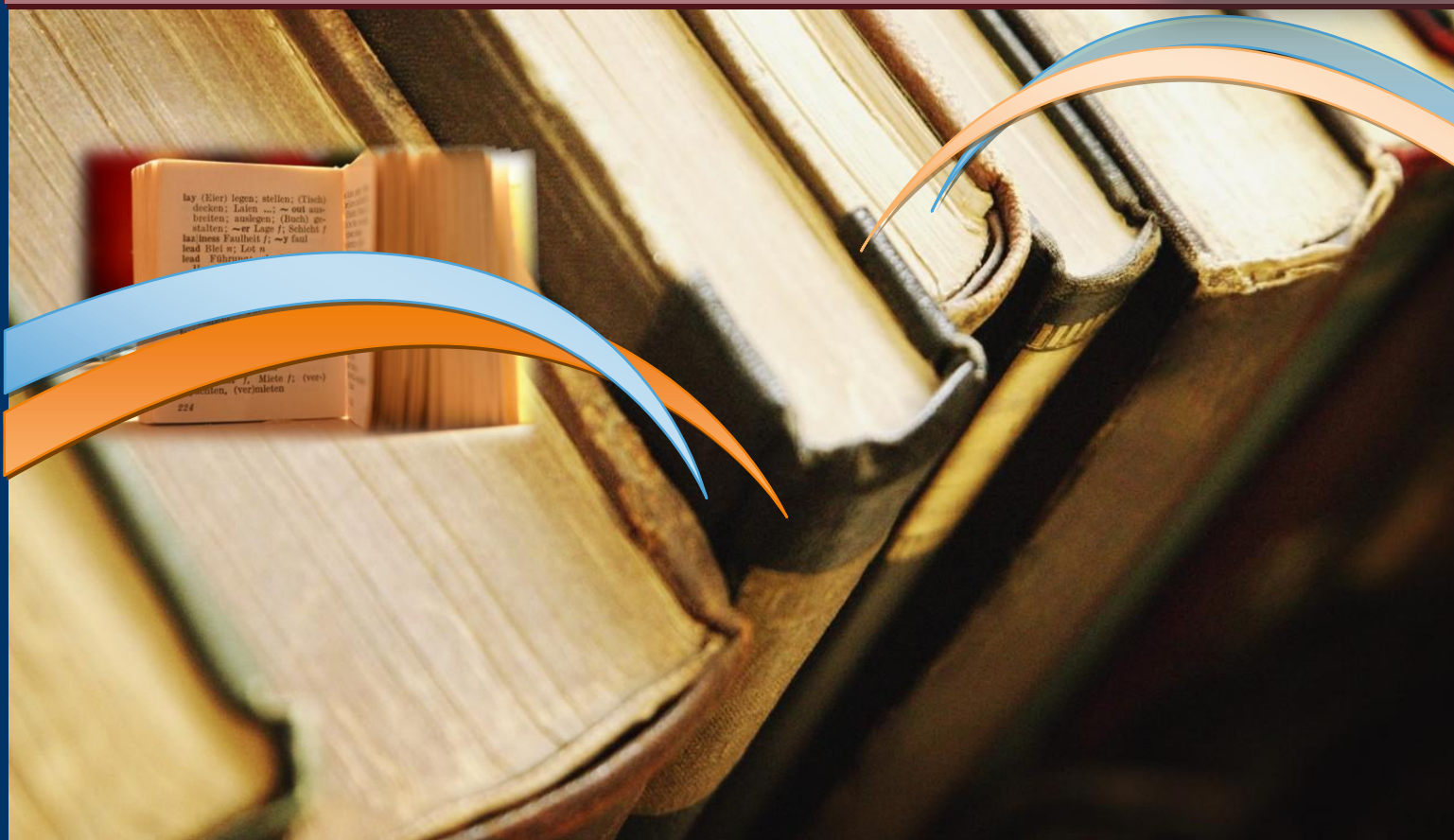


Republic of Iraq  
Ministry of Higher Education and  
Scientific Research



**The consortium of Deans  
for the Veterinary Medicine Colleges  
in Iraq**

**SYLLABUSES  
2010-2011**

Republic of Iraq  
Ministry of Higher Education  
and Scientific Research



VETERINARY MEDICINE COLLEGES  
SYLLABUSES  
2010-2011

**The consortium of Deans  
for the Veterinary Medicine Colleges  
in Iraq**

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**YEAR: FIRST**

**SUBJECT: ANATOMY**

**Theoretical hours: 2**

**Practical hours: 2**

**Units: 6**

**FIRST & SECOND SEMESTERS**

<b>ANATOMY: THEORETICAL SUBJECTS</b>	<b>HOURS</b>
<b>INTRODUCTION</b> Anatomy and methods of study, topographic terms and nomenclatures.	<b>2</b>
<b>GENERAL OSTEOLOGY</b> Skeleton, structure of bones, development and growth of chemical and physical properties of bone, the vertebral column, ribs, sternum, bones of thoracic limb, bones of pelvic limb.	<b>5</b>
<b>MYOLOGY</b> Types of muscles with structure, shape of skeletal muscles, action of skeletal muscle, accessory structures associated with skeletal muscles, vessels and nerves supply the muscles.	<b>5</b>
<b>GENERAL SYNDESMOLOGY (ARTHROLOGY)</b> Fibrous joint, cartilaginous joints, synovial joint, joints of thoracic limb, joints of pelvic limb.	<b>6</b>
Common integument, foot of the horse, hoof, stay apparatus of the thoracic limb.	<b>6</b>
<b>CARDIO VASCULAR SYSTEM(HEART AND ARTERIES)</b> Introduction, heart and pericardium, pericardium, heart, the size and position and shape and location of heart ,grooves of the heart, left and right atrium, left and right ventricle, blood supply of heart, nerve supply of heart, arteries; aorta, ascending aorta, brachiocephalic trunk, descending aorta, thorax aorta (branches), abdominal aorta (branches),blood supply of the thoracic limb, blood supply of the hind limb	<b>8</b>
<b>MAMMARY GLAND</b> Embryonic development of the mammary gland, types of mammary glands with it's location in domestic animals, glandular	<b>3</b>

ANATOMY: THEORETICAL SUBJECTS	HOURS
structure and ducts of mammary gland, suspensory ligament of udder, blood and nerves supply of the udder.	
<p><b>URINARY SYSTEM</b>                      Introduction, parts of the urinary system and it's connections with genital system, shape of kidney in domestic animals (comparison), classification of kidneys in domestic animals, location of kidneys with it's fixation ( ligaments) in domestic animals, blood supply and venous drainage and nerve supply of kidneys, ureter, urinary bladder with it's ligaments, urethra, peritoneal reflections in pelvic cavity of males and females.</p>	<b>5</b>
<p><b>MALE GENITAL SYSTEM</b>                      Development, testis, testis structure, comparison of the testis in domestic animals, blood and nerve supply, epididymis, ductus deferens, the spermatic cord, tunica vaginalis, mesorchium, the scrotum, structure of the penis, muscle of penis, blood and nerve of the penis, comparative features of the penis, the prepuce, accessory genital glands, the vesicular gland, the prostate gland, bulbourethral gland.</p>	<b>8</b>
<p><b>FEMALE GENITAL SYSTEM</b>                      Introduction, development of female genital system, ovary: types, position in domestic animals, uterine tube, uterus (comparison), vagina, vestibule, female urethra, sub urethral diverticulum, broad ligament, anatomical relationship between rectum and female genital system, vulva, clitoris.</p>	<b>7</b>
<p><b>ENDOCRINE GLAND</b>                      Pituitary gland (hypophysis), thyroid gland, parathyroid gland, adrenal gland, pineal body.</p>	<b>5</b>
<b>Total</b>	<b>60</b>

<b>ANATOMY: PRACTICAL SUBJECTS</b>	<b>HOURS</b>
Bones of thoracic limb and joints, scapula of horse and comparative anatomy	2
Humerus and comparative anatomy	2
Radius and ulna with comparison	2
Carpal bones in horse and metacarpal and phalanges bones	2
Circulatory system: pericardium and the heart ,chambers of the heart and the major vessels of the heart.	2
Muscles of the shoulder gridle of the sheep	2
The lateral surface of shoulder muscles and arm in sheep	2
Dissection of intrinsic muscles of shoulder and arm	2
Muscles of the forearm and manus (extensor and flexor )	2
Review	2
Practical examination	2
Arteries and nerves of the thoracic limb in sheep	2
Thoracic, lumber vertebrae and sacrum in horse	2
Ribs and sternum in horse	2
The hoof in horse and foot of the ox	2
Comparative anatomy of the pelvic bone	2
Comparative anatomy of the femur	2
Comparative anatomy of the tibia and fibula	2
Tarsus and metatarsal bone in horse	2
Muscles of the lion, hip and thigh in sheep	2
Flexor and extensor muscles of the pelvic limb in sheep	2
Review	2
Practical examination	2
Arteries and sacrolumbar plexuses and nerves of pelvic limb	2
Inguinal region and mammary gland in sheep	2
Urinary system (kidneys, ureter and urinary bladder)	2
Female reproductive system in sheep ( ovaries, uterine tube and uterus)	2
Male reproductive system in sheep ( testis and scrotum)	2
Penis and accessory sex glands	2
Muscles of the lion, hip and thigh in sheep	2
<b>Total</b>	<b>60</b>

**YEAR: FIRST**

**SUBJECT: ANIMAL MANAGEMENT**

**Theoretical hours: 2**

**Practical hours: 2**

**Units: 6**

**FIRST & SECOND SEMESTERS**

<b>ANIMAL MANAGEMENT: THEORETICAL SUBJECTS</b>	<b>HOURS</b>
Animal wealth in Iraq and its importance.	<b>2</b>
Factors limiting animal production in tropics e.g. Iraq..	<b>2</b>
Domestication of different animals.	<b>2</b>
Duties of the veterinarian	<b>2</b>
Some kinds of records for farm animals	<b>2</b>
<b>HORSES</b> <ul style="list-style-type: none"> <li>▪ Classes of horses.</li> <li>▪ Breeds of horses.</li> <li>▪ Identification and description of horses.</li> <li>▪ Terminology of horses.</li> <li>▪ Breeding of horses: age of puberty, sexual maturity, signs of oestrous, signs of pregnancy, diagnosis of pregnancy, signs of birth, care of new – born animals, system of weaning, care and management of pregnant mare, care and management of the stallion (stud).</li> <li>▪ Origin of the horses from animal kingdom.</li> <li>▪ Feeding and watering</li> </ul>	<b>10</b>
<b>CATTLE</b> <ul style="list-style-type: none"> <li>▪ classes of cattle( cows and water- buffaloes)</li> <li>▪ Breeds of cattle.</li> <li>▪ Identification and description of cattle and water buffaloes.</li> <li>▪ Terminology of cattle.</li> <li>▪ Origin of cattle and water buffaloes from animal kingdom.</li> <li>▪ breeding of cattle (age of puberty , sexual maturity , signs of oestrous, signs of pregnancy, diagnosis of pregnancy , signs of birth, calving (parturition ) , care of new – born calf, systems of weaning, care of dams , care of bull (stud),</li> </ul>	<b>10</b>

ANIMAL MANAGEMENT: THEORETICAL SUBJECTS	HOURS
milking process. <ul style="list-style-type: none"> <li>▪ Growth rate of cattle</li> <li>▪ Twinning in cattle.</li> </ul>	
<b>SHEEP AND GOATS</b> <ul style="list-style-type: none"> <li>▪ Types and breeds of sheep and goats.</li> <li>▪ Identification and description of sheep.</li> <li>▪ Terminology of sheep.</li> <li>▪ origin of sheep and goats from animal kingdom.</li> <li>▪ breeding of sheep (age of puberty , sexual maturity , signs of oestrous, signs of pregnancy, diagnosis of pregnancy, lambing and kidding, (parturition), care of the dam and new born , adoption or fostering on orphan lamb, suckling and weaning , care of rams , breeding seasons, application of hormones, effect of artificial light.</li> <li>▪ Feeding and managing type of feed in pregnancy and parturition, feeding of lambs and their fattenning problems of feeding.</li> <li>▪ Grazing management.</li> <li>▪ Milking production and udder.</li> <li>▪ Wool and mohair.</li> <li>▪ Livestock building and equipment (disinfection, construction, ventilation standards).</li> </ul>	<b>10</b>
<b>CAMELS</b> <ul style="list-style-type: none"> <li>▪ Types and breeds of camels.</li> <li>▪ Origin of camel from animal kingdom.</li> <li>▪ General characters.</li> <li>▪ Breeding camels: (age of puberty, sexual maturity, signs of oestrous, signs of pregnancy, diagnosis of pregnancy, suckling, weaning and care of the young camel).</li> <li>▪ Feeding and watering of camels.</li> </ul>	<b>4</b>
<ul style="list-style-type: none"> <li>▪ <b>FARM ANIMAL HEALTH AND DISEASES</b></li> <li>▪ Signs of health in animals (pulse rate, respiration rate, body temperature, condition of the skin appetite, defecation, urination, animal postures, routes of drug administration.</li> <li>▪ Diseases of animals (cattle, sheep, horses), hygienic methods of disposal of dead animals.</li> </ul>	<b>4</b>

