Ministry of Higher Education and Scientific Research
University of Basrah
College of Veterinary Medicine

Vocabulary curriculum for courses
College of Veterinary Medicine
Iraqi Universities

By

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Second Edition
2017

Vocabulary curriculum for courses College of Veterinary Medicine Iraqi Universities

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2017

Contents List

The credits and total credits for each Subject and levels

The credits of first-Year Level

Subject	Theoretical	Practical	credits	Total credits
Biology I	2 hours	2 hours	3	6
Biology II	2 hours	2 hours	3	
Anatomy I	2 hours	3 hours	4	8
Anatomy II	2 hours	3 hours	4	
Animal Management I	2 hours	2 hours	3	6
Animal Management II	2 hours	2 hours	3	
General Chemistry I	2 hours	2 hours	3	6
General Chemistry II	2 hours	2 hours	3	
Computer I	1 hour	2 hours	2	4
Computer II	1 hour	2 hours	2	
English language I	1 hour	-	1	2
English language II	1 hour	-	1	
حقوق الانسان I	2 hours	-	2	4
حقوق الانسان II	2 hours	-	2	
Poultry Management	1 hour	2 hours	2	2
اللغة العربية	1 hour		1	1
Total				39

The credits of second-Year Level

Subject	Theoretical	Practical	credits	Total credits
Anatomy III	2 hours	2 hours	3	6
Anatomy IV	2 hours	2 hours	3	
Histology I	2 hours	3 hours	4	8
Histology II	2 hours	3 hours	4	
Physiology I	4 hours	2 hours	5	10
Physiology II	4 hours	2 hours	5	
Biochemistry I	3 hours	2 hours	4	8
Biochemistry II	3 hours	2 hours	4	
Animal nutrition I	2 hours	2 hours	3	6
Animal nutrition II	2 hours	2 hours	3	
Genetics	2 hours	-	2	2
Embryology	1 hour	-	1	1
Statistics	2 hours	2 hours	3	3
Total				44

The credits of third-Year Level

Subject	Theoretical	Practical	credits	Total credits
General Pathology	3 hours	3 hours	5	10
Systematic Pathology	3 hours	3 hours	5	
Microbiology I	3 hours	2 hours	4	8
Microbiology II	3 hours	2 hours	4	
Parasitology I	3 hours	2 hours	4	8
Parasitology II	3 hours	2 hours	4	
Immunology	2 hours	2 hours	3	3
Pharmacology I	3 hours	2 hours	4	8
Pharmacology II	3 hours	2 hours		
Toxicology	2 hours	-	2	2
Virology	2 hours	2 hours	3	3
Clinic I		2 hours	1	1
Total				43

The credits of fourth-Year Level

Subject	Theoretical	Practical	credits	Total credits
Medicine I	3 hours	-	3	6
Medicine II	3 hours	-	3	
Surgery I	3 hours	2 hours	4	8
Surgery II	3 hours	2 hours	4	
Poultry Diseases I	2 hours	2 hours	3	6
Poultry Diseases II	2 hours	2 hours	3	
Clinical pathology I	1 hour	2 hours	2	4
Clinical pathology II	1 hour	2 hours	2	
Infectious and epidemiological diseases I	3 hours		3	6
Infectious and epidemiological diseases II	3 hours		3	
Morbid Anatomy I	1 hour	2 hours	2	4
Morbid Anatomy II	1 hour	2 hours	2	
Clinic II		4 hours	2	4
Clinic III		4 hours	2	
Female fertility and venereal diseases	2 hours	2 hours	3	3
Obstetrics	2 hours	2 hours	3	3
Zoonotic diseases	2 hours		2	2
Total				46

The credits of fifth-Year Level

Subject	Theoretical	Practical	credits	Total credits
Medicine III	3 hours	-	3	6
Medicine IV	3 hours	-	3	
Surgery III	2 hours	2 hours	3	6
Surgery IV	2 hours	2 hours	3	
Food hygienic I	2 hours	2 hours	3	6
Food hygienic II	2 hours	2 hours	3	
Fish diseases	2 hours	2 hours	3	3
Artificial Insemination	1 hour	2 hours	2	2
Clinic IV		14 hours	7	7
Clinic V		12 hours	6	6
Summer clinic		3 hours	2	2
Reproductive Techniques	1 hour	2 hours	2	2
Forensic Medicine	1 hour	2 hours	2	2
Veterinary ethics	1 hour	-	1	1
Research Projects I	1 hour	-	1	2
Research Projects II	1 hour	-	1	
Total				45

