maintenance and production for Swine.
89	Protein requirement for maintenance and production for Swine
90	Feeding of swine- piglets & growers, (conventional & un-conventional feeds).
91	Feeding of swine- pregnant sows and lactating sow (with conventional and un-conventional feeds).
92	Feeding of swine- breeding boar and fattening animals (with conventional and un-conventional feeds).
93	Formulation of ration for swine as per BIS and ICAR specifications.
94	Formulation of ration for swine as per BIS and ICAR specifications
95	Energy and protein requirement for maintenance and production for Equine.
96	Feeding of equine- foal, yearling and brood mare (with conventional and un-conventional feeds).
97	Feeding of equine- stallion and race horses (with conventional and un-conventional feeds).
98	Formulation of ration for horse as per BIS and ICAR specifications
99	Nutrient requirement, feeding practices and diet formulation for mice and rat.
100	Nutrient requirement, feeding practices and diet formulation for rabbit.
101	Nutrient requirement, feeding practices and diet formulation for guinea pig.
102	Nutritional requirement and feeding of various breeds of dogs – pups and growing dogs.
103	Nutritional requirement and feeding of various breeds of dogs – adult dogs, pregnant and lactating bitches.
104	Nutritional requirement and peculiarities of feeding cats.
105	Feeding of wild animals in captivity – Carnivores.
106	Feeding of wild animals in captivity – Herbivores and Omnivores.
107	Feeding of wild birds in captivity
108	Metabolic disorders and nutritional interventions in non-ruminants.

PG Lecture Schedule

Title of Course: ANIMAL NUTRITION – ENERGY AND PROTEIN

Course No. ANN - 601
Semester-1

Credits: 3+0=3

Lect. No.	Topics
1.	Basic terminology.
2.	Classification of carbohydrates.
3.	Classification of fats
4.	Classification of proteins
5.	Fundamental concepts of Digestion and metabolism of Carbohydrate in non-ruminants.
6.	Fundamental concepts of Digestion and metabolism of Carbohydrate in ruminants.
7.	Fundamental concepts of Digestion and metabolism of Fat in non-ruminants.
8.	Fundamental concepts of Digestion and metabolism of Fat in ruminants.
9.	Fundamental concepts of Digestion and metabolism of Protein in non-ruminants.
10.	Fundamental concepts of Digestion and metabolism of Protein in ruminants.
11.	Gluconeogenesis
12.	Recent advances in glucogenic precursors on acetate utilization.
13.	NPN metabolism.
14.	Urea fermentation potential and metabolizable protein.
15.	Amino acid imbalance.
16.	Amino acid antagonism
17.	Amino acid toxicity
18.	Measures of feed energy. Total digestible nutrients, its calculation, advantages and limitations.
19.	Starch Equivalent, its calculation, advantages and limitations.
20.	Partitioning of feed energy-gross energy, digestible energy & metabolizable energy.
21.	Partitioning of feed energy-Net energy, productive energy.
22.	Efficiency of energy utilization
23.	Efficiency of Protein utilization.
24.	Feeding standards- comparative appraisal and limitations.
25.	Feeding standards- comparative appraisal and limitations (contd.)
26.	Rumen degradable Protein (RDP)
27.	Rumen undegradable protein (UDP) and Kinetics.
28.	Energetics of protein synthesis and turn over.
29.	Quantification of microbial protein synthesis.
30.	Protein quality determination in monogastrics-Crude protein, Digestible Crude protein and utility.
31.	Protein quality determination in monogastrics- PER, EAAI.
32.	Protein quality determination in monogastrics- Protein equivalent, Biological value.
33.	Utility of Biological value, Nutritive ratio, its calculation, advantages and limitations.
34.	Energy balance.
35.	Fasting catabolism.
36.	Direct calorimetry
37.	Indirect calorimetry, Carbon-nitrogen balance.
38.	Methods of determination of energy and protein requirements.
39.	Determination of energy and protein requirement for maintenance in ruminants.

40.	Determination of energy and protein requirement for growth in ruminants.
41.	Determination of energy and protein requirement for pregnancy in ruminants.
42.	Determination of energy and protein requirement for lactation in ruminants.
43.	Determination of energy and protein requirement for maintenance in companion animals.
44.	Determination of energy and protein requirement for growth in companion animals.
45.	Determination of energy and protein requirement for pregnancy in companion animals.
46.	Determination of energy and protein requirement for lactation in companion animals.
47.	Determination of energy and protein requirement for maintenance and growth in poultry.
48.	Determination of energy and protein requirement for egg production in poultry.

Lecture Schedule

Title of Course: ANIMAL NUTRITION – MINERALS, VITAMINS AND FEED ADDITIVES

Course No. ANN - 602

Credits: 3+1=4

Semester-1

Lect No.	Topics
1.	Classification of minerals.
2.	General role of minerals
3.	Soil-plant-animal-human relationship
4.	Requirement of minerals
5.	Factors affecting requirements
6.	Importance of minerals in animal health and production
7.	Classification of vitamins.
8.	Major minerals, Importance of Calcium : its distribution, metabolism, physiological functions, deficiencies and excesses, requirements and sources
9.	Importance of Phosphorus: its distribution, metabolism, physiological functions, deficiencies and excesses, requirements and sources
10.	Importance of Sodium and Potassium: their distribution, metabolism, physiological functions, deficiencies and excesses, requirements and sources.
11.	Importance of Chlorine and Sulfur: their distribution, metabolism, physiological functions, deficiencies and excesses, requirements and sources.
12.	Importance of Magnesium: its distribution, metabolism, physiological functions, deficiencies and excesses, requirements and sources.
13.	Trace minerals, Importance of Iron: its distribution, metabolism, physiological functions, deficiencies and excesses, requirements and sources.
14.	Importance of Copper in animal health and production, its distribution, metabolism, physiological functions, deficiencies and excesses, requirements and sources, their requirement and supplementation in feed.
15.	Importance of Cobalt and Selenium in animal health and production, its distribution, metabolism, physiological functions, deficiencies and excesses, requirements and sources.
16.	Probable essential minerals.
17.	Toxic minerals.