<b>ANIMAL MANAGEMENT: THEORETICAL SUBJECTS</b>	<b>HOURS</b>
<ul style="list-style-type: none"> <li>▪ Sanitation foot bath.</li> <li>▪ Transportation of animals.</li> <li>▪ Bedding (litter) and its importance for farm animals.</li> <li>▪ Behavior of farm animals.</li> </ul>	<b>4</b>
<ul style="list-style-type: none"> <li>▪ Examinations for soundness</li> <li>▪ Examination of horses.</li> <li>▪ Examination of cattle.</li> <li>▪ Examination of sheep.</li> <li>▪ Examination of camels.</li> </ul>	<b>4</b>
<b>DENTITION</b> <ul style="list-style-type: none"> <li>▪ How to age horses.</li> <li>▪ How to age cattle.</li> <li>▪ How to age sheep.</li> <li>▪ How to age camels.</li> </ul>	<b>4</b>
<b>Total</b>	<b>60</b>

<b>ANIMAL MANAGEMENT: PRACTICAL SUBJECTS</b>	<b>HOURS</b>
External features of farm animals.	<b>4</b>
Methods of approaching, restraint and casting of horses.	<b>8</b>
Methods of approaching, restraint and casting of cattle, camel leading.	<b>8</b>
Methods of approaching, restraint and casting of sheep for different purposes.	<b>8</b>
Vices of horses and cows.	<b>8</b>
Mouth ages for different animals, signs of health: pulse and respiration, body temperature mucous membranes condition.	<b>8</b>
Care of farm animals; grooming, washing, heating, clipping, drying of wet horses.	<b>8</b>
Sheep dipping.	<b>4</b>
shoeing of horses	<b>4</b>
<b>Total</b>	<b>60</b>

**YEAR: FIRST**

**SUBJECT: BIOLOGY**

**Theoretical hours: 2**

**Practical hours: 2**

**Units: 6**

**FIRST & SECOND SEMESTERS**

<b>BIOLOGY: THEORETICAL SUBJECTS</b>	<b>HOURS</b>
Introduction and definitions of terms	2
Origin of life	2
Living organisms	2
The cell	6
General characters of protozoa	2
Kingdom protozoa	8
Phylum :platyhrminthes	8
Phylum:Nemathelminthes	6
Phylum:Arthropoda	2
Phylum:Chordata	20
Cellular nucleic acid DNA , RNA	2
<b>Total</b>	<b>60</b>

<b>BIOLOGY : PRACTICAL SUBJECTS</b>	<b>HOURS</b>
The Microscope	2
The Cell	2
Mitosis	2
Kingdom Protozoa/Mastigophora	2
Kingdom Protozoa/Sarcodena	2
Ciliphora Kingdom Protozoa/	2
Kingdom Protozoa/Sporozoa	2
Trematoda/Fasciola	2
Trematoda/Schistosoma	2
Cestoda /Taenia	2

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<b>BIOLOGY : PRACTICAL SUBJECTS</b>	<b>HOURS</b>
1st Term Examination	-
Nematoda/Ascaris	2
Nematoda/Ancylostoma	2
The insects/Moquitoes	2
The insects/Ticks	2
Phylum :Chordata	2
Class :Osteichthyes(Bony Fish)	2
Bony Fish/Dissecting	2
Class:Amphibia(Frog)	2
Frog/Dissecting	2
Class:Aves (Bird)	2
Bird/Dissecting	2
Class:Mammalia-Mammals(Rabbit)	2
2ND TERM EXAMINATION	-
<b>Total</b>	<b>60</b>

**YEAR: FIRST**

**SUBJECT: COMPUTER**

**Theoretical hours: 1**

**Practical hours: 2**

**Units: 4**

**FIRST & SECOND SEMESTERS**

<b>COMPUTER :THEORETICAL SUBJECTS</b>	<b>HOURS</b>
Computer Lab. Visit – demonstration of computer parts	<b>4</b>
Computer science terminology – GWBASIC programming	<b>6</b>
Operating systems (MS-DOS and WINDOWS)	<b>10</b>
Microsoft office programs (Word, PowerPoint, and Excel).	<b>10</b>
<b>Total</b>	<b>30</b>

<b>COMPUTER : PRACTICAL SUBJECTS</b>	<b>HOURS</b>
Computer Lab. Visit – demonstration of computer parts	<b>10</b>
Computer science terminology – GWBASIC programming	<b>10</b>
Operating systems (MS-DOS and WINDOWS)	<b>20</b>
Microsoft office programs (Word, PowerPoint, and Excel).	<b>20</b>
<b>Total</b>	<b>60</b>

YEAR: FIRST

DEMOCRACY AND HUMAN RIGHTS (ARABIC)

السنة: الأولى

المادة: الديمقراطية وحقوق الإنسان Democracy and human rights

عدد الساعات النظرية: 2

عدد الوحدات: 4

الفصل الأول والثاني

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20	الديمقراطية تعريف الديمقراطية أنواع الديمقراطية تقسيمات الديمقراطية تقييمات الديمقراطية
40	حقوق الإنسان بين الشريعة الإسلامية والفكر القانوني <ul style="list-style-type: none"> <li>• التطور التاريخي لفكرة حقوق الإنسان</li> <li>• حقوق الإنسان التعريف بها وأنواعها</li> <li>• ضمانات احترام وحماية حقوق الإنسان</li> <li>• حماية الطفولة في الشريعة الإسلامية</li> <li>• حماية الطفولة في القانون الوضعي</li> </ul>
60	المجموع

**YEAR: FIRST**

**SUBJECT: GENERAL CHEMISTRY**

**Theoretical hours: 2**

**Practical hours: 2**

**Units: 6**

**FIRST & SECOND SEMESTERS**

<b>GENERAL CHEMISTRY: THEORETICAL SUBJECTS</b>	<b>HOURS</b>
Atoms and electronic structure/ periodic table Chemical bonding Formula masses / the mole/ molecular formula Acid base theory/ionization constant/autoionization of water/ measurement of pH Chemical quantitative analysis/ standard solution/ titration of acid and base indicators Buffers / biochemical buffers	<b>14</b>
Alkenes and cycloalkenes Alkenes Alkynes Aromatic compounds Organic halides Ethers Alcohols and phenols Aldehydes and ketones Carboxylic acids Carboxylic acid derivatives Amines	<b>16</b>
Introduction in biochemistry Water Carbohydrates Lipids Amino acids Peptides Proteins Nucleic acids	<b>30</b>
<b>Total</b>	<b>60</b>

<b>GENERAL CHEMISTRY: PRACTICAL SUBJECTS</b>	<b>HOURS</b>
General instructions	<b>2</b>
Qualitative analysis	<b>4</b>
Preparation of solutions	<b>6</b>
Titrimetric analysis	<b>6</b>
Measurement of pH value	<b>2</b>
Preparation of buffer solution	<b>2</b>
Crystallization	<b>2</b>
Preparation of acetylene	<b>2</b>
Preparation of aspirin	<b>4</b>
Qualitative characterization of functional groups	<b>2</b>
Saponification	<b>2</b>
General tests of carbohydrates	<b>8</b>
General tests of amino acids and proteins	<b>8</b>
Tests for lipids	<b>6</b>
<b>Total</b>	<b>60</b>

**YEAR: FIRST**

**SUBJECT: POULTRY MANAGEMENT**

**Theoretical hours: 1**

**Practical hours: 2**

**Units: 2**

**SECOND SEMESTERS**

<b>POULTRY MANAGEMENT: THEORETICAL SUBJECTS</b>	<b>HOURS</b>
Poultry science and industry development - terminology – classification of poultry.	<b>2</b>
Poultry breeding and strains Differences – chromosomal Studies – traits inheritance.	<b>2</b>
Internal systems of a chicken.	<b>2</b>
Artificial hatching and hatcheries - egg storage – disinfection and fumigation.	<b>2</b>
Rearing baby chicks – preparation of houses – hygiene measurements required tools.	<b>2</b>
Factors affecting egg production And feed efficiency indices.	<b>1</b>
Nutrition and rations formulation.	<b>1</b>
Design of poultry houses.	<b>1</b>
Vaccination methods – some Diseases due to faulty management.	<b>1</b>
Marketing and economic.	<b>1</b>
<b>Total</b>	<b>15</b>

<b>POULTRY MANAGEMENT: PRACTICAL SUBJECTS</b>	<b>HOURS</b>
Phenotypic parts of chickens	<b>4</b>
Solving problems related to some inherited traits	<b>2</b>
Anatomy of birds	<b>4</b>
Demonstration of hatcheries	<b>2</b>
Demonstration of poultry houses and equipment	<b>4</b>
Solving related problems	<b>4</b>
Calculation of feed Components ratios	<b>2</b>
Studying common management faults and corrections	<b>2</b>
Demonstration of possible cases	<b>2</b>
Possible visit to broiler Slaughtering house or a video show	<b>4</b>
<b>Total</b>	<b>30</b>

**YEAR: SECOND**

**SUBJECT: ANATOMY**

**Theoretical hours: 2**

**Practical hours: 3**

**Units: 7**

**FIRST & SECOND SEMESTERS**

<b>ANATOMY: THEORETICAL SUBJECTS</b>	<b>HOURS</b>
<p><b>DIGESTIVE SYSTEM</b>                      General description of the digestive system and its embryological development. Mouth cavity and its content like the tongue and hard palate and soft palate with its muscles and cheeks and lips, blood and nerve supply of the tongue. Salivary glands, pharynx and its layers and muscles and openings. The hyoid apparatus (bones and muscles ). Muscles of mastication. Course and relationship of esophagus and its structures. Classification of stomach, parts of the intestine, duodenum, jejunum, ileum. The caecum and its variations in farm animals. Colon and its variations in farm animals, rectum, anus. Accessory glands like the liver and its ligaments and lobation, gallbladder and the variations in farm animals. Pancreas and its variations. Peritoneum its reflexation in the abdominal cavity to fix the abdominal organs.</p>	<b>20</b>
<p><b>RESPIRATORY SYSTEM</b>                      Introduction, nose, nasal cavity, nasopharynx, paranasal sinuses, larynx, trachea, lungs, thoracic cavity, pleura.</p>	<b>10</b>
<p><b>Lymphatic system</b>                      Introduction, lymph, lymph vascular system. lymphatic tissue, lymph vessels, lymph capillaries, lymphatic tissue structures, solitary lymph nodules, tonsils, lymph nodes, lymphocenter, hemal nodes, lymph trunks and ducts, thymus, spleen .</p>	<b>12</b>
<p><b>NERVOUS SYSTEM</b>                      Development of the brain. Central nervous system: brain, parts</p>	<b>12</b>

<b>ANATOMY: THEORETICAL SUBJECTS</b>	<b>HOURS</b>
of the brain ( spinal cord, cranial nerves, spinal nerves). Autonomic nervous system: sympathetic division, parasympathetic division. Meninges, cerebrospinal fluid.	
<b>SENSE ORGANS</b> The eye (tunics, parts, chambers, muscles), blood supply, nerve supply, lacrimal apparatus, ear (divisions and cavities).	<b>6</b>
<b>Total</b>	<b>60</b>

<b>ANATOMY: PRACTICAL SUBJECTS</b>	<b>HOURS</b>
General description of the skull.	<b>3</b>
Cranial cavity, nasal cavity, hyoid bone, mandible.	<b>3</b>
Skull comparative, paranasal sinuses.	<b>3</b>
Cervical vertebrae comparative.	<b>3</b>
Superficial dissection of face region (muscles, nerves, arteries, veins).	<b>3</b>
Deep dissection of face region (muscles, nerves, arteries, veins, parotido auricular region, buccal region, mental region).	<b>3</b>
Dissection of oral cavity with its contents (compassion), muscles of hyoid bone, muscles and papillae of tongue.	<b>3</b>
Dissection of pharynx (divisions, muscles, openings, muscles of soft palate, muscles of mastication).	<b>3</b>
Dissection of nasal cavity with its contents (comparison), larynx (laryngeal cartilages, laryngeal cavities, laryngeal muscles), blood and nerve supply to the larynx.	<b>3</b>
Review.	<b>3</b>
Practical examination.	<b>3</b>
The eye ( tunics, muscles, nerves, chambers).	<b>3</b>
The brain, cranial and spinal meninges, parts of brain, cranial nerves.	<b>3</b>
Dissection of neck region ( lateral and ventral surfaces ) including chief veins, nerves, arteries, muscles, thyroid gland, lymph nodes, trachea, esophagus.	<b>3</b>