Total credits for each levels

Level	Total credits
First-Year Level	39
Second-Year Level	44
Third-Year Level	43
Fourth-Year Level	46
Fifth-Year Level	45
Total	217

- **Course Level:** First-Year Level
- **Course Name**: Biology I
- **Theoretical:** 2 hours
- **Practical:** 2 hours
- **Semester:** First
- **Unit:**3

Course Objectives

Upon completion of this course, the student should be familiarized with:

1. To provide students with important knowledge about Introduction to the nature of life, including the diversity of microbial and animal life; the nature of heredity; evolution; and principles of Biology. Intended for life science majors.
2. To make students understand the chemical, molecular, and cellular basis of life; form and function of microbial, and animal life. Intended for life science majors.
3. To make students understand the Introduction to the principles of transmission and molecular genetics of animals, and bacteria. Recombination, structure and replication of DNA, gene expression, cloning, quantitative and population genetics**.**

Course Contents

week	Topics	Hours
	Theoretical Subject	
1	Introduction and definition of term,	2
2	Origin of life	2
3 and 4	The cell: The cells structure composition and function	4
5	Taxonomy of the kingdom	2
6	Phylum : protozoa	4
7 and 8	Phylum: Platyhelminthes	4
9 and 10	Phylum: Nemathelminthes	4
11 and 12	Phylum: Arthropoda	4
13	Phylum: Chordata	4
Total		**30**

Course Contents

week	Topics	Hours
	Practical Subject	
1	The microscope	2
2 and 3	The cell	4
4	Protozoa :Mastigophora	2
5	Protozoa : Sarcodena	2
6	Protozoa :Ciliphora	2
7	Protozoa : Sporozoa	2
8	Nematoda: Ascaris	2
9	Nematoda: Ancylostoma	2
10	Trematoda: Fasciola	2
11	Trematoda: Schistosoma	2
12	Cestoda: Taenia	2
13	Mosquitoes	2
14 and 15	Phylum: Chordata, disseating	4
Total		**30**

Mode of Assessment

Assessment	Score	Period
First Exam	10	5-6th weeks
Second Exam	10	10-11th weeks
Practical Exam	10	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th
Final Exam	60	After the 16th.

Textbooks and Recommended References

1. Campbell Biology (9th Edition) : by Jane B. Reece (Author), Lisa A. Urry (Author), Michael L. Cain (Author), Steven A. Wasserman (Author), Peter V. Minorsky (Author), Robert B. Jackson (Author)
2. Campbell Biology: Concepts & Connections: Jane B. Reece , Martha R. Taylor , Eric J. Simon , Jean L.Dickey, Kelly A. Hogan

- **Course Level:** First-Year Level
- **Course Name**: Biology II
- **Theoretical:** 2 hours
- **Practical:** 2 hours
- **Semester:** Second
- **Unit:** 3

Course Objectives

Upon completion of this course, the student should be familiarized with:

1. To provide students with important knowledge about Introduction to the nature of life, including the diversity of microbial and animal life; the nature of heredity; evolution; and principles of Biology Intended for life science majors.
2. To make students understand the chemical, molecular, and cellular basis of life; form and function of microbial, and animal life. Intended for life science majors.
3. To make students understand the Introduction to the principles of transmission and molecular genetics of animals, and bacteria. Recombination, structure and replication of DNA, gene expression, cloning, quantitative and population genetics.