18.	Importance of vitamins in animal health and production.
19.	Definition, history, classification, chemistry, functions, deficiencies and excesses, requirements and sources of vitamin-A and D
20.	Definition, history, classification, chemistry, functions, deficiencies and excesses, requirements and sources of vitamin-E and K.
21.	Definition, history, classification, chemistry, functions, deficiencies and excesses, requirements and sources of Thiamin.
22.	Definition, history, classification, chemistry, functions, deficiencies and excesses, requirements and sources of Riboflavin, Niacin and Pantothenic acid..
23.	Definition, history, classification, chemistry, functions, deficiencies and excesses, requirements and sources of Biotin and Pyridoxine, Folic acid, Cynocobalamine and Choline
24.	Critical minerals for non-ruminants and ruminants.
25.	Chelates and chelated minerals.
26.	Inter-relationship of minerals with carbohydrates and protein.
27.	Inter-relationship of minerals with fats and vitamins.
28.	Impact of minerals arising from industrial affluent on animal health and production.
29.	Critical limits of minerals in edible herbage
30.	Bioavailability studies in minerals.
31.	Impact of minerals on reproduction
32.	Area specific minerals.
33.	Relationship of vitamins with carbohydrates and protein.
34.	Relationship of vitamins with fats and minerals.
35.	Critical vitamins for ruminants.
36.	Critical vitamins for non-ruminants.
37.	Feed additives and its classification, including probiotics, Prebiotics, Symbiotics and feed enzymes.
38.	Antibiotic as feed additives in livestock ration, its merits and demerits, public health legislations.
39.	Probiotics as feed additives in livestock ration, its characteristics and advantages.
40.	Prebiotics as feed additives in livestock ration, its characteristics and advantages.
41.	Use of hormones as feed additives in livestock ration, its merits and demerits, public health legislations.
42.	Use of enzymes as feed additives in livestock ration and its advantages.
43.	Use of feed flavours, hardening and binding agents.
44.	Use of acidifiers as feed additives in livestock ration.
45.	Use of grits, buffers and neutralizers as feed additives in livestock ration.
46.	Use of growth stimulating compounds arsenic, copper sulphate, surfactant and tranquilizers as feed additives in livestock ration.
47.	Use of anti-bloat, anti-fungal, anti-coccidial and anthelmintics etc. as feed additives in livestock ration.
48.	Research techniques in nutrition.

Practical Schedule

**Title of Course: ANIMAL NUTRITION – MINERALS, VITAMINS AND
FEED ADDITIVES**

Course No. ANN-602

Credits: 3+1=4

Prct No.	Topics
-------------	--------

1	General principles of mineral estimation.
2	Sampling and processing techniques.
3	Estimation of Ca, P and salt.
4	Estimation of Mg and sulphur.
5	Estimation of Cu, Co and I.
6	Estimation of Zn, Mn, Mo, etc.
7	Determination of bioavailability of minerals.
8	Formulation of mineral mixtures for ruminants.
9	Formulation of mineral mixtures for non-ruminants and poultry.
10	Identification of adulterants and quality control.
11	Atomic absorption spectrometry in mineral estimation of major elements.
12	Atomic absorption spectrometry in mineral estimation of trace elements.
13	Preparation of diets for mineral studies.
14	Principles of vitamin estimation and formulation of vitamin mixtures.
15	Estimation of vitamins-A and E.
16	Estimation of vitamins-C.

Lecture Schedule

Title of Course: FEED TECHNOLOGY

Course No. ANN 603

Credits: 1+1=2

Semester-1

Lect No.	Topics
1.	Importance of feed technology in relation to animal productivity.
2.	The integrated biological, chemical and physical basis for evaluating the inherent nutritional quality of feed ingredients and feeds.
3.	The integrated biological, chemical and physical basis for evaluating the inherent nutritional quality of feeds.
4.	Familiarization of various feed mill equipments.
5.	Familiarization of various feed mill layouts and operations.
6.	Problems of feed manufacturing units and control measures, Quarantine measures.
7.	Introduction to the formula feed manufacturing including principles of material handling, grinding, mixing, pelleting and other major processing operations.
8.	Crumbling, Flaking, Popping, Extrusion.
9.	Principles of instrumentation and analysis, with emphasis on application to Quality control and research in the feed industry.
10.	The formulation of concentrate mixtures, premixes and rations using computer. Automated feed mill
11.	Personal management in feed plants, laws and regulation of feed manufacturing industry
12.	Codex alimentarius, HACCP.
13.	Organizational charts for small, medium and large feed plants.
14.	Labour standards, planning and production programme.
15.	Handling of plant equipment.
16.	Merits and demerits of automated feed plant.