ANATOMY: PRACTICAL SUBJECTS	HOURS
Dissection of neck region (dorsal and lateral surfaces ) including chief muscles and nerves .	3
Dissection of thorax, thoracic fascia, muscles of thoracic wall, respiratory muscles, internal thoracic fascia, pleura, pulmonary ligament, thymus, lung comparative, trachea, bronchial tree.	3
Nerves in thoracic cavity (phrenic, vagus , sympathetic chain), pericardium ,cranial and caudal venae cavae, and venous azygous, longus colli m. and transversus thoracic muscle.	3
Aortic arch, common brachiocephalic trunk with its branches, thoracic aorta with its branches.	3
Diaphragm (parts, hiatuses).	3
Viscera: stomach (comparative).	3
Viscera: small intestine (comparative).	3
Viscera: large intestine (comparative).	3
Viscera: liver and its ligaments (comparative).	3
Lymph centers in abdominal cavity, spleen.	3
Review.	3
Practical examination.	3
Abdominal aorta with its branches, distribution of autonomic nervous system in region behind diaphragm.	3
Terminal branches of abdominal aorta in pelvic cavity with autonomic nerves in it.	3
Dissection of abdominal wall (muscles and nerves).	3
Avian anatomy.	3
<b>Total</b>	<b>90</b>

**YEAR: SECOND**

**SUBJECT: ANIMAL NUTRITION**

**Theoretical hours: 2**

**Practical hours: 2**

**Units: 6**

**FIRST & SECOND SEMESTERS**

<b>ANIMAL NUTRITION: THEORETICAL SUBJECTS</b>	<b>HOURS</b>
Introduction and importance of nutrition of farm animals	<b>2</b>
<b>THE ANIMAL AND ITS FOOD</b>	
a. Water and its functions, regulation and comparative use by farm animals.	<b>5</b>
b. Energy metabolism.	<b>5</b>
c. Carbohydrate metabolism.	<b>5</b>
d. Protein and nucleic acids metabolism	<b>5</b>
e. Lipid metabolism.	<b>5</b>
f. Trace elements , functions and deficiency symptoms.	<b>5</b>
g. Vitamins, functions and deficiency symptoms	<b>3</b>
<b>THE EVALUATION OF FOOD</b>	
a. Digestibility.	<b>3</b>
b. Energy content of foods and partition.	<b>3</b>
c. Symptoms of expressing the energy value of foods	<b>3</b>
d. Protein.	<b>3</b>
<b>FEEDING STANDARDS FOR MAINTENANCE AND GROWTH</b>	
a. Ruminant.	<b>1</b>
b. Rabbits	<b>1</b>

<b>ANIMAL NUTRITION: THEORETICAL SUBJECTS</b>	<b>HOURS</b>
c. Poultry	<b>1</b>
<b>FEEDING STANDARDS FOR REPRODUCTION AND GROWTH</b>	
a. Ruminants	<b>1</b>
b. Rabbits	<b>1</b>
Effect of environmental stress on nutrient needs	<b>3</b>
Nutritional problems related to nutrition	<b>5</b>
<b>Total</b>	<b>60</b>

<b>ANIMAL NUTRITION: PRACTICAL SUBJECTS</b>	<b>HOURS</b>
Using the nutrition lab	<b>2</b>
Feedstuff approximate analysis	<b>2</b>
How to take samples for analysis	<b>4</b>
Moisture determination in feedstuff, green roughage, milk, meat and eggs	<b>8</b>
Determination of ash	<b>2</b>
Determination of silica	<b>2</b>
Preparing standard solutions	<b>4</b>
Determination of crude protein	<b>4</b>
Determination of crude fiber	<b>4</b>
Determination of ether extract	<b>4</b>
Determination of NFE by chemical method	<b>2</b>
Determination of NFE by calculation method	<b>2</b>
Determination of gross energy by chemical method	<b>2</b>
Determination of gross energy by calculation method	<b>2</b>

<b>ANIMAL NUTRITION: PRACTICAL SUBJECTS</b>	<b>HOURS</b>
Determination of energy by Bomb calorimetry	<b>2</b>
Digestive trials	<b>6</b>
Making standard ration for farm animals	<b>8</b>
<b>Total</b>	<b>60</b>

**YEAR: SECOND****SUBJECT: BIOCHEMISTRY****Theoretical hours: 3****Practical hours: 2****Units: 8****FIRST & SECOND SEMESTERS**

<b>BIOCHEMISTRY: THEORETICAL SUBJECTS</b>	<b>HOURS</b>
Cell biochemistry.	<b>4</b>
Enzymes: Mechanism of action, kinetics, Regulation.	<b>6</b>
Hormones: hormone action, Signal transduction.	<b>7</b>
Carbohydrate: Bioenergetics & Metabolism, Biosignaling, Biological oxidation.	<b>8</b>
Respiratory chain, Oxidative phosphorylation, Citric acid cycle, The catabolism of acetyl CoA.	<b>6</b>
Gluconeogenesis & Glycolysis, Pentose phosphate pathway.	<b>5</b>
Lipids: Oxidation of fatty acid, ketogenesis, Biosynthesis of fatty acids.	<b>5</b>
Lipid transport & storage.	<b>5</b>
Cholesterol synthesis, transport & excretion .	<b>5</b>
Anabolism & catabolism of protein & amino acids.	<b>7</b>
Nucleotides & Nucleic acid: Structure & function	<b>5</b>
Metabolism of nucleotides.	<b>4</b>
Regulation of gene expression.	<b>5</b>
RNA Synthesis, process, modification.	<b>6</b>
DNA Organization, Replication & Repair.	<b>6</b>
Protein synthesis & the genetic code.	<b>6</b>
<b>Total</b>	<b>90</b>

BIOCHEMISTRY: PRACTICAL SUBJECTS	HOURS
General instruction	2
Carbohydrates	
General qualitative tests	2
Unknown of carbohydrates	2
Glycogens	2
Proteins	
Fibrous proteins	2
Separation of albumin and globulin by precipitation	2
Glycoprotein	2
Phosphoprotein	2
Enzymes	
Amyolytic activity of amylase	2
Effect of pH on amylase activity	2
Effect of temperature on amylase activity	2
Urine	
Physical properties of urine	2
Normal and abnormal constituents of urine	2
Unknown of urine	2
Exam	2
Photometric methods in biochemical analysis	4
Determinate of serum total protein	2
Calibration curve of protein	2
Determinate of serum amylase activity	2
Determinate of serum inorganic phosphate	2
Determinate of serum total calcium	2
Determinate of serum bilirubin	2
Determinate of serum creatinine	2
Determinate of serum uric acid	2
Determinate of serum cholesterol	2
Enzymatic method for glucose	2
Determinate of serum total lipid	2
Determinate of serum urea	2
Exam	2
<b>Total</b>	<b>60</b>

**YEAR: SECOND**

**SUBJECT: EMBRYOLOGY**

**Theoretical hours: 1**

**Practical hours: -**

**Units: 1**

**SECOND SEMESTER**

<b>EMBRYOLOGY: THEORETICAL SUBJECTS</b>	<b>HOURS</b>
Introduction, oogenesis, Spermatogenesis	<b>1</b>
Fertilization, cleavage, Implantation	<b>2</b>
Trilaminar embryonic disc	<b>1</b>
Placentation with classification	<b>1</b>
Development of cardiovascular system	<b>1</b>
Development of urogenital system	<b>2</b>
Development of body cavities	<b>1</b>
Development of digestive system	<b>2</b>
Development of respiratory system	<b>2</b>
Development of nervous system.	<b>2</b>
<b>Total</b>	<b>15</b>

**YEAR: SECOND**

**SUBJECT: GENETICS**

**Theoretical hours: 2**

**Practical hours: -**

**Units: 2**

**FIRST SEMESTER**

<b>GENETICS: THEORETICAL SUBJECTS</b>	<b>HOURS</b>
Genetics history and its theories	<b>2</b>
The cell and chromosome behavior	<b>2</b>
Mendelian inheritance and its modification	<b>2</b>
Genetics and statistics in pedigree analysis	<b>2</b>
Genes interaction	<b>2</b>
Multiple alleles and psudoalleles	<b>2</b>
Sex determination and inheritance related to sex	<b>3</b>
Linkage, crossing over and genetic map	<b>3</b>
Chromosomal mutations	<b>2</b>
The chemical and engineering basis of heredity	<b>2</b>
Gene frequency and factors affecting it	<b>2</b>
Resemblance between relatives	<b>2</b>
Selection	<b>2</b>
Methods of matting	<b>2</b>
<b>Total</b>	<b>30</b>

**YEAR: SECOND**

**SUBJECT: HISTOLOGY**

**Theoretical hours: 2**

**Practical hours: 3**

**Units: 7**

**FIRST & SECOND SEMESTERS**

<b>HISTOLOGY: THEORETICAL SUBJECTS</b>	<b>HOURS</b>
<b>INTRODUCTION:</b> Definition of histology and it's relation to other sciences, microscopic measurements, calculation of magnification, basic histological techniques.	<b>1</b>
<b>CYTOLOGY:</b> Interphase nucleus, nuclear membrane, chromatin, duplication of chromatin, nucleolus, cytoplasmic organoids mitochondria, granular and smooth endoplasmic reticulum, ribosomes, Golgi apparatus, lysosomes, centrosomes, cell membrane.	<b>5</b>
<b>BLOOD AND MYELOID TISSUE:</b> Blood leukocyte:differential diagnosis, normal values in animals, erythrocytes: shape,structure and function, blood platelets: structure and function, myeloid tissue: general structure, erythropoesis, granulopoesis, structure and development of blood platelets.	<b>4</b>
<b>NERVOUS TISSUE:</b> Constituents of nervous tissue, neurons, Structure and classification, organoids of neurons, axons and dendrites, supporting cells in CNS and PNS, synapses, nerve fibers, cerebrospinal and autonomic ganglia.	<b>5</b>
<b>CARTILAGE AND BONE:</b> Cartilages, types and histological structure, bone, compact and spongy bone, structure and location, differences between bone and cartilages, intramembranous and endochondral ossification.	<b>3</b>

HISTOLOGY: THEORETICAL SUBJECTS	HOURS
<p><b>CARDIOVASCULAR SYSTEM:</b>                      Blood vessels, types of arteries, types of veins, venules, types of capillaries, sinusoids, arteriovenous anastomosis, wall of the heart, cardiac valves, pulse conducting system.</p>	<b>3</b>
<p><b>LYMPHATIC SYSTEM:</b>                      Lymphatic vessels, lymphatic organs, tonsils, lymph nodes, hemolymph nodes, thymus, spleen: different theories of arterio-venous circulation, lymphatic nodules in other non lymphatic organs.</p>	<b>3</b>
<p><b>RESPIRATORY SYSTEM:</b>                      Nasal cavity, vestibular region, respiratory region, olfactory region, larynx, trachea, lung, bronchi, bronchioles, alveolar ducts, alveoli, interalveolar septum, pleura.</p>	<b>3</b>
<p><b>DIGESTIVE SYSTEM:</b>                      Oral cavity, lip, tongue, lingual papillae, esophagus, stomach, nonglandular stomach in ruminants: rumen, reticulum, omasum, abomasums, glandular stomach, cardiac portion, fundic portion, pyloric portion, small intestine: duodenum, jejunum, ileum, large intestine, colon, recto anal junction, accessory glands, liver, pancreas.</p>	<b>8</b>
<p><b>URINARY SYSTEM:</b>                      Unipyramidal kidney, multipyramidal kidney, general microscopic structure, nephron, portions and function, juxtaglomerular complex, portions and function, ureter, urinary bladder, urethra.</p>	<b>3</b>
<p><b>ENDOCRINE SYSTEM:</b>                      Pituitary gland, embryonic origin, adenohypophysis and endocrine cell types, neurohypophysis, hypothalamic portion, thyroid gland, structure and function, adrenal gland, structure and function, parathyroid gland, structure and function, endocrine cells in other organs.</p>	<b>4</b>
<p><b>MALE REPRODUCTIVE SYSTEM:</b>                      Histological structure of testis, seminiferous tubules, spermatozoa development, adult spermatozoa, interstitial cells, epididymis, ductus deferens, prostate gland, vesicular gland, bulbourethral gland.</p>	<b>4</b>