Course Contents

week	Topics	Hours
	Theoretical Subject	
1	Living organism	2
2	Comparison between Prokaryote and Eukaryote cells	2
3 and 4	Mitosis: Replication of Eukaryote cells	4
5 and 6	Meiosis :Reduction division and Gametogenesis	4
7	Types of living tissues	2
8	Stem cells	2
9	Blood composition and function	2
10	General characteristic of Bacteria	2
11	General characteristic of virus	2
12	Introduction to molecular Biology	2
13	Nucleic acid types and functions	2
14	Gene and chromosomes	2
15	Gene engineering	2
Total		**30**

Course Contents

week	Topics	Hours
	Practical Subject	
1	Prokaryote and Eukaryote cells	2
2	Mitosis	2
3 and 4	Bacterial staining	4
5 -8	Types of tissues	8
9 and 10	Blood film	4
11-15	How to use laboratory equipment's (Balance, water bath ,pH meter ,centrifuge ,incubator,etc…)	10
Total		**30**

Mode of Assessment

Assessment	Score	Period
First Exam	10	5-6th weeks
Second Exam	10	10-11th weeks
Practical Exam	10	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th
Final Exam	60	After the 16th.

Textbooks and Recommended References

1. Campbell Biology (9th Edition) : by Jane B. Reece (Author), Lisa A. Urry (Author), Michael L. Cain (Author), Steven A. Wasserman (Author), Peter V. Minorsky (Author), Robert B. Jackson (Author)
2. Campbell Biology: Concepts & Connections: Jane B. Reece , Martha R. Taylor , Eric J. Simon , Jean L.Dickey, Kelly A. Hogan

- **Course Level:** First Year Level
- **Course Name**: Anatomy I
- **Theoretical:** 2 hours
- **Practical:** 3 hours
- **Semester:** First
- **Unit:** 4

Course Objectives

Upon completion of this course, the student should be familiarized with:

This course will introduce the students to basic anatomical concepts including anatomic terminologies and directional terms. The course focuses on comparative gross anatomy of the bones, muscles, skin and other organs in different animals.

Course Contents

week	Topics	Hours
	Theoretical Subject	
1	Introduction: Anatomy and methods of study ,Topographic and descriptive terms.	2
2-4	General osteology: The skeleton, classification of bones , structure of bones , development and growth of bones, chemical and physical properties of bone, the vertebral column, ribs ,sternum , bone of thoracic limb ,bones of pelvic limb	6
5 and 6	Mycology : 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.	4
7-9	General syndesmology (arthrology) Fibrous joint, cartilaginous joints , synovial joint , joint of thoracic limb , joints of pelvic limb.	6
10-12	Sense organs: The eye (tunics, parts, chambers, muscles), blood supply, nerve supply, lacrimal apparatus, ear (divisions and cavities).	6
13-15	Endocrine gland: Pituitary gland (hypophysis),thyroid gland,parathyroid gland, adrenal gland ,pineal body	6
Total		**30**

Course Contents

week	Topics	Hours
	Practical Subject	
1	Bones of thoracic limb and joints, scapula of horse and comparative anatomy	3
2	Humerus and comparative anatomy .	3
3	Radius and ulna with comparison	3
4	Carpal bones in horse and metacarpal and phalanges bones .	3
5	Ribs and sternum in horse	3
6	The lateral surface of shoulder muscles and arm in sheep	3
7	The medial surface of shoulder muscles and arm in sheep	3
8	Muscles of the forearm and manus (extensor and flexor)	3
9 and 10	Cervical , thoracic , lumber , sacral and coccygeal vertebrae in horse	6
11	Dissection of intrinsic muscles of shoulder and arm	3
12	Comparative anatomy of the pelvic bone	3
13	Comparative anatomy of the femur	3
14	Comparative anatomy of the tibia and fibula	3
15	Tarsus and metatarsal bone in horse	3
Total		**45**

Mode of Assessment

Assessment	Score	Period
First Exam	10	5-6th weeks
Second Exam	10	10-11th weeks
Practical Exam	10	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks and Recommended References

1.Veterinary anatomy by Dyce-Wensing 2010
2.Anatomy of domestic animals by R-Getty

- **Course Level:** First Year Level
- **Course Name:** Anatomy II
- **Theoretical:** 2 hours
- **Practical:** 3 hours
- **Semester:** Second
- **Unit:** 4

Course Objectives

Upon completion of this course, the student should be familiarized with:

This course will introduce the students to basic anatomical concepts including anatomic terminologies and directional terms. The course focuses on comparative gross anatomy of the viscera and other organs in different animals.