Practical Schedule

Title of Course: FEED TECHNOLOGY

Course No. ANN-603

Credits: 1+1=2

Prct No.	Topics
1	Identification of feed ingredients and their specifications for different categories of livestock.
2	Identification of feed ingredients and their specifications for poultry
3	Identification of compound feed for different categories of livestock.
4.	Identification of compound feed for different categories of poultry.
5.	Feed microscopy.
6.	Formulating premixes
7.	Formulating premixes (Contd.)
8.	Introduction to Pulverisers.
9.	Introduction to pelletisers.
10	Introduction to complete feed block equipments
11	Plant layout and design of different capacity of feed mills
12	Problems related to feasibility of feed mills.
13	Record keeping in different sections of feed mill
14.	Experiential learning at the feed plant for preparing feed
15.	Experiential learning at the feed plant for preparing urea molasses mineral blocks.
16.	Experiential learning at the feed plant for preparing mineral mixture.

Lecture Schedule

Title of Course: FEED CONSERVATION, STORAGE AND QUALITY CONTROL

Course No. ANN-604

Credits No. : 2+2=4

Semester-2

Lect No.	Topics
1.	Principles of feed and fodder processing, their merits and demerits.
2.	Principles of feed and fodder preservation techniques, their merits and demerits
3.	Procurement, planning and purchase procedures.
4.	Traditional farm level storage structures.
5.	Modern farm level storage structures
6.	Feed storage and godown management,
7.	Estimation of storage capacity and stack plan.
8.	Evaluation of processed and preserved feeds and forages.
9.	Role of moisture, temperature and relative humidity during storage of feedstuffs and their effect on biotic factors.
10.	Handling and storage of liquid feed Ingredients.
11.	Physical changes in feeds during storage
12.	Chemical changes in feeds during storage
13.	Storage losses
14.	Insects, pests and rodents in feed stores.
15.	Insects, pests and rodents control in feed stores
16.	Role of fungi and tolerance limits.
17.	Measures to check fungi in stored products

18.	Factors affecting the quality of feed and feedstuffs on preservation.
19.	Microbiological evaluation of processed feeds.
20.	Microbiological evaluation of preserved feeds
21.	Effect of preservation on nutritional value of feed.
22.	Properties and mode of action of pesticides
23.	Properties and mode of action of fumigants
24.	Principles of good sanitation and hygiene of godowns.
25.	Proximate composition
26.	Limitations of various systems of analysis
27.	Partitioning of forage fibre by Van Soest method
28.	Partitioning of forage fibre by Van Soest method (contd.)
29.	Quality control of feed ingredients.
30.	Specifications of feed ingredients, BIS standards.
31.	Specifications of finished feeds, BIS standards.
32.	Pesticide and insecticide residues in feeds.

Practical Schedule

Title of Course: FEED CONSERVATION, STORAGE AND QUALITY CONTROL

Course No. ANN 604

Credits No. : 2+2=4

Prct No.	Topics
1	Laboratory evaluation of preserved feed.
2	Laboratory evaluation of processed forages.
3	Physical properties of feeds and feedstuffs
4.	Identification of insect-pests in stored products
5.	Identification of fungi in stored products
6.	Techniques for detection of hidden infestation in grains.
7.	Quality control of stored feed materials
8.	Inspection of stored feed materials
9.	Moisture equilibrium determination
10	Estimation of chemical changes in feeds during storage.
11	Estimation of alcoholic acidity in feeds during storage
12	Estimation of rancidity in feeds during storage
13	Estimation of uric acid in feeds during storage
14	Weende's proximate analysis, its advantages and disadvantages
15	Estimation of dry matter in concentrates.
16	Estimation of dry matter in roughages.
17	Estimation of crude protein in feed samples.
18	Estimation of crude protein in feed samples. (contd.)
19	Estimation of ether extract in feed samples.
20	Estimation of ether extract in feed samples. (contd.)
21	Estimation of total ash in feed samples.
22	Estimation of total ash in feed samples. (contd.)
23.	Estimation of acid insoluble ash in feed samples.
24.	Estimation of crude fibre and calculation of nitrogen free extract in feed samples.
25.	Estimation of crude fibre and calculation of nitrogen free extract in feed samples. (contd.)
26.	Van Soest fibre fractionation and its advantages.

27.	Estimation of NDS and NDF
28.	Estimation of ADS and ADF
29.	Estimation of lignin and sand and silica
30.	Enzymatic evaluation
31.	Pro rata deduction (Feed laws) regarding urea and FFA.
32.	Pro rata deduction (Feed laws) regarding peroxide value, adulterants and heavy metals.

Lecture Schedule

Title of Course: RUMINANT NUTRITION

Course No. ANN-605

Credits No. : 2+1=3

Semester-2

Lect. No.	Topics
1.	Nutrients and their metabolism with special reference to milk production.
2.	Nutrients and their metabolism with special reference to meat production.
3.	Nutrients and their metabolism with special reference to wool production.
4.	Feeding standards, their history.
5.	Feeding standards, their comparative appraisal and limitations.
6.	Classification of feedstuffs.
7.	Nutrient requirements for calves, heifers, dry, pregnant and lactating cows.
8.	Nutrient requirements for calves, heifers, dry, pregnant and lactating buffaloes.
9.	Nutrient requirements for lambs, dry, pregnant and lactating sheep.
10.	Nutrient requirements for kids, dry, pregnant and lactating goat.
11.	Introduction to rumen microflora and fauna.
12.	Classification of rumen bacteria.
13.	Classification of rumen protozoa.
14.	Classification of rumen yeast, fungi and other microbes.
15.	Development of rumen.
16.	Role of milk replacers.
17.	Role of calf starters
18.	Feed formulation of large ruminants for growth and maintenance.
19.	Feed formulation of large ruminants during pregnancy, lactation and dry period.
20.	Feed formulation of small ruminants for growth and maintenance.
21.	Feed formulation of small ruminants during pregnancy, lactation and dry period.
22.	Concept of complete feed, its advantages and disadvantages.
23.	Limiting nutrients of high yielding ruminants.
24.	Strategic feeding of high yielding ruminants
25.	Concept of by-pass protein and their impact on production, reproduction and immune status
26.	Concept of by-pass fats and their impact on production, reproduction and immune status
27.	Concept of by-pass starch and their impact on production, reproduction and immune status.
28.	Importance of CLA and omega fatty acids.
29.	Scope for value addition in milk
30.	Different systems of feeding buffalo for beef production.
31.	Feeding during natural calamities
32.	Feeding in various agro-climatic zones of India