<b>HISTOLOGY: THEORETICAL SUBJECTS</b>	<b>HOURS</b>
Female reproductive system: Histological structure of ovary, ovarian follicle development, ovulation, corpus luteum and function oviduct portions, histological structure of uterus, cyclic changes in the endometrium, cervix, vagina, mammary gland and functional conditions.	<b>6</b>
<b>SENSORY ORGANS:</b> Eye: histological structure: cornea, sclera, choroid, ciliary body, iris, retina, eyelid. Ear: histological structure of internal ear: osseous labyrinth, membranous labyrinth, cochlear duct, organ of corti.	<b>4</b>
<b>SKIN:</b> Epidermis, dermis, hair follicles, structure, classification, arrangement, skin glands: sebaceous gland, sweat glands, arrector pili muscle	<b>4</b>
<b>Total</b>	<b>60</b>

<b>Histology: PRACTICAL SUBJECTS</b>	<b>HOURS</b>
General information , working in the laboratory , using and maintaining microscopes, structure & types of cells, neurons.	<b>3</b>
Glycogen granules , mitochondria , golgi apparatus , nissl granules.	<b>3</b>
Different types of epithelial tissue (simple and compound).	<b>3</b>
connective tissue proper : reticular C.T. , adipose CT, elastic CT, white fibrous CT, cells of CT.	<b>3</b>
Muscular tissue : striated muscle , smooth muscle , cardiac muscle .supportive connective tissue (elastic cartilage , hyaline cartilage , fibro cartilage).	<b>3</b>
Compact bone , decalcified , cancellous bone , bone developing .	<b>3</b>
Nervous tissue: myelinated fibers , nerve trunk , spinal ganglion , sympathetic ganglion , Pacinian corpuscle , motor end plate .	<b>3</b>
Blood cells : WBC, RBC, blood platelets.	<b>3</b>
Blood smear: preparation, staining, differential count of WBCs	<b>3</b>

<b>Histology: PRACTICAL SUBJECTS</b>	<b>HOURS</b>
Bone marrow.	<b>3</b>
Exam	<b>3</b>
Lymph system : lymph node , thymus , spleen , palatine tonsil , Pharyngeal tonsil.	<b>3</b>
Cardiovascular system : elastic artery (aorta) , medium sized muscular artery , small artery , small vein , medium sized vein , large vein (vena cava ) , wall of heart ( Purkinji fibers ) , semilunar valves.	<b>3</b>
Tongue structure, lingual papillae.	<b>3</b>
Salivary glands: parotid, sublingual, submaxillary, esophagus.	<b>3</b>
Fundic gland region of stomach , pyloric gland region of stomach, rumen , reticulum, omasum.	<b>3</b>
Small intestine : duodenum , jejunum , ileum , large intestine , recto anal canal.	<b>3</b>
Liver of human and pig , gallbladder , pancreas.	<b>3</b>
Respiratory system (larynx , trachea , lung ).	<b>3</b>
Endocrine glands : hypophysis (pituitary gland ) , adrenal gland ( in human and horse ) , thyroid gland , parathyroid gland.	<b>3</b>
Urinary system :kidney , ureter , urinary bladder .	<b>3</b>
Exam	<b>3</b>
Male genital system : testis , epididymis , vas deferens.	<b>3</b>
Female genital system : ovary , corpus luteum , uterine tube (oviduct), uterus (secretory phase and proliferative phase).	<b>3</b>
Hairy skin including hair follicles and sebaceous glands , non hairy skin including sweat gland.	<b>3</b>
Eye : cornea , retina.	<b>3</b>
Ear: cochlea , corti organ.	<b>3</b>
Mammary gland (active and in active).	<b>3</b>
Review	<b>6</b>
Total	<b>90</b>

**YEAR: SECOND**

**SUBJECT: PHYSIOLOGY**

**Theoretical hours: 4**

**Practical hours: 3**

**Units: 10**

**FIRST & SECOND SEMESTERS**

<b>PHYSIOLOGY : THEORETICAL SUBJECTS</b>	<b>HOURS</b>
Introduction to Physiology	<b>1</b>
The cell and its functions(Organization of the cell, membranous structures of the cell, cytoplasm and its organelles functional systems of the cell,Transport of substances through the cell membrane, radiation and metabolism of energy)	<b>5</b>
Nerve(structure of the nerve cell, membrane potentials and action potentials, origin of the normal resting membrane potential, nerve action potential,initiation of the action potential, special characteristics of signal transmission in nerve trunks, synapses, neurotransmitters and the neuromuscular junction.	<b>5</b>
Muscle(types of muscles and structures, General mechanism of muscle contraction, molecular mechanism of muscle contraction, molecular characteristics of the contractile filaments, energetics of muscle contraction, characteristics of whole muscle contraction, mechanics of skeletal muscle contraction, rigor mortis and physiology of cardiac muscle).	<b>5</b>
The Autonomic nervous system (General organization of the autonomic nervous system, physiologic anatomy of the sympathetic nervous system, physiologic anatomy of the parasympathetic nervous system, chemical transmission at autonomic junctions, basic characteristics of sympathetic and parasympathetic function, receptors on the effector organs, effects of sympathetic and parasympathetic stimulation on	<b>3</b>

PHYSIOLOGY : THEORETICAL SUBJECTS	HOURS
specific organs, "Alarm" or "Stress" response of the sympathetic nervous system and control of the autonomic nervous system).	
Blood (formed elements, functions of the blood, erythrocytes, erythropoiesis, hemoglobin, reactions of hemoglobin, white blood cells, chemotaxis, platelets, plasma proteins, blood coagulation, blood groups, immunity	9
Lymp: composition and function	1
Cerebrospinal fluid: composition and function	1
Cardiovascular system(Structure of the heart, and course of blood flow through the heart chambers and heart valves, cardiac cycle, heart sounds, the electrocardiogram cardiac out put, blood flow in vessels, blood pressure, capillary circulation, venous circulation, cardiovascular regulatory mechanisms, innervation of the blood vessels, cardiac innervation, vasomotor center, baroreceptors and blood _brain barrier)	10
Respiration (functional structures, mechanics of pulmonary ventilation, partial pressure of gases in alveolar and blood, surfactant, surface tension, and collapse of the alveoli, pulmonary volumes,, pulmonary capacities, alveolar ventilation, dead space and its effect on alveolar ventilation, functions of the respiratory. Passageways,mechanics of respiration, transport of gases in the blood and regulation of respiration)	6
Kidney: nephron structure and blood supply, plasma volume,total blood volume, glomerular filtration, factors affecting the GFR, tubular function, tubular secretion, water excretion, osmotic diuresis, diuretics, factors affecting sodium excretion, regulation of potassium excretion,functions of ureter and urinary bladder.	10
Acid _base balance: chemical buffer, regulation of CO <sub>2</sub> concentration by the respiratory system, regulation of plasma HCO <sub>3</sub> <sup>-</sup> concentration by the kidney, fate of H <sup>+</sup> in the urine and body fluids.	4
Digestive system: salivary glands and saliva, structures of digestive system, gastric secretion, regulation of gastric secretion, exocrine portion of the pancreas, liver and biliary system, small intestine, intestinal secretion, intestinal motility, large intestine, defecation, absorption, rumination, microbiology of the rumen.	14

<b>PHYSIOLOGY : THEORETICAL SUBJECTS</b>	<b>HOURS</b>
Central Nervous system: brain, brain stem, medulla oblongata, reticular formation of the brain stem, thalamus, hypothalamus, temperature regulation, sensory system, motor system (spinal cord and reflexes), learning and memory and limbic system.	<b>12</b>
Endocrine system: the relationship between nervous system and endocrine glands, hormones, types of hormones, mechanisms of hormone action, pituitary gland, thyroid gland, hormonal control of calcium metabolism, parathyroid glands, adrenal gland, pancreatic hormones, prostaglandins, atrial natriuretic peptide, pineal gland and thymus gland.	<b>20</b>
Male and female reproductive system: structures, spermatogenesis, structure of mature spermatozoon, endocrine function of the testes and control of testicular function. Structures of female reproductive system, types of follicles, estrous cycle, menstrual cycle, ovarian cycle, uterine cycle, vaginal cycle, puberty, ovarian hormones, abnormalities of ovarian functions. Pregnancy, placental hormones, parturition and lactation.	<b>14</b>
<b>Total</b>	<b>120</b>

<b>PHYSIOLOGY: PRACTICAL SUBJECTS</b>	<b>HOURS</b>
Introduction to apparatus and instruments	<b>3</b>
Frog sciatic nerve and gastrocnemius muscle preparation.	<b>3</b>
The simple muscle twitch.	<b>3</b>
The effect of temperature on muscle contraction.	<b>3</b>
Effect of stimulus strength on muscle contraction and fatigue.	<b>3</b>
Summation of two stimuli and tetanus.	<b>3</b>
Frog's heart (sequence of the heart beat and effect of acetylcholine on the heart)	<b>3</b>
Extrasystole and compensatory pause and Stannius ligatures.	<b>3</b>
Blood pressure in man.	<b>3</b>
Effect of exercise and gravity on blood pressure and venous pressure.	<b>3</b>

<b>PHYSIOLOGY: PRACTICAL SUBJECTS</b>	<b>HOURS</b>
Exam	<b>3</b>
Reactive hyperemia, reaction to venous congestion and cold pressor test.	<b>3</b>
Red blood cell count.	<b>3</b>
White blood cell count.	<b>3</b>
Estimation of hemoglobin, packed cell volume and erythrocyte sedimentation rate.	<b>3</b>
The Wintrobe erythrocyte indexes.	<b>3</b>
Review	<b>3</b>
Blood groups and coagulation time.	<b>3</b>
Lung volumes (measurement of respiratory volume spirometry)	<b>3</b>
Measurement of pulmonary ventilation and respiratory movements.	<b>3</b>
Salivary digestion.	<b>3</b>
Nervous system: reflex action in man (cutaneous and deep reflexes)	<b>3</b>
Eye reflexes and response time	<b>3</b>
Sensory physiology	<b>3</b>
Vision and taste.	<b>3</b>
Hearing	<b>3</b>
Evaluation of seminal quality.	<b>3</b>
Estrous cycle of the rat.	<b>3</b>
Ovariectomy in rat.	<b>3</b>
Review	<b>3</b>
<b>Total</b>	<b>90</b>

**YEAR: SECOND**

**SUBJECT: STATISTICS**

**Theoretical hours: 2**

**Practical hours: 2**

**Units: 3**

**SECOND SEMESTER**

<b>STATISTICS: THEORETICAL SUBJECTS</b>	<b>HOURS</b>
Introduction to statistics and statistics symbols.	<b>2</b>
Tabular and graphical presentation.	<b>4</b>
Measures of central tendency.	<b>2</b>
Measures of dispersion or variation .	<b>2</b>
Elementary probability theory .	<b>4</b>
Discrete probability distribution .	<b>2</b>
Continuous probability distribution, normal distribution .	<b>2</b>
Simple regression and correlation.	<b>2</b>
Tests of hypotheses, Z-distribution.	<b>4</b>
T- distribution.	<b>2</b>
Chi- square distribution.	<b>2</b>
F-distribution	<b>2</b>
<b>Total</b>	<b>30</b>

<b>STATISTICS: PRACTICAL SUBJECTS</b>	<b>HOURS</b>
Introduction to statistics and statistics symbols.	<b>2</b>
Tabular and graphical presentation.	<b>4</b>
Measures of central tendency.	<b>2</b>
Measures of dispersion or variation .	<b>2</b>
Elementary probability theory .	<b>4</b>
Discrete probability distribution .	<b>2</b>
Continuous probability distribution, normal distribution .	<b>2</b>
Simple regression and correlation.	<b>2</b>
Tests of hypotheses, Z-distribution.	<b>4</b>
T- distribution.	<b>2</b>
Chi- square distribution.	<b>2</b>
F-distribution	<b>2</b>
<b>Total</b>	<b>30</b>

**YEAR: THIRD**

**SUBJECT: CLINIC**

**Theoretical hours:** -

**Practical hours:** 2

**Units:** 1

**SECOND SEMESTER**

<b>CLINIC : PRACTICAL SUBJECTS</b>	<b>HOURS</b>
Introduction and history taking	<b>1</b>
Clinical examination and diagnosis (Inspection and physical examination)	<b>1</b>
Temperature	<b>1</b>
Examination of the cardiovascular system	<b>2</b>
Examination of the respiratory system	<b>1</b>
Examination of the digestive system	<b>2</b>
Examination of the lymph nodes	<b>1</b>
Examination of the udder and milk	<b>1</b>
Examination of the urinary system	<b>1</b>
Examination of the skin	<b>1</b>
Allergic tests	<b>1</b>
Routs of drug administration	<b>1</b>
Revision	<b>1</b>
<b>Total</b>	<b>15</b>