Practical Schedule**Title of Course: RUMINANT NUTRITION****Course No. ANN - 605****Credits No. : 2+1=3**

Prct No.	Topics
1	Design and planning of feeding experiments- CRD.
2	Design and planning of feeding experiments- RBD.
3	Design and planning of feeding experiments- LSD.
4.	Identification of feed and fodder on the basis of its composition.
5.	Artificial rumen technique
6.	Methods for evaluation of feedstuffs- in vitro gas
7.	Methods for evaluation of feedstuffs- in sacco digestion kinetics.
8.	Determination of nutritive value of feeds and fodders by metabolism trial in dairy cattle.
9.	Determination of nutritive value of feeds and fodders by metabolism trial in Dairy cattle. (contd.)
10	Determination of nutritive value of pastures by the use of range techniques.
11	Study of rumen metabolic profile.
12	Preparation of by-pass proteins.
13	Preparation of by-pass fats.
14	Preparation of by-pass starch.
15	Identification of rumen microbes and rumen studies.
16	Identification of rumen microbes and rumen studies. (contd.)

Lecture Schedule**Title of Course: NON-RUMINANT NUTRITION****Course No. : ANN - 606****Credits: 1+1=2****Semester-2**

Lect No.	Topics
1	Nutrients, their metabolism and requirements for poultry during different stages of growth and production.
2	Nutrients, their metabolism and requirements for swine during different stages of growth and production.
3	Limiting aminoacids-lysine and methionine
4.	Feeding systems for swine and poultry.
5.	Feed additives for swine and poultry.
6.	Feed formulations for different purposes including least cost rations for swine.
7.	Feed formulations for different purposes including least cost rations for poultry.
8.	Quality control of poultry feed for efficient egg and meat production.
9.	Quality control of swine rations for efficient meat production.
10	Nutrition in relation to diseases.
11	Nutrition in relation to stress.
12	Nutritional factors affecting quality of the products.
13	Hind gut fermentation and its importance.
14	Nutrient requirements of rabbits and equines.
15	Nutritional manipulation for producing value added eggs.
16	Nutritional manipulation for producing value added meat / pork.

Practical Schedule**Title of Course: NON-RUMINANT NUTRITION****Course No. : ANN 606****Credits: 1+1 =2**

Prct. No.	Practicals
1.	Design and planning for broiler feeding experiments
2	Design and planning for layer feeding experiments
3	Design and planning for swine feeding experiments
4.	Formulation and compounding of general and least cost rations for broilers.
5.	Formulation and compounding of general and least cost rations for layers.
6.	Formulation and compounding of general and least cost rations for swine.
7.	Determination of nutritive value of poultry feeds by balance experiments
8.	Determination of nutritive value of swine feeds by balance experiments
9.	Evaluation of protein quality.
10	Visit to broiler units.
11	Visit to layer units.
12	Visit to piggery units.
13	Feed and fodder stores.
14	Use of software in least cost feed formulations.
15	Basic principles governing the least cost formulation soft wares.
16	Basic principles governing the least cost formulation soft wares. (contd.)

Lecture Schedule**Title of Course: NUTRITION OF COMPANION, LABORATORY, WILD AND ZOO ANIMALS****Course No. : ANN - 607****Credits: 2+1=3****Semester-2**

Lect No..	Topics
1	Feeding habits and food pattern of companion animals (dogs & cat)
2	Feeding habits and food pattern of laboratory animals (rat, rabbit & guinea pig)
3	Feeding habits and food pattern of wild and zoo carnivores.
4	Feeding habits and food pattern of wild and zoo herbivores.
5	Digestive structure and functions in companion animals.
6	Digestive structure and functions in laboratory animals.
7	Digestive structure and functions in wild and zoo herbivores.
8	Digestive structure and functions in wild and zoo carnivores.
9	Nutritional requirements of companion animals.
10	Nutritional requirements of laboratory animals (rat, rabbit & guinea pig)
11	Nutritional requirements of wild and zoo carnivores.
12	Nutritional requirements of wild and zoo herbivores.
13	Feeding standards for companion animals
14	Feeding standards for laboratory animals
15	Importance of colostrum and feeding of neonates and growing animals. Raising Orphans
16	Feeding and care of nursing mothers
17	Feeding of sick animals. Post - surgical nutrition

18	Geriatric animal nutrition.
19	Ration formulation for captive animals.
20	Artificial feeding and feeding during emergency.
21	Nutritive characteristics of forages for wild animals
22	Adequacy of forage plants for wild and zoo animals.
23	Nutrition of semi wild and semi domestic animals like mithun and yak under special topography.
24	Composition, presentation, sterilization of companion / laboratory animal diets.
25	Palatability assessment and storage of companion/laboratory animal diets.
26	Mistakes and misleading information on companion food labels and labeling.
27	Nutraceuticals in companion animal foods.
28	Nutraceuticals in laboratory animal foods.
29	Nutritional deficiency diseases in companion animals.
30	Nutritional deficiency diseases in laboratory animals
31	Nutritional deficiency diseases in wild and zoo herbivores
32	Nutritional deficiency diseases in wild and zoo carnivores.