**YEAR: THIRD**

**SUBJECT: IMMUNOLOGY**

**Theoretical hours: 2**

**Practical hours: 2**

**Units: 3**

**FIRST SEMESTER**

<b>IMMUNOLOGY: THEORETICAL SUBJECTS</b>	<b>HOURS</b>
Principle of immunity and immune response (specific and non specific)	2
Immunoglobulin: Structure, variation, Function and synthesis	5
Immunology of T and B cells	2
Complement: Nature, Function and pathways	2
Cell mediated immunity, antigen recognition by T cells	2
Immunological tolerance	2
Types of Hypersensitivity, Mechanisms	4
Auto-immunity	3
Transplantation	2
Principle of immune genetics	2
Immunoanaphylaxis reaction	2
Immunity of infection	2
<b>Total</b>	<b>30</b>

<b>IMMUNOLOGY: PRACTICAL SUBJECTS</b>	<b>HOURS</b>
Introduction to immunology labs	2
Lab animals	2
Preservation of antigens and antibodies	4
Separation of immunoglobulin	2
Complement test	2
Precipitation test	4
Agglutination test	2
Neutralization test	2
Separation of lymphocytes from blood and lymph nodes	4
Preparation of antigens	2

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IMMUNOLOGY: PRACTICAL SUBJECTS	HOURS
Leukocytes	<b>2</b>
Phagocytosis	<b>2</b>
<b>Total</b>	<b>30</b>

**YEAR: THIRD**

**SUBJECT: MICROBIOLOGY**

**Theoretical hours: 3**

**Practical hours: 3**

**Units: 9**

**FIRST & SECOND SEMESTERS**

<b>MICROBIOLOGY : THEORETICAL SUBJECTS</b>	<b>HOURS</b>
Introduction and history of microbiology	2
Bacterial cell structures and function	3
Bacterial classification	1
Bacterial nutrition and growth	2
Sterilization and disinfections	2
Antibiotics and chemotherapeutics agents	2
Bacterial genetics	2
Bacterial virulence	1
Staphylococcus	1
Streptococcus	2
Corynebacterium	2
Listeria	1
Bacillus	2
Clostridium	4
Actinomyces and Nocardia	1
Actionbacillus	1
Pasteurella	1
Haemophilus	1
Moraxella and bordetlla	1
Pseudomonas (Burkholderia)	1
Leptospira	1
Campylobacter	2
Brucella	2
Spharophorus	1
Enterbacteriaceae	5
Mycobacterium	2
Rickettsia and chlamydias	4

<b>MICROBIOLOGY : THEORETICAL SUBJECTS</b>	<b>HOURS</b>
Mycoplasma	5
Mycology	5
Virus structure, chemistry, morphology and classification	20
Viral multiplication and types of propagation	4
Viral genetics, interaction between viruses	4
Interferon and formation and uses	2
<b>Total</b>	<b>90</b>

<b>MICROBIOLOGY: PRACTICAL SUBJECTS</b>	<b>HOURS</b>
General laboratory instructions	3
Microscopes	3
Sterilization and disinfection	3
Culture media for bacterial growth	3
Bacterial nutrition and growth	3
Colony morphology	3
Pure culture techniques	3
Bacterial motility	3
Bacterial morphology	3
Bacterial staining technique	3
Bacterial count	3
Antibiotic tests	3
Biochemical tests	3
Staphylococcus and streptococcus	3
Corynebacterium, Rhadococcus ,Listeria	3
Bacillus, clostridium and an aerobic condition	3
Mycobacterium, Pasturella	3
Pseudomonas(Burkholderia)	3
Leptospira and brucella	3
Enterobacteriaceae	3
Mycology	3
Collection and preservation of viral samples	3
Isolation and propagation of viruses	3
propagation of viruses in egg embryo	3
propagation of viruses in tissue culture	3

MICROBIOLOGY: PRACTICAL SUBJECTS	HOURS
Haemagglutination test	<b>3</b>
Haemagglutination inhibition test	<b>3</b>
ELISA test	<b>3</b>
Neutralization test	<b>3</b>
Precipitation and immunoflourscent test	<b>3</b>
<b>Total</b>	<b>90</b>

**YEAR: THIRD**

**SUBJECT: PARASITOLOGY**

**Theoretical hours: 3**

**Practical hours: 2**

**Units: 8**

**FIRST & SECOND SEMESTERS**

<b>PARASITOLOGY: THEORETICAL SUBJECTS</b>	<b>HOURS</b>
Introduction and definitions of terms	<b>1</b>
Effects of parasites on their hosts	<b>1</b>
Transmission of parasite infestation	<b>1</b>
Life cycles	<b>1</b>
Immunology	<b>1</b>
Phylum: Nematoda Families: Scarodidae, Hetrakidae, Subuluridae, Oxyuridae, Rhabditidae, Strongyloides, Trichonematidae, Ancylostomatidae, Trichostrongylidae, Dictyocaulidae, Metastrongyloidae, Trichuridae, Trichinellidae, Spriuroidae, Fillariidae.	<b>20</b>
Phylum: Platyhelminthes Families: Taeniidae, Anoplocephaliadae, Thysanosonidae, Davaineidae Dipylidiidae, Hymenolepididae, Mesocestoidae, Diphllbothriidae	<b>12</b>
Phylum: Trematoda Families: Fasciolidae, Dicrocoelidae, Parmaphistomatidae, Schistosomatidae,	<b>8</b>
Phylum: Protozoa Families: Trypanosomatidae, Trichomonadae, Monocercomonadidae, Eimeriidae, Sarcocystidae, Cryptoseoridiidae, Plasmodiidae, Babesiidae, Theileriidae.	<b>30</b>
Phylum: Arthropoda Families: Ioxdidae, Argasidae, Sarcoptidae, Psoroptidae, Tabanidae, Culicidae, Psychodidae, Simuliidae, Oestridae, Calliphoridae, Anthomyidae, Cimicidae, Haematopinidae, Linognathidae, Superfamilies, Ischnocera, Amblycera	<b>15</b>
<b>Total</b>	<b>90</b>

PARASITOLOGY: PRACTICAL SUBJECTS	HOURS
Laboratory diagnosis of parasitism	2
Laboratory diagnosis of parasitism	2
Fasciola hepatica, Life cycle, Fasciola gigantica	2
Dicrocoelium dendriticum, Metagonimus yokcagawi Paramphistomatidae(3 genuses)	4
Schistoma (male,female) In copulation,eggs of S.mansoni,eggs, S.japonicum+cercaria	2
Moniezia expansa, (Mature seg,scolex) M.bendeni, Avitellina (mature and gravid) Thysaniezia, (mature and gravid)	4
Raillietina (mature and gravid) R.tetragona scolex, R.echinobothrida(scolex) R.cesticillus(scolex), Dipylidium caninum (mature and gravid), Hymenolepis nana	4
Taenia spp (eggs+(mature and gravid)+scolex) of T.pisiformis,proto scolex, of Coenurus cerebralis	4
Echinococcus granulosus +protoscolex of Hydatid cyst+Mesocestoides lineatus (mature and gravid), Spirometra (mature)	4
Parascaris equorum+ Toxocara canis +Oxyuris equi Ascaridia galli +Hetrakis gallinarum +Subulura brumptii	2
Strongylidae copulatory bursa, Strongylus vulgaris+S. equines Chabertia ovina, Ancylostoma caninum, Bunostomum sp	2
Haemonchus contortus, (male and female), Ostertagia(3 sp) Dictyocalus filarial(male)	4
Habronema (male,female), Thelazia, Setaria digiata(female) Trichinella spiralis(larval stage), Trichuris trichura	2
Trypanosoma brucei, T.equiperdium, T.evansi T.cruzi, Leishmania (Amastigete), Trichomonas vaginalis Entamoeba histolytica(trophozoite)	4
Eimeria (life cycle), Sarcocystis, Toxoplasma gondii Cryptosporidium	4
Plasmodium gallinaceum,Babesia:B.canis,B.motasi	2

PARASITOLOGY: PRACTICAL SUBJECTS	HOURS
Theileria, Anaplasma	
Hard ticks, Hyalomma, Rhipicephalus, Boophilus and larva Soft tick( Argas persicus)	4
Demodex folliculorum, Dermanyssus gallinae Psorptes, Sarcoptes	2
Menacanthus straminus, Haematopinus suis Ctenocephalides canis, Xenopsylla cheopis, Cimex lectularis	2
Anopheles, Culex, (male, female) pupa and larva, Simulium adult, Larva	2
Oesteridae, Oestrus ovis, Hypoderma bovis, Gastrophilus intestinalis	2
<b>Total</b>	<b>60</b>

**YEAR: THIRD**

**SUBJECT: PATHOLOGY**

**Theoretical hours: 3**

**Practical hours: 3**

**Units: 9**

**First & SECOND SEMESTERS**

<b>PATHOLOGY: THEORETICAL SUBJECTS</b>	<b>HOURS</b>
Introduction	<b>1</b>
Degenerative changes and Necrosis / Acute Cellular Degeneration/ Gout Degeneration and Gangrenous necrosis (Gangrene types).	<b>8</b>
Disturbance of Pigmentation ( Jaundice/ Types and causes and formation of hemosidren, melanin, and calcification/ types and causes)	<b>3</b>
Disturbance of growth ( atrophy, hyperatrophy, hyperplasia, hyoplasia, metapsia, aplasia, congenial anomlies)	<b>3</b>
Disturbance of Circulation (Congestion and hemorrhage/ types and causes, thrombus and emboli: types and causes, infarction, embolism, edema / types and causes)	<b>6</b>
Inflammation (definition, causes, types of inflammatory cells, types of inflammation)	<b>8</b>
Healing and repair	<b>2</b>
Inmunopathology	<b>6</b>
Tumors (definition/ theories of origin, classification/ differentiation between benign and malignant tumors/ histological characters of tumors/ method of transmission)	<b>8</b>
Diseases of respiratory system/ Upper respiratory tract/ Lung/ Pleura	<b>6</b>
Diseases of Cardiovascular system (Epicardium, Myocardium, Pericardium, Diseases of blood and lymph vessels)	<b>5</b>
Diseases of haemopoetic and lymphatic tissues ( Lymphatic nods, spleen, thymus)	<b>3</b>
Diseases of digestive system (diseases of mouth, cum, tongue, pharynx and esophagus/ diseases of Rumen and stomach/	<b>8</b>

<b>PATHOLOGY: THEORETICAL SUBJECTS</b>	<b>HOURS</b>
Diseases of intestine/ disease of liver and pancreas)	
Disease of urinary system ( Diseases of kidney, Urethras, Urinary bladder)	<b>4</b>
Disease of Male genital system (testis, epididmyus, Urethra, Penis, Prostate) Disease of female genital system (Ovary, Oviduct, Uterus and Cervix, Vagina and valve)	<b>3</b>
Diseases of Muscol- Skeletal system	<b>4</b>
Diseases of Nervous system (Manning, Brain, Spinal cord)	<b>3</b>
Disease of Endocrine	<b>3</b>
Diseases of skin and accessory	<b>3</b>
Diseases of eye and special organ	<b>3</b>
<b>Total</b>	<b>90</b>

<b>PATHOLOGY: PRACTICAL SUBJECTS</b>	<b>HOURS</b>
Solutions and fluids used in fixation and preservation of tissue samples used as preservative samples.	<b>3</b>
Methods of processing and preparation of tissue for microscopically examination .	<b>3</b>
Methods of embedding and preparation of tissue blocks.	<b>3</b>
Methods of cryostat for frozen sections.	<b>6</b>
Methods of reaction and special tissue stains.	<b>3</b>
Frozen section microtome for pathological detection of fat and enzymes.	<b>6</b>
Practical training in examination and diagnosis of many pathological conditions as histological section, lintin slides, digital photos and fixed samples (gallery samples) .	<b>6</b>
Histopathological practice for examining of upper respiratory tract .	<b>6</b>
Histological section and fixed gross samples of endocarditis and myocarditis and pericarditis caused by bacteria and parasites.	<b>6</b>
Pathological affections of aorta and other blood vessels (gross and histopathological section)	<b>6</b>

PATHOLOGY: PRACTICAL SUBJECTS	HOURS
Pathological affection of digestive system including gingivitis and other mucosal epithelial affection (foot and mouth diseases, and wooden tongue).	6
Gastroenteritis, parasitic affection of stomach, intestinal obstruction, coccidiosis (gross and histopathological practice).	6
Liver necrosis, liver cirrhosis, abscess, parasitic infection of liver and bile duct and gill bladder. Microscopic slides of pathological infection of kidney urethras and urinary bladder. Hematuria in farm animals.	6
Microscopic slides of metritis and salphangitis, supportive metritis and mastitis	6
Microscopic slides of male and female genital system, testis and urinary tract	6
Microscopic slides of bone infection, and cartridge, joints, osteomalaysia, vitamin D deficiency, skin infection, myocytic and parasitic infection of skin.	6
Microscopic slides from general diseases cases.	6
Final Examination.	1
<b>Total</b>	<b>90</b>

**YEAR: THIRD****SUBJECT: PHARMACOLOGY**

<b>Theoretical hours:</b>	<b>3</b>
<b>Practical hours:</b>	<b>2</b>
<b>Units:</b>	<b>8</b>

<b>PHARMACOLOGY: THEORETICAL SUBJECTS</b>	<b>HOURS</b>
Principles of pharmacology	<b>9</b>
Drugs acting on autonomic and somatic nervous system	<b>10</b>
Drugs acting on central nervous system	<b>10</b>
Drugs affecting gastrointestinal function	<b>5</b>
Autacoids and anti-inflammatory drugs	<b>8</b>
Dermatopharmacology	<b>2</b>
Chemotherapy of microbial diseases	<b>10</b>
Chemotherapy of parasitic diseases	<b>8</b>
Drugs acting on cardiovascular system and blood	<b>7</b>
Drugs affecting renal function and fluid-electrolyte therapy	<b>5</b>
Drugs affecting the respiratory system	<b>6</b>
Endocrine pharmacology and hormones	<b>10</b>
<b>Total</b>	<b>90</b>

PHARMACOLOGY: PRACTICAL SUBJECTS	HOURS
Metrology	2
Nature and sources of drugs	4
Pharmaceutical preparations and drug forms	2
Routes of drug administration	2
Variations in drug response (Species and individual)	4
Microsomal enzymes activity induction and drug response	2
Excretion of drugs	2
Prescription writing	2
Dispensing	4
Action of drugs on the eyes	2
Action of drugs on isolated guinea pigs ileum	2
Drugs and effects on the rabbit intestine	2
Drugs and effects on rabbit uterus	2
Neuromuscular blocking (on the frog)	2
Calculation of drug dosage	2
Xylazine-ketamine anesthesia in rabbits	2
Dose response relationships (ED50, LD50, TI)	2
Anticonvulsants	2
Determination of blood cholinesterase activity	2
Organophosphate poisoning in rats or mice	2
Xylazine effects in sheep	2
Diuretics	2
Aspirin toxicity (comparison with acetaminophen)	2
Veterinary pharmaceutical preparations	4
Neurobehavioral effects of drugs and toxicants	2
Effects of drugs on the perfused heart	2
<b>Total</b>	<b>60</b>

**YEAR: THIRD**

**SUBJECT: TOXICOLOGY**

**Theoretical hours: 2**

**Practical hours: -**

**Units: 2**

**SECOND SEMESTER**

<b>TOXICOLOGY: THEORETICAL SUBJECTS</b>	<b>HOURS</b>
Concepts and terminology	<b>2</b>
Toxicokinetics	<b>2</b>
Antidotes and general treatment of poisoning	<b>2</b>
Diagnostic aspects of toxicology	<b>2</b>
Insecticides	<b>3</b>
Herbicides	<b>2</b>
Metals and minerals	<b>2</b>
Mycotoxins	<b>2</b>
Feed-associated toxicants	<b>2</b>
House-hold and industrial products	<b>2</b>
Plants	<b>3</b>
Biotoxins	<b>2</b>
Environmental pollution with toxicants	<b>2</b>
Pharmaceuticals	<b>2</b>
<b>Total</b>	<b>30</b>

**YEAR: FOURTH**

**SUBJECT: CLINIC**

**Theoretical hours:** -

**Practical hours:** 4

**Units:** 4

**First & SECOND SEMESTERS**

Examination of animals, diagnosis of disease conditions referred to the Veterinary Teaching Hospital or through field visits. Rotations in surgery, obstetrics, poultry diseases, internal medicine and clinical pathology.

**YEAR: FOURTH**

**SUBJECT: CLINICAL PATHOLOGY**

**Theoretical hours: 1**

**Practical hours: 2**

**Units: 4**

**First & SECOND SEMESTERS**

<b>CLINICAL PATHOLOGY: THEORETICAL SUBJECTS</b>	<b>HOURS</b>
Introduction- terminology and concepts	2
Clinical haematology (leukocytes and erythrocytes)	4
Bone marrow examination	1
Platelets function abnormalities and diagnosis of bleeding disorders	1
Clinical biochemistry, Basic principles, Total protein, Ketones, urea, enzymology, mineral levels.	2
Metabolic profile testing and S.I. unit.	1
Liver function test	2
Kidney function test	2
Water electrolytes and acid - base imbalance	1
Disturbances of adrenal, pituitary, thyroid and parathyroid glands	2
Clinical parasitology	4
Rumen fluid examination	1
Clinical microbiology	2
Milk Examination	1
Antimicrobial sensitivity test	1
Clinical immunology	1
Transudate and exudate	1
Water electrolytes and acid - base imbalance	1
<b>Total</b>	<b>30</b>

CLINICAL PATHOLOGY: PRACTICAL SUBJECTS	HOURS
Collection of different samples.	2
Erythrocytes count	2
Reticulocytes count	2
Packed cell volume and Hb determination	2
Leukocytes parameters ( TLC)	2
Leukocytes parameters ( DLC)	2
ESR determination	2
Platelets function abnormalities	2
Bleeding and clotting time	2
Blood smear examination	2
Lymph smear examination	2
Clinical biochemistry, Total protein, Ketones, urea, enzymology, and mineral levels.	6
Urine examination ( physical and chemical )	2
Urine examination ( Microscopic )	2
Fecal examination	2
Fecal examination	2
Skin scraping examination	2
Clinical microbiology	4
Milk Examination( physical and chemical )	2
Milk Examination ( Bacterial )	2
Antimicrobial sensitivity test	2
Rumen fluid examination	2
Serological test	4
Tests of detection of toxic substances.	4
Revision ( over - all ).	2
<b>Total</b>	<b>60</b>

**YEAR: FOURTH**

**SUBJECT: INFECTIOUS DISEASES AND EPIDEMIOLOGY**

**Theoretical hours: 3**

**Practical hours: -**

**Units: 6**

**First & SECOND SEMESTERS**

<b>INFECTIOUS DISEASES AND EPIDEMIOLOGY: THEORETICAL SUBJECTS</b>	<b>HOURS</b>
Introduction	1
Rinderpest	1
PPR	1
FMD	2
Vesicular stomatitis	1
Blue tongue	1
BVD/MD	2
IBR	2
MCF	2
Viral diarrhea of calves, Lambs, Kids and foals	2
Pasteurellosis and HS	1
Black leg	1
Black disease	1
Tetanus	1
Enterotoxaemia	2
Botulism	1
Bacillary hemoglobinuria	1
Braxy	1
TB and johns disease.	2
Actinomycosis and Actinobacillosis	2
Oral and laryngeal necrobacillosis	1
Winter dysentery of cattle	1
Diseases caused by Hemophilus and Moraxella spp	2
Equine infectious anemia	1
African horse sickness	1
Equine Rhinopneumonitis	1

<b>INFECTIOUS DISEASES AND EPIDEMIOLOGY: THEORETICAL SUBJECTS</b>	<b>HOURS</b>
Equine viral arthritis	1
Equine influenza	1
Viral encephalomyelitis of horses	1
Anaplasmosis	1
Theileriosis	1
Babesiosis	1
Mastitis	2
Brucellosis	2
Listeriosis	1
Leptospirosis	2
Anthrax	2
Salmonellosis	2
Colibacillosis	2
Footrot	1
CCPP and CBPP	2
Toxoplasmosis	1
Orf	1
Papillomatosis	1
Lumpy skin disease	1
Bovine ulcerative Mammillitis	1
Bovine ephemeral fever	1
Rift vally fever	1
Akabane Virus Diseaes	1
Bovine viral leukosis	1
Rabies	1
Pseudorabies	1
Louping ill	1
Scrapie	1
Enzootic abortion in sheep	1
Glanders	2
Epizootic lymphangitis	2
Strangles	1
Contagious bovine pyelonephritis	1
Caseous lymphadenitis of sheep	1
Ulcerative lymphangitis	1

INFECTIOUS DISEASES AND EPIDEMIOLOGY: THEORETICAL SUBJECTS	HOURS
Mange and external parasites infestation	<b>2</b>
Diseases caused by parasites	<b>2</b>
<b>Total</b>	<b>90</b>

**YEAR: FOURTH**

**SUBJECT: MEDICINE**

**Theoretical hours: 3**

**Practical hours: -**

**Units: 6**

**First & SECOND SEMESTERS**

<b>MEDICINE: THEORETICAL SUBJECTS</b>	<b>HOURS</b>
Introduction	<b>2</b>
General systemic states	<b>3</b>
Digestive system: Principles of alimentary tract dysfunction	<b>4</b>
Manifestation of alimentary tract dysfunction	<b>2</b>
Diseases of the buccal cavity and associated organs, Stomatitis, Pharyngeal obstruction, Pharyngeal paralysis, Esophagitis, esophageal obstruction	<b>5</b>
Diseases of the forestomachs of ruminants	<b>11</b>
Diseases of the stomach and intestine	<b>4</b>
Equine colic	<b>3</b>
Diseases of the liver	<b>11</b>
Diseases of nervous system	<b>15</b>
Diseases of Respiratory system	<b>15</b>
Diseases of skin	<b>15</b>
<b>Total</b>	<b>90</b>

**YEAR: FOURTH**

**SUBJECT: POULTRY DISEASES**

**Theoretical hours: 2**

**Practical hours: 2**

**Units: 6**

**First & SECOND SEMESTERS**

<b>POULTRY DISEASES: THEORETICAL SUBJECTS</b>	<b>HOURS</b>
Introduction about diseases and poultry industry	<b>4</b>
Malnutrition diseases	<b>8</b>
Bacterial diseases	<b>10</b>
Mycoplasma and Chlamydia diseases	<b>6</b>
Viral diseases	<b>10</b>
Mycotic diseases	<b>6</b>
Parasitic diseases	<b>8</b>
Diseases of Pet birds and zoonosis	<b>4</b>
Diseases of Turkey, Pigeon, Quails	<b>4</b>
<b>Total</b>	<b>60</b>

<b>POULTRY DISEASES: PRACTICAL SUBJECTS</b>	<b>HOURS</b>
Introduction about poultry industry in relation to diseases	<b>2</b>
Requirement of management of house and their effected on diseases	<b>2</b>
Method for killing chickens prepared for post mortem	<b>2</b>
Learning student about how to write case report	<b>2</b>
Comparative anatomy of bird to fix gross lesions and collection of samples for diagnosis	<b>4</b>
Malnutrition of diseases	<b>2</b>
E coli infection	<b>2</b>
Diseases caused by Salmonella	<b>4</b>
Coryza/ fowl cholera and spirochetosis	<b>2</b>
Necrotic and ulcerative enteritis	<b>2</b>
Mycoplasma diseases	<b>2</b>
Newcastle, Maerks disease, leukosis, avian encephalomyelitis	<b>4</b>

<b>POULTRY DISEASES: PRACTICAL SUBJECTS</b>	<b>HOURS</b>
Infectious bronchitis, IBD, infectious hepatitis, infectious laryngotrachitis	<b>4</b>
First Term Examination	
Avian pox, Stunting syndrome, EDS, HHS	<b>2</b>
Film about method used for vaccination to protect the bird from viral diseases, information about vaccine used unevenly and practical application on rout of vaccine	<b>2</b>
Parasitic diseases	<b>2</b>
Drug used for treatment of poultry diseases, method of administration, methods for calculation the quantity in winter and summer	<b>2</b>
Mycotic diseases	<b>2</b>
Field visiting to layers, parents stock, knowing the important diseases that affecting this farm and method of control	<b>2</b>
Bacteriological and serological method and collection of blood, method of preservation, for the purpose of diagnosis used locally and internationally	<b>4</b>
Important diseases of seabird, wild birds and prey birds (Eagles and Hawks)	<b>2</b>
Methods of treatment	<b>2</b>
Visiting to scientific central lab in veterinary medicine college	<b>2</b>
Second Term Examination	
<b>Total</b>	<b>60</b>