Practical Schedule

Title of Course: NUTRITION OF COMPANION, LABORATORY, WILD AND ZOO ANIMALS

Course No. : ANN - 607

Credits: 2+1=3

Prct No.	Topics
1	Formulation of balanced diets for companion animals.
2	Formulation of balanced diets for laboratory animals.
3	Preparation of hygienic, balanced diets and feeding for companion animals.
4	Preparation of hygienic, balanced diets and feeding for laboratory animals.
5	Ration formulation and feeding schedules for wild and zoo carnivores.
6	Ration formulation and feeding schedules for wild and zoo herbivores.
7	Feeding schedules for sick and orphan wild and zoo carnivores.
8	Feeding schedules for sick and orphan wild and zoo herbivores.
9	Artificial and emerging feeding in wild and zoo carnivores.
10	Artificial and emerging feeding in wild and zoo herbivores.
11	General feeding habits and different feed constituents of wild and captive carnivores.
12	General feeding habits and different feed constituents of wild and captive herbivores.
13	Research methodology of companion / laboratory animals.
14	Processing and storage of companion/laboratory diets.
15	Visit to zoological park.
16	Visit to wildlife sanctuary.

Lecture Schedule: ANN-608

Title of Course: RESEARCH TECHNIQUES IN ANIMAL NUTRITION

Course No. : ANN - 608

Credits: 1+3=4

Semester-3

Lect No.	Topics
-----------------	---------------

1	Principles of animal experimentation.
2	Specialized feed compounding
3	Introduction and principle of GLC.
4	Introduction and principle of HPLC.
5	Introduction and principle of AAS.
6	Introduction and principle of tracer technique for determination of digestibility.
7	Introduction and principle of flame photometer.
8	Introduction and principle of NIR analyzer.
9	Introduction and principle of Sulfur Hexafluoride 6 technique for methane estimation.
10	Introduction and principle of amino acid analyzer.
11	Importance and principle of various techniques in estimating chemical and biochemical constituents and toxic principles in concentrates.
12	Importance and principle of various techniques in estimating chemical and biochemical constituents and toxic principles in roughages.
13	Importance, principles and procedures for estimating chemical and biochemical constituents in blood.
14	Importance, principles and procedures for estimating chemical and biochemical constituents in milk.
15	Importance, principles and procedures for estimating chemical and biochemical constituents in rumen liquor.
16	Importance, principles and procedures for estimating chemical and biochemical constituents in meat, wool.

Practical Schedule: ANN-608

Title of Course: RESEARCH TECHNIQUES IN ANIMAL NUTRITION

Course No.: ANN - 608

Credits: 1+3=4

Pract No.	Topics
1	Estimation of NDF
2	Estimation of ADF
3	Estimation of Lignin
4	Determination of digestibility by using lignin as internal marker.
5	Determination of digestibility by using lignin as internal marker. (contd...)
6	Estimation of Ca by atomic absorption spectrophotometer
7	Estimation of Mg and S by atomic absorption spectrophotometer
8	Estimation of Cu and Co by atomic absorption spectrophotometer
9	Estimation of Zn and Mn by atomic absorption spectrophotometer
10	Estimation of Fe and I by atomic absorption spectrophotometer
11	Estimation of Se and Mo by atomic absorption spectrophotometer
12	Estimation of Pb and Hg by atomic absorption spectrophotometer
13	In-vitro/in-sacco determination of digestibility and digestion kinetics
14	Contd... In-vitro/in-sacco determination of digestibility and digestion kinetics
15	Determination of energy content of feed using bomb calorimeter.
16	Determination of energy content of faeces using bomb calorimeter.
17	Determination of energy content of urine using bomb calorimeter.
18	Physical methods of improvement of quality of concentrate feeds.
19	Physical methods of improvement of quality of roughages.

20	Chemical methods of improvement of quality of animal feeds (alkali treatment)
21	Chemical methods of improvement of quality of animal feeds (urea treatment)
22	Biological methods of improvement of quality of animal feeds
23	Interpretation and presentation of results.
24	Tracer techniques in Animal Nutrition – Radioisotope studies for mineral metabolism.
25	Tracer techniques in Animal Nutrition – SF6 tracer technique for methane estimation.
26	Chromic oxide technique for determination of digestibility of pasture.
27	Quality evaluation of silage- moisture and pH determination.
28	Quality evaluation of silage- Acidity determination.
29	Quality evaluation of silage- Estimation of VFAs.
30	Quality evaluation of Hay- Colour and leafyness of hay
31	Quality evaluation of Hay- Moisture estimation.
32	Quality evaluation of Hay- Carotene estimation
33	Estimation of gross energy of feed
34	Estimation of digestible energy of feed
35	Estimation of digestible energy of feed. (contd..)
36	Estimation of metabolizable energy of feed
37	Estimation of nitrates in feeds and fodders
38	Estimation of urea in feeds and fodders
39	Estimation of aflatoxin in feeds and fodders
40	Estimation of salmonella in feeds and fodders
41	Estimation of glycosides in feeds and fodders
42	Blood profile: Estimation of serum Ca
43	Estimation of serum P
44	Estimation of serum trace minerals
45	Estimation of BUN
46	Meat quality: Meat : bone ratio
47	Dressing %
48	Weights of edible/non-edible offals.