**YEAR: FOURTH**

**SUBJECT: SURGERY**

**Theoretical hours: 3**

**Practical hours: 2**

**Units: 8**

**First & SECOND SEMESTERS**

<b>SURGERY: THEORETICAL SUBJECTS</b>	<b>HOURS</b>
Introduction and classification of Surgery	2
Sterilization	3
Response to trauma	3
Wound classification	3
Haemostasis	3
Abscess	3
Ulcer	3
Tumors	3
Affection of the bursa, joints	3
Affection of tendon	3
History on anaesthesia	3
Classification of anaesthesia	2
Local anaesthesia	3
Regional anaesthesia	3
Preanaesthetic consideration	3
Premeditation and muscle relaxant	3
Stages of general anaesthesia	3
Volatile and non-volatile anesthetic agents	3
Anaesthesia of lab. Animals and birds	3
Anaesthetic accidents	3
Anaesthetic accidents treatment	3
X-ray	3
Radiation hazard and protection	3
Diagnostic and procedures of radiology	3
Processing of X-Ray	3
Fracture classification	3

Fracture healing	<b>3</b>
Lameness	<b>3</b>
Affection of hoof	<b>3</b>
Laser in surgery	<b>3</b>
Endoscopic surgery	<b>2</b>
<b>Total</b>	<b>90</b>

<b>SURGERY: PRACTICAL SUBJECTS</b>	<b>HOURS</b>
Introduction to surgical theater	<b>2</b>
Instrumentation	<b>4</b>
Preparation of surgical packs	<b>2</b>
Preoperative examination	<b>2</b>
Sutures and ligatures	<b>4</b>
Local anaesthesia	<b>4</b>
Regional anaesthesia	<b>4</b>
Examination of the first term	<b>2</b>
General anaesthesia	<b>6</b>
X-ray	<b>6</b>
Orthopedics surgery	<b>6</b>
Tendon surgery	<b>4</b>
Intra articular injection	<b>4</b>
Laser and endoscopic surgery	<b>4</b>
Docking	<b>4</b>
Examination	<b>2</b>
<b>Total</b>	<b>60</b>

**YEAR: FOURTH**

**SUBJECT: THERIOGENOLOGY**

**Theoretical hours**                      **2**

**Practical hours:**                      **2**

**Units:**                                      **6**

**FIRST & SECOND SEMESTERS**

<b>THERIOGENOLOGY : THEORETICAL SUBJECTS</b>	<b>HOURS</b>
Introduction, The fertility and genital diseases	<b>1</b>
Anatomy of the female genital system	<b>2</b>
Puberty and maturity	<b>2</b>
Oestrus cycle in animals	<b>2</b>
Oestrus detection	<b>2</b>
Seasonality and their effects	<b>2</b>
Ovulation	<b>2</b>
luteolysis	<b>2</b>
Reproductive hormones	<b>2</b>
Infertility and sterility	<b>2</b>
Reproduction in mare	<b>2</b>
Reproduction in buffalo and camel	<b>2</b>
Reproduction in dog and cat	<b>2</b>
Oestrus synchronization	<b>2</b>
Superovulation	<b>2</b>
Evaluation of fertility and record system	<b>2</b>
Introduction, history of artificial insemination	<b>2</b>
Anatomy of the male genital system	<b>2</b>
Spermatogenesis	<b>2</b>
Hormonal control in male reproduction	<b>2</b>
Breeding soundness	<b>2</b>
Method of semen collection	<b>2</b>
Composition of semen	<b>2</b>
Evaluation of semen	<b>2</b>
Sperm metabolism	<b>2</b>
Semen dilution	<b>2</b>

<b>THERIOGENOLOGY : THEORETICAL SUBJECTS</b>	<b>HOURS</b>
Semen storage	<b>2</b>
Method of artificial insemination	<b>2</b>
Fertility and infertility in male	<b>2</b>
Venereal diseases	<b>2</b>
In vitro fertilization	<b>1</b>
<b>Total</b>	<b>60</b>

<b>THERIOGENOLOGY : PRACTICAL SUBJECTS</b>	<b>HOURS</b>
Anatomy of the female genital sys.	<b>4</b>
Examine of female genital samples	<b>4</b>
Measurements of female genital sys.	<b>4</b>
Practical examine of female genital sys.	<b>4</b>
uses of reproductive hormones	<b>4</b>
vaginal and uterine samples	<b>4</b>
anomalies in female genital system	<b>4</b>
Intrauterine therapy	<b>4</b>
Anatomy of the male genital system	<b>4</b>
Examination of the male	<b>4</b>
Semen collection	<b>4</b>
Semen evaluation	<b>4</b>
Semen dilution	<b>4</b>
Cooling and storage of semen	<b>4</b>
Artificial insemination	<b>4</b>
<b>Total</b>	<b>60</b>

**YEAR: FOURTH**

**SUBJECT: ZOONOTIC DISEASES**

**Theoretical hours: 2**

**Practical hours: -**

**Units: 2**

**SECOND SEMESTER**

<b>ZOONOTIC DISEASES: THEORETICAL SUBJECTS</b>	<b>HOURS</b>
Introduction to the zoonosis	<b>1</b>
Principles of zoonosis recognition	<b>1</b>
Principles of zoonosis control and prevention	<b>1</b>
Viral zoonosis: FMD, Bovine popular stomatitis, Cow pox, Orf, pseudocow pox	<b>1</b>
Argentin Hemorrhagic fever, Crimean - Congo Hemorrhagic fever, Ebola Hemorrhagic fever, Rift valley fever, Viral hepatitis type A, B, C, D, E.	<b>1</b>
Eastern, Venezuelan and Western equine encephalitis	<b>1</b>
Louping - ill, Mad cow disease	<b>1</b>
Rabies , California encephalitis, Colorado tick fever	<b>1</b>
West Nile fever, Yellow fever, Nairobi sheep disease	<b>1</b>
Influenza ( swine and equine )	<b>1</b>
Newcastle disease, Psittacosis, Q fever	<b>1</b>
Bacterial zoonosis, Anthrax, Listerosis, Leptospirosis, Lepracy	<b>1</b>
Botulism, Brucellosis, Campylobacterosis	<b>1</b>
Tuberculosis	<b>1</b>
Closterdium perfringes food poisoning, Streptococcus, Staphylococcus	<b>1</b>
Colibacillosis, Vibriosis	<b>1</b>
Salmonellosis, Shigellosis	<b>1</b>
Cat scratch disease, Rat bit fever, Plague.	<b>1</b>
Tetanus, Clostridial histotoxic infection	<b>1</b>
Glanders and corynebacterium infection	<b>1</b>
Parasitic zoonosis, Arthropod infection and tick paralysis	<b>1</b>
Cestoda infection: Coenuriasis, Taeniasis,	<b>1</b>

<b>ZOONOTIC DISEASES: THEORETICAL SUBJECTS</b>	<b>HOURS</b>
Echinococcosis, Diphyllbothriasis	<b>1</b>
Trematode infection:Fascioliasis, Dictoceliasis	<b>1</b>
Nematode infection: Ascariasis, Capillariasis, Filariasis, Thelaziasis, Trichinosis	<b>1</b>
Cutaneous larva migrans, Visceral larva migrant	<b>1</b>
Protozoa infection: Toxoplasmosis, Cryptosporidiosis, Giadiasis, Sarcocytosis	<b>1</b>
Babesiosis, Balantidiasis, Lishmaniasis, Trypanosomiasis	<b>1</b>
Fungal infection: Dematomycesis, Actinomycesis, Blastomycesis	<b>1</b>
Candidiasis, Histoplosmosis, Ring worm, Nocardiosis	<b>1</b>
<b>Total</b>	<b>30</b>

**YEAR: FIFTH**

**SUBJECT: CLINIC**

**Theoretical hours:** -  
**Practical hours:** **13**  
**Units:** **13**  
**First & SECOND SEMESTERS**

Examination of animals, diagnosis of disease conditions referred to the Veterinary Teaching Hospital or through field visits. Rotations in surgery, obstetrics, poultry diseases, internal medicine and clinical pathology

**YEAR: FIFTH**

**SUBJECT: FISH DISEASES**

**Theoretical hours: 1**

**Practical hours: 2**

**Units: 2**

**FIRST SEMESTER**

<b>FISH DISEASES: THEORETICAL SUBJECTS</b>	<b>HOURS</b>
Introduction of Ichthyology and Fish Pathology	<b>1</b>
Prevention and health control	<b>2</b>
Infectious diseases	<b>4</b>
Parasitic diseases	<b>5</b>
Non infectious diseases	<b>3</b>
<b>Total</b>	<b>15</b>

<b>FISH DISEASES: PRACTICAL SUBJECTS</b>	<b>HOURS</b>
Introduction in fish breeding and diseases	<b>2</b>
External appearance for fish and anatomy	<b>2</b>
Physical and chemical property of pond water	<b>2</b>
Pond's designed	<b>2</b>
Fish feeding, breeding, and types of ponds	<b>2</b>
Sample taken and preservation	<b>2</b>
Practical examination	<b>2</b>
Practical tests and bacterial culture in fish	<b>2</b>
Parasitic tests and diagnosis methods in fish	<b>2</b>
Practical fishing and field fish exam	<b>2</b>
Diagnostic and pathological slides show	<b>2</b>
Methods with practical apply	<b>2</b>
Practical work on pathological samples for diagnosis	<b>2</b>
Pond's fertilization and it's methods	<b>2</b>
Final Practical examination	<b>2</b>
<b>Total</b>	<b>30</b>

**YEAR: FIFTH**

**SUBJECT: MEDICINE**

**Theoretical hours: 3**

**Practical hours: -**

**Units: 6**

**First & SECOND SEMESTERS**

<b>MEDICINE: THEORETICAL SUBJECTS</b>	<b>HOURS</b>
Introduction	<b>3</b>
Milk fever	<b>3</b>
Downer cow syndrom	<b>3</b>
Hypomagnesemia tetany	<b>3</b>
Pregnancy toxemia	<b>3</b>
Ketosis	<b>3</b>
Post parturant Hb uria	<b>3</b>
Azotouria	<b>3</b>
Cardiovascular system	<b>10</b>
Vitamin D deficiency (Rickets)	<b>3</b>
Ca deficiency	<b>3</b>
P deficiency	<b>3</b>
Osteomalacia	<b>2</b>
Vit A deficiency	<b>2</b>
Vit E deficiency	<b>2</b>
Vit K deficiency	<b>2</b>
Cu deficiency	<b>2</b>
Iodine deficiency	<b>2</b>
Mn, Zn, Co deficiency	<b>6</b>
Vit C deficiency, Thiamin def., Riboflavin def.	<b>2</b>
Nicotinic acid def., Pyridoxine def., Choline def.	<b>2</b>
Blood and blood forming organs	<b>15</b>
Urinary system	<b>10</b>
<b>Total</b>	<b>90</b>

**YEAR: FIFTH**

**SUBJECT: MORBID ANATOMY AND FORENSIC MEDICINE**

**Theoretical hours: 1**

**Practical hours: 2**

**Units: 2**

**SECOND SEMESTER**

<b>MORBID ANATOMY AND FORENSIC MEDICINE: THEORETICAL SUBJECTS</b>	<b>HOURS</b>
Death, cause of general death, suncop, asphyxia	<b>1</b>
Drowning, sudden death, death from starvation, death from cold, death from effect of heat, death from electric current	<b>1</b>
Burns and it's types	<b>1</b>
Wounds and it's types	<b>1</b>
Toxin and it's types	<b>1</b>
Bovine diseases: Tuberculosis, Leptospirosis, Contagious bovine pleuro pneumonia, Colibacillosis, Shipping fever, Cattle plague, Bovine malignant catarrhal, Foot and mouth disease, Bovine viral diarrhea, Actinobacillosis, Actinomycosis, Theileriosis, Anaplasmosis, Babesiosis, Lumpy skin disease	<b>3</b>
Ovine disease: contagious ecthyma, Sheep pox, Foot root, Black leg, Lamb dysentery, Anthrax, Listeriosis, Enterotoxaemia, Black disease	<b>2</b>
Equine disease: Strangles, Glanders, Shigellosis, Epizooyic lymphangitis, Ulcerative lymphangitis, Equine infectious anemia, Equine influenza	<b>3</b>
Canine and Feline disease: Rabies, Canine distemper, Canine viral hepatitis, Feline parvo virus, Panleukopenia	<b>1</b>
Lab animal disease: Tyzzer's disease, Coccidiosis in rabbit, External parasite	<b>1</b>
<b>Total</b>	<b>15</b>

<b>MORBID ANATOMY AND FORENSIC MEDICINE: PRACTICAL SUBJECTS</b>	<b>HOURS</b>
Introduction & P.M report	<b>2</b>
Post mortem technique for large animals + examination of specimen of disease	<b>2</b>
PM technique for lab animals + examination of organs + specimen of disease	<b>4</b>
Data show of Bovine diseases: Tuberculosis, Leptospirosis, Contagious bovine pleuro pneumonia, Colibacillosis, Shipping fever, Cattle plague, Bovine malignant catarrhal, Foot and mouth disease, Bovine viral diarrhea, Actinobacillosis, Actinomycosis, Theileriosis, Anaplasmosis, Babesiosis, Lumpy skin disease	<b>10</b>
Data show of Ovine disease: contagious ecthyma, Sheep pox, Foot root, Black leg, Lamb dysentery, Anthrax, Listeriosis, Enterotoxaemia, Black disease	<b>6</b>
Data show of Equine disease: Strangles, Glanders, Shigellosis, Epizooyic lymphangitis, Ulcerative lymphangitis, Equine infectious anemia, Equine influenza	<b>4</b>
Data show of Canine and Feline disease: Rabies, Canine distemper, Canine viral hepatitis, Feline parvo virus, Panleukopenia	<b>2</b>
<b>Total</b>	<b>30</b>

**YEAR: FIFTH**

**SUBJECT: OBSTETRICS**

**Theoretical hours: 1**

**Practical hours: 2**

**Units: 4**

**First & SECOND SEMESTERS**

<b>OBSTETRICS: THEORETICAL SUBJECTS</b>	<b>HOURS</b>
Introduction, historical of the Obstetrics.	<b>1</b>
Physiology of pregnancy.	<b>2</b>
Development of the embryo.	<b>1</b>
Maternal recognition of pregnancy.	<b>1</b>
Fetal membranes and fetal fluids.	<b>1</b>
Position of uterus during the pregnancy period.	<b>1</b>
Gestation length and the factors influencing it.	<b>1</b>
Maintenance of pregnancy	<b>1</b>
Pregnancy Diagnosis	<b>2</b>
Problems of pregnancy	<b>2</b>
Parturition	<b>2</b>
Dystocia: causes	<b>1</b>
Dystocia: treatment	<b>1</b>
Induction of Parturition	<b>1</b>
Postpartum Care	<b>1</b>
Puerperium period	<b>1</b>
Uterine involution	<b>1</b>
Uterine defense mechanism	<b>1</b>
Puerperial diseases: Retained placenta	<b>1</b>
Uterine prolapse	<b>1</b>
Metritis: Causes	<b>1</b>
Metritis: Treatment	<b>1</b>
Ultrasonography	<b>1</b>
Sperm sexing	<b>1</b>
Embryo Transfer	<b>1</b>
Cloning and splitting of embryo	<b>1</b>
<b>Total</b>	<b>30</b>

<b>OBSTETRICS: PRACTICAL SUBJECTS</b>	<b>HOURS</b>
Fetal membranes	<b>4</b>
General examine of genital system	<b>4</b>
Pregnancy diagnosis	<b>4</b>
Uterine torsion	<b>4</b>
Fetal anomalies	<b>4</b>
Normal position of parturition	<b>4</b>
Fetal causes of Dystocia	<b>4</b>
Maternal causes of Dystocia	<b>4</b>
Obstetrical equipments	<b>4</b>
Obstetrical maneuvers	<b>4</b>
Caesarian section	<b>4</b>
Fetotomy	<b>4</b>
Uterine and vaginal prolapse	<b>4</b>
Retained placenta	<b>4</b>
Ovariectomy	<b>4</b>
<b>Total</b>	<b>60</b>

**YEAR: FIFTH****SUBJECT: RESEARCH PROJECT****Theoretical hours: 1****Practical hours: -****Units: 2****FIRST & SECOND SEMESTERS**

<b>RESEARCH PROJECT: THEORETICAL SUBJECTS (1<sup>ST</sup> SEMESTER)</b>	<b>HOURS</b>
Research methods and hypothesis testing	<b>3</b>
Defining problems	<b>3</b>
Designing study	<b>3</b>
Data management	<b>3</b>
Writing reports	<b>3</b>
<b>Total</b>	<b>15</b>

**SECOND SEMESTER:**

The course also involves conducting a clinical research project, writing a report and defending it before an examining committee.

**YEAR: FIFTH**

**SUBJECT: SUMMER CLINIC**

<b>Theoretical hours:</b>	<b>-</b>
<b>Practical hours:</b>	<b>3</b>
<b>Units:</b>	<b>2</b>

The SUMMER CLINIC is held during summer after passing the fourth year (successfully).

Examination of animals, diagnosis of disease conditions referred to the Veterinary Teaching Hospital or through field visits. Rotations in surgery, obstetrics, poultry diseases, internal medicine and clinical pathology.

**YEAR: FIFTH**

**SUBJECT: SURGERY**

**Theoretical hours: 2**

**Practical hours: 2**

**Units: 6**

**First & SECOND SEMESTERS**

<b>SURGERY : THEORETICAL SUBJECTS</b>	<b>HOURS</b>
Digestive system: Affection of salivary gland	2
Affection of tongue	2
Affection of teeth	2
Affection of esophagus	2
Affection of stomach	2
Affection of small intestine	2
Affection of digestive accessory organs	2
Facial paralysis	2
Respiratory system: Affection of upper tract	2
Affection of larynx and guttural	2
Affection lungs and trachea	4
Affection of chest wall	2
Cardiovascular system: cardial anomalies	2
Pericarditis	2
Hernia	2
Treatment of Fistula whether	2
Affection of male genital system	2
Affection female genital system	2
Treatment Pneumovagina	2
Affection of penis and prepuce	2
Preparation of teaser	2
Castration	2
Urinary system: Affection of kidney	2
Affection of ureter	2
Affection of urinary bladder	2
Affection of urethra	2

<b>SURGERY : THEORETICAL SUBJECTS</b>		<b>HOURS</b>
Affection of teat and udder		<b>2</b>
Ear surgery		<b>2</b>
Eye surgery		<b>2</b>
<b>Total</b>		<b>60</b>

<b>SURGERY: PRACTICAL SUBJECTS</b>		<b>HOURS</b>
Oesophagotomy		<b>4</b>
Tracheotomy		<b>4</b>
Intestinal surgery		<b>4</b>
Enterotomy		<b>4</b>
Castration		<b>4</b>
Gastrotomy		<b>4</b>
Mammectomy		<b>4</b>
Teat fistula		<b>4</b>
Nephrectomy		<b>4</b>
Ovariohysterectomy		<b>4</b>
Cystotomy and Cystectomy		<b>4</b>
Urethrostomy and Urethrotomy		<b>4</b>
Splenectomy		<b>4</b>
Rumenotomy		<b>4</b>
Ophthalmic surgery		<b>4</b>
<b>Total</b>		<b>60</b>

**YEAR: FIFTH**

**SUBJECT: VETERINARY ETHICS**

**Theoretical hours: 1**

**Practical hours: -**

**Units: 1**

**SECOND SEMESTER**

<b>Veterinary ethics: Theoretical Subjects</b>	<b>Hours</b>
Veterinarians Medical Doctor Duties	<b>1</b>
Ethics of Veterinarians	<b>1</b>
Veterinary job Licenses	<b>1</b>
Veterinary Medicine clinic	<b>1</b>
Veterinary Medical Services	<b>1</b>
Veterinary Medical consultant burses	<b>1</b>
Order for giving consultant	<b>1</b>
Graduating consultant of veterinaries	<b>1</b>
Job Ethics	<b>7</b>
<b>Total</b>	<b>15</b>

**YEAR: FIFTH**

**SUBJECT: VETERINARY PUBLIC HEALTH**

**Theoretical hours: 2**

**Practical hours: 2**

**Units: 6**

**First & SECOND SEMESTERS**

<b>VETERINARY PUBLIC HEALTH : THEORETICAL SUBJECTS</b>	<b>HOURS</b>
The food animals	1
Anatomy, meat composition and quality	2
Meat plant construction and equipment	3
Preservation of meat	2
By- product treatment	3
Plant sanitation	2
From farm to slaughter	1
Human slaughter	2
Examination	1
Meat hygiene practice	3
Red meat inspection	2
Poultry slaughter and inspection	2
Exotic meat production	1
Chemical residues in meat	2
Food poisoning	3
Occupational injuries and infection	2
Pathology	2
Examination	1
Bacterial diseases	2
Viral diseases	1
Mycotic diseases	1
Diseases caused by arthropod parasites	1
Diseases caused by helminthes	1
Metabolic diseases	2
Nutritional disorders	2
Environmental pollutants	2

VETERINARY PUBLIC HEALTH : THEORETICAL SUBJECTS	HOURS
Examination	1
Milk and chemical composition of raw milk.	2
Method of treating milk.	1
Microbiological of dairy milk.	2
Safety and quality of dairy products.	1
Milk from farm to plant .	1
Mammary gland and milk biosynthesis.	1
Hygiene by design.	2
Pathogenic of raw milk	2
<b>Total</b>	<b>60</b>

VETERINARY PUBLIC HEALTH: PRACTICAL SUBJECTS	HOURS
Poultry slaughterhouse	2
Poultry carcasses: pathological cases, examination and judgments	2
Poultry carcasses portioning	2
Meat quality	4
Examining the head and judgments	4
Examining the carcasses and judgments	4
Examining the viscera and judgments	4
Comparative anatomy of carcass organs	4
Specifications of meat, fats of animals	2
Bleeding	2
Acidity and abnormal odors, jaundice	2
Teething of animals	2
Exam	2
Milk specific gravity	2
Determination of fat and total solids in milk	2
Adulteration of milk	2
Antibiotic residues in milk	2
Mastitis tests	2
Determination of aflatoxins in milk	2
Exam	2
Egg examination	2
Fish examination	2
Canned food examination	2
Meat microbiology	4
<b>Total</b>	<b>60</b>

**Notes:**

- The total subjects to be taught in FIRST & SECOND SEMESTERS during the five years of college are 40.
- The total of the required units for graduation are 204.
- The language of teaching is English except for the course of democracy and human rights in the first year which is taught in Arabic.

## CURRICULUM OF THE COLLEGES OF VETERINARY MEDICINE (2010-2011)

### FIRST YEAR (CURRICULUM)

Course	Lecture (h)	Lab (h)	Total credit
Biology	2	2	6
General chemistry	2	2	6
Anatomy	2	2	6
Animal management	2	2	6
Poultry management (2 <sup>nd</sup> semester)	1	2	2
Computer	1	2	4
Democracy and human rights	2	-	4
<b>Total</b>	<b>12</b>	<b>12</b>	<b>34</b>

### SECOND YEAR (CURRICULUM)

Course	Lecture (h)	Lab (h)	Total credit
Biochemistry	3	2	8
Physiology	4	3	10
Anatomy	2	3	7
Histology	2	3	7
Animal nutrition	2	2	6
Genetics (1 <sup>st</sup> semester)	2	-	2
Embryology (2nd semester)	1	-	1
Statistics (2nd semester)	2	2	3
<b>Total</b>	<b>18</b>	<b>14</b>	<b>44</b>

THIRD YEAR (CURRICULUM)

Course	Lecture (h)	Lab (h)	Total credit
Pathology	3	3	9
Pharmacology	3	2	8
Parasitology	3	2	8
Microbiology	3	3	9
Immunology (1 <sup>st</sup> semester)	2	2	3
Toxicology (2 <sup>nd</sup> semester)	2	-	2
Clinic (2 <sup>nd</sup> semester)	-	2	1
Total	16	14	40



FOURTH YEAR (CURRICULUM)

Course	Lecture (h)	Lab (h)	Total credit
Clinic	-	4	4
Medicine	3	-	6
Infectious diseases & epidemiology	3	-	6
Theriogenology	2	2	6
Poultry diseases	2	2	6
Surgery	3	2	8
Clinical pathology	1	2	4
Zoonotic diseases (2 <sup>nd</sup> semester)	2	-	2
Total	16	12	42

FIFTH YEAR (CURRICULUM)			
Course	Lecture (h)	Lab (h)	Total credit
Clinic	-	13	13
Medicine	3	-	6
Surgery	2	2	6
Veterinary public health	2	2	6
Obstetrics	1	2	4
Research project	1	-	2
Fish diseases (1 <sup>st</sup> semester)	1	2	2
Morbid anatomy & forensic medicine (2 <sup>nd</sup> semester)	1	2	2
Veterinary ethics (2 <sup>nd</sup> semester)	1	-	1
Summer Clinic	-	3	2
<b>Total</b>	<b>12</b>	<b>26</b>	<b>44</b>

**Total No. of subjects: 40**

**Total No. of units: 204**



**The consortium of Deans  
for the Veterinary Medicine  
Colleges  
in Iraq**