Lecture Schedule: ANN-609

**Title of Course: NON CONVENTIONAL FEEDSTUFFS AND TOXIC
CONSTITUENTS / ANTIMETABOLITES IN ANIMAL
FEEDSTUFF**

Course No. ANN - 609

Credits: 2+1=3

Semester-3

Lect. No.	Topics
1	Present and future feed requirements and current availability for livestock.
2	Present and future feed requirements and current availability for poultry.
3	Use of non-traditional feeds – By-products of agriculture.
4	Classification of non conventional feeds.
5	Use of non-traditional feeds – By-products of slaughter house
6	Use of non-traditional feeds – By-products of fruit industry.
7	Use of non-traditional feeds – By-products of hatchery.
8	Use of non-traditional feeds – By-products from forest.

9	Evaluation of non conventional feeds by chemical methods
10	Evaluation of non conventional feeds by biological methods
11	Formulation of economical rations for cattle and buffalo using non conventional feeds
12	Formulation of economical rations for sheep using non conventional feeds
13	Formulation of economical rations for goat using non conventional feeds
14	Formulation of economical rations for poultry using non conventional feeds
15	Formulation of economical rations for swine using non conventional feeds
16	Level of inclusion of various non conventional feeds in cattle and buffalo ration
17	Level of inclusion of various non conventional feeds in sheep & goat ration
18	Level of inclusion of various non conventional feeds in poultry ration
19	Level of inclusion of various non conventional feeds in swine ration
20	Classification of toxic principles in animal feedstuffs.
21	Chemico-physical properties of various toxins.
22	Effect of toxins on biological system in cattle & buffalo
23	Effect of toxins on nutrients utilization in cattle & buffalo
24	Effect of toxins on biological system and nutrients utilization in sheep and goat
25	Effect of toxins on biological system in poultry
26	Effect of toxins on nutrients utilization in poultry
27	Effect of toxins on biological system and nutrients utilization in swine.
28	Detoxification of toxin principles by various physical techniques
29	Detoxification of toxin principles by various chemical techniques
30	Detoxification of toxin principles by various biological techniques
31	Insecticide residue detection in feed stuff
32	Pesticide residue detection in feed stuff.

Practical Schedule: ANN-609

**Title of Course: NON CONVENTIONAL FEEDSTUFFS AND TOXIC
CONSTITUENTS / ANTIMETABOLITES IN
ANIMAL FEEDSTUFF**

Course No. ANN 609

Credits: 2+1=3

Pract No.	Topics
1	Estimation of various protease inhibitors in feeds.
2	Estimation of various protease inhibitors in feeds. (contd..)
3	Estimation of tannins in feeds.
4	Estimation of mycotoxins in feeds.
5	Estimation of nitrates in feeds.
6	Estimation of HCN in feeds.
7	Estimation of oxalates in feeds.
8	Estimation of insecticide residue in feeds.
9	Estimation of pesticide residue in feeds.
10	Estimation of saponnins in feeds.
11	Estimation of gossypol in feeds.
12	Estimation of mimosine in feeds.
13	Estimation of lead in feeds.
14	Estimation of mercury in feeds.
15	Estimation of selenium in feeds.
16	Estimation of arsenic in feeds.

6. Teaching Schedule :UG, PG , PhD - Prepared by – Course Teacher – Year wise / Course Wise

Lecture Schedule

UNIT - 1

Title of Unit: Principles of Animal Nutrition and Feed Technology

Sr. No.	Topics	Date
1	History of Animal Nutrition.	30.09.2024
2	Importance of nutrients in animal production and health.	01.10.2024
3	Composition of animal body and plants	07.10.2024
4	Nutritional terms and their definitions	08.10.2024
5	Nutritional aspects of carbohydrates, Protein, Fat	09.10.2024
6	Role and requirements of water, metabolic water	14.10.2024
7	General importance of minerals in animal health and production, Classification of minerals.	15.10.2024
8	Major minerals, Importance of Calcium and Phosphorus in animal health and production, their requirement and supplementation in feed.	16.10.2024
9	Importance of Sodium, Potassium, Chlorine, Sulfur and Mg in animal health and production, their requirement and supplementation in feed.	11.11.2024
10	Trace minerals, Importance of Iron, Copper, Cobalt and Selenium in animal health and production, their requirement and supplementation in feed.	12.11.2024
11	Importance of Iodine, Zinc, Mn, Fluorine and Molybdenum in animal health and production, their requirement and supplementation in feed.	13.11.2024
12	General importance of vitamins in animal health and production, Classification of vitamins.	19.11.2024
13	Fat soluble vitamins, Importance of Vitamin A and D in animal health and production, their requirement and supplementation in feed.	25.11.2024
14	Importance of Vitamin E and K in animal health and production, their requirement and supplementation in feed.	26.11.2024
15	Importance of Thiamine, Riboflavin, Niacin and Pantothenic acid in animal health and production, their requirement and supplementation in feed.	27.11.2024
16	Importance of Biotin, Pyridoxine, Folic acid, Cyanocobalamin, Choline & Vit. C in animal health and production, their requirement and supplementation in feed.	04.12.2024

17	Common feeds and fodders and its classification,	05.12.2024
18	Various types of concentrates and roughages, its importance for livestock health and production and availability.	16.12.2024
19	Measures of food energy and their applications, gross energy, digestible energy, metabolizable energy and net energy.	17.12.2024
20	Total digestible nutrients, Starch equivalent	18.12.2024
21	Food units and physiological fuel value.	19.12.2024
22	Direct calorimetry.	20.12.2024
23	Indirect calorimetry, Carbon nitrogen balance studies.	01.01.2025
24	Protein evaluation of feeds- Measures of protein quality in non-ruminants, Biological value of protein, protein efficiency ratio, protein equivalent.	13.01.2025
25	Calorie protein ratio and nutritive ratio.	14.01.2025
26	Measures of protein quality in ruminants- Digestible crude protein, RDP and UDP, metabolizable protein.	14.01.2025
27	Introduction to feed technology- feed industry. Processing of concentrates and roughages.	15.01.2025
28	Various physical methods of feed processing for improving the nutritive value of inferior quality roughages.	15.01.2025
29	Various chemical and biological methods of feed processing for improving the nutritive value of inferior quality roughages	16.01.2025
30	Preparation, storage and conservation of livestock feed through silage and its use in livestock feeding.	16.01.2025
31	Preparation, Storage and conservation of livestock feed through hay and its use in livestock feeding.	17.01.2025
32	Harmful natural constituents and common adulterants in Roughages	17.01.2025
33	Harmful natural constituents and common adulterants in Concentrates	27.01.2025
34	Feed additives in the rations of livestock and their uses.	27.01.2025
35	Feed additives in the rations of poultry and their uses.	30.01.2025

UNIT - 2

Title of Unit: Applied Ruminant Nutrition- I

Sr. No.	Topics	Date
36	Scientific feeding & its Importance.	30.01.2025
37	Feeding experiments, different methods of feeding experiments.	10.02.2025
38	Feeding experiments, different methods of feeding experiments.	10.02.2025
39	Digestion & metabolism trials, norms adopted in digestion trial.	11.02.2025

40	Norms adopted in digestion trial.	11.02.2025
41	Measurement of digestibility by conventional methods.	12.02.2025
42	Indicator method of determining digestibility.	12.02.2025
43	Determining pasture consumption & its digestibility.	13.02.2025
44	Factors affecting digestibility of feed.	13.02.2025
45	Feeding standards and its classification.	14.02.2025
46	Uses, significance, merits and demerits of various feeding standards with reference to ruminants.	14.02.2025
47	Balanced ration & its characteristics.	25.02.2025

UNIT - 3

Title of Unit: Applied Ruminant Nutrition- II

Sr. No.	Topics	Date
48	Energy and protein requirement of livestock for maintenance.	27.02.2025
49	Energy and protein requirement of livestock for production.	27.02.2025
50	Methods adopted for arriving energy requirement for maintenance.	28.02.2025
51	Methods adopted for arriving protein requirement for maintenance.	28.02.2025
52	Methods adopted for arriving energy requirements for production in terms of growth and reproduction.	10.03.2025
53	Methods adopted for arriving protein requirements for production in terms of growth and reproduction.	10.03.2025
54	Methods adopted for arriving energy requirements for production in terms of milk and meat.	11.03.2025
55	Methods adopted for arriving protein requirements for production in terms of milk and meat.	11.03.2025
56	Methods adopted for arriving energy & protein requirements for production in terms of wool and draft purpose.	12.03.2025
57	Feeding of dairy cattle & buffalo- Calf stage (up to weaning)	12.03.2025
58	Feeding of dairy cattle & buffalo- Growth stage and adult animal	13.03.2025
59	Feeding of dairy cattle & buffalo- pregnant, dry and lactating animals	13.03.2025
60	Feeding of dairy cattle & buffalo- breeding bulls & working animals.	24.03.2025
61	General principles of computation of rations.	24.03.2025
62	Formulation of ration for dairy cattle.	25.03.2025
63	Formulation of ration for dairy cattle	25.03.2025

64	Formulation of ration for lactating buffaloes.	26.03.2025
65	Formulation of ration for cattle & buffalo- breeding bulls & working animals	26.03.2025
66	Feeding of high yielding animals and role of bypass nutrients.	27.03.2025
67	Feeding of goat- kid, grower, adult, pregnant, lactating goat and buck.	27.03.2025
68	Formulation of ration for goat.	28.03.2025
69	Feeding of sheep - pregnant, lactating ewes.	28.03.2025
70	Formulation of ration for sheep and lambs.	07.04.2025
71	Metabolic disorders and nutritional interventions in ruminants.	08.04.2025
72	Importance and utilization of NPN compounds for ruminants.	08.04.2025

UNIT 4

Title of Unit: Applied Non-ruminant Nutrition

Sr. No.	Topics	Date
73	Methods adopted for arriving at energy requirement for maintenance.	09.04.2025
74	Methods adopted for arriving at protein requirement for maintenance.	09.04.2025
75	Methods adopted for arriving at energy requirement for growth, reproduction, egg, meat and work	11.04.2025
76	Methods adopted for arriving at protein requirement for growth, reproduction, egg, meat and work	11.04.2025
77	Feeding standards for poultry.	21.04.2025
78	Energy requirement for maintenance and production for Poultry.	21.04.2025
79	Protein requirement for maintenance and production for Poultry	22.04.2025
80	Feeding of poultry- Broiler (with conventional and un-conventional feeds).	23.04.2025
81	Feeding of poultry- Broiler (with conventional and un-conventional feeds).	24.04.2025
82	Feeding of poultry- Layer (with conventional and un-conventional feeds).	24.04.2025
83	Feeding of poultry- Layer (with conventional and un-conventional feeds).	25.04.2025
84	Feeding of duck, quail and turkey.	05.05.2025
85	Formulation of ration for poultry as per BIS and ICAR specifications.	05.05.2025
86	Formulation of ration for poultry as per BIS and ICAR specifications	06.05.2025

87	Feeding standards for non-ruminants	06.05.2025
88	Energy requirement for maintenance and production for Swine.	07.05.2025
89	Protein requirement for maintenance and production for Swine	08.05.2025
90	Feeding of swine- piglets & growers, (conventional & un-conventional feeds).	08.05.2025
91	Feeding of swine- pregnant sows and lactating sow (with conventional and un-conventional feeds).	09.05.2025
92	Feeding of swine- breeding boar and fattening animals (with conventional and un-conventional feeds).	19.05.2025
93	Formulation of ration for swine as per BIS and ICAR specifications.	19.05.2025
94	Formulation of ration for swine as per BIS and ICAR specifications	20.05.2025
95	Energy and protein requirement for maintenance and production for Equine.	20.05.2025
96	Feeding of equine- foal, yearling and brood mare (with conventional and un-conventional feeds).	21.05.2025
97	Feeding of equine- stallion and race horses (with conventional and un-conventional feeds).	21.05.2025
98	Formulation of ration for horse as per BIS and ICAR specifications	22.05.2025
99	Nutrient requirement, feeding practices and diet formulation for mice and rat.	22.05.2025
100	Nutrient requirement, feeding practices and diet formulation for rabbit.	23.05.2025
101	Nutrient requirement, feeding practices and diet formulation for guinea pig.	23.05.2025
102	Nutritional requirement and feeding of various breeds of dogs – pups and growing dogs.	02.06.2025
103	Nutritional requirement and feeding of various breeds of dogs – adult dogs, pregnant and lactating bitches.	03.06.2025
104	Nutritional requirement and peculiarities of feeding cats.	03.06.2025
105	Feeding of wild animals in captivity – Carnivores.	05.06.2025
106	Feeding of wild animals in captivity – Herbivores and Omnivores.	05.06.2025
107	Feeding of wild birds in captivity	06.06.2025
108	Metabolic disorders and nutritional interventions in non-ruminants.	06.06.2025

Practical Schedule

Unit – 1

Sr. No.	Title of Unit: Principles of Animal Nutrition and Feed Technology Practicals	Date
1	General precautions while working in nutrition laboratories.	

2	Familiarization of various feed stuff and fodders, Preparation and processing of samples for chemical analysis-herbage, silages, faeces and urine.	30.09.2024
3	Preparation of solutions.	07.10.2024
4	Weende's system of analysis, Proximate principles in feed – general views and its main features.	14.10.2024
5	Estimation of dry matter in feed samples.	17.10.2024
6	Estimation of total ash in feed samples.	26.10.2024
7	Estimation of acid insoluble ash in feed samples.	11.11.2024
8	Estimation of crude protein in feed samples.	19.11.2024
9	Estimation of ether extract in feed samples.	25.11.2024
10	Estimation of crude fibre and calculation of nitrogen free extract in feed samples.	04.12.2024
11	Estimation of calcium in feed samples.	16.12.2024
12	Estimation of phosphorus in feed samples.	21.12.2024
13	Demonstration of detergent method of forage analysis.	01.01.2025
14	Qualitative detection of undesirable constituents and common adulterants of feed.	13.01.2025

UNIT - 2

Title of Unit: Applied Ruminant Nutrition- I

Sr. No.	Topics	Date
15	Determination of digestibility	19.01.2025
16	Calculation of digestibility coefficient	27.01.2025
17	Calculation of nutritive value in terms of DCP, TDN and NR (Nutritive ratio) and balance of nutrients.	19.02.2025

UNIT-3

Title of Unit: Applied Ruminant Nutrition- II

Sr. No.	Topics	Date
----------------	---------------	-------------

18	Calculation of requirements of nutrients in terms of DCP, TDN & ME for maintenance, growth, meat, milk, wool, reproduction and draft purpose.	17.02.2025
19	Formulation of ration for growing, dry and pregnant cattle	25.02.2025
20	Formulation of ration for growing, dry and pregnant buffalo.	03.03.2025
21	Formulation of ration for milk production for cattle and buffalo	10.03.2025
22	Formulation of ration for feeding livestock during scarcity period.	18.03.2025
23	Visit to animal farm.	24.03.2025
24	Visit to feed mill.	07.04.2025

UNIT-4

Title of Unit: Applied Non-ruminant Nutrition

Sr. No.	Topics	Date
25	Calculation of requirement of nutrient for growth, reproduction, egg and meat production.	15.04.2025
26	Calculation of requirement of nutrient for growth, reproduction, egg and meat production.	21.04.2025
27	Formulation of ration for Broilers (with conventional and unconventional feed ingredients).	24.04.2025
28	Formulation of ration for Layers (with conventional and unconventional feed ingredients).	28.04.2025
29	Formulation of ration for swine- Creep ration, grower and finisher ration (with conventional and unconventional feed ingredients).	05.05.2025
30	Principles of compounding and mixing of feeds.	07.05.2025
31	Formulation of balanced diets for horses.	13.05.2025
32	Formulation of balanced diets for dogs.	19.05.2025
33	Formulation of balanced diets for cats.	26.05.2025
34	Feeds and feeding schedule of zoo animals, Birds diet charts.	02.06.2025
35	Visit to farms.	06.06.2025
36	Visit to farms.	09.06.2025

8. College Classes Time Table :UG, PG , PhD - Year wise / Semester Wise
9. Examination Time Table – UG, PG , PhD - Semester / Year wise - Theory and Practical
- 10.** Result –UG, PG , PhD - Semester Wise / Year Wise