Course Contents

week	Topics	Hours
	Theoretical Subject	
1 and 2	**Common integument** Foot of the horse, hoof, stay apparatus of the thoracic limb.	4
3-5	**Urinary system** 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 its fixation (ligaments) in domestic animals, blood supply and venous drainage and nerve supply of kidneys, ureter, urinary bladder with its ligaments, urethra, peritoneal reflections in pelvic cavity of males and females.	6
6-9	**Male genital system** Development, testis, testis structure, comparison of the testis in domestic animals, blood and nerve supply, epididymis, ducts 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.	8
10-13	**Female genital system** 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.	8
14 and 15	**Mammary gland** Embryonic development of the mammary gland, types of mammary glands with its location in domestic animals, glandular structure and ducts of mammary gland, suspensory ligament of udder, blood and nerves supply of the udder.	4
Total		**30**

Course Contents

week	Topics	Hours
	Practical Subject	
1	The hoof in horse and foot of the ox	3
2	Flexor and extensor muscles of the pelvic limb in sheep	3
3	Inguinal region and mammary gland in sheep	3
4	Urinary system (kidneys, ureter and urinary bladder)	3
5	Muscles of the sublumber , hip in sheep	3
6 and 7	Circulatory system: pericardium and the heart, chambers of the heart and the major vessels of the heart.	6
8	Arteries and sacrolumbar plexuses and nerves of pelvic limb	3
9	Inguinal region and mammary gland in sheep	3
10 and 11	Male and female reproductive system in sheep	6
12	Penis and accessory sex glands	3
13 and 14	Female and female reproductive system in sheep	6
15	Muscles of the thigh in sheep	3
Total		**45**

Mode of Assessment

Assessment	Score	Period
First Exam	10	5-6th weeks
Second Exam	10	10-11th weeks
Practical Exam	10	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks and Recommended References

1.Veterinary anatomy by Dyce-Wensing 2010
2.Anatomy of domestic animals by R-Getty

- **Course Level:** First-Year Level
- **Course Name:** Animal Management I
- **Theoretical:** 2 hours
- **Practical:** 2 hours
- **Semester:** First
- **Unit:** 3

Course Objectives

Upon completion of this course, students will be able to:

1. Critically evaluate the theories and methods of animal behavior and/or welfare research.
2. Assess and evaluate the welfare of various animal species used in livestock production, research, zoos, as companions, or other situations.
3. Compare and contrast the various philosophical views concerning our duties toward animals.
4. Evaluate current issues involving animals in society and formulate a justifiable argument based on objective and critical evaluation of both the philosophical views and scientific data.

Course Contents

Week	Topics	Hours
	Theoretical Subject	
1	Animal wealth in Iraq and its importance	2
2	Factors limiting animal production in tropics e.g. Iraq	2
3	Domestication of different animals	2
4	Duties of the veterinarian	2
5	Some kinds of records for farm animals	2
6-10	**Horses** Classes of horses. Breeds of horses. Identification and description of horses. Terminology of horses. 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). Origin of the horses from animal kingdom. Feeding and watering	10
11-15	**Cattle** Classes of cattle(cows and water- buffaloes) Breeds of cattle. Identification and description of cattle and water buffaloes. Terminology of cattle. Origin of cattle and water buffaloes from animal kingdom. Breeding of cattle (age of puberty , sexual maturity , signs of oestrous, signs of pregnancy, diagnosis of pregnancy , signs of birth, calving	10

	(parturition), care of new – born calf, systems of weaning, care of dams , care of bull (stud), milking process. Growth rate of cattle Twinning in cattle.	
Total		**30**

Course Contents

Week	Topics	Hours
	Practical Subject	
1 and 2	External features of farm animal.	4
3-7	Methods of approaching , restraint and casting of horses	10
8-11	Methods of approaching , restraint and casting of cattle, camel leading	8
12-15	Methods of approaching , restraint and casting of sheep for different purposes	8
Total		**30**

Mode of Assessment

Assessment	Score	Period
First Exam	10	5-6th weeks
Second Exam	10	10-11th weeks
Practical Exam	10	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks And Recommended References

- AL-Wahab,R. and Bryant,M.J. Animal production.
- Anonymous, Sheep Breeding Management. U.K.
- Col,H.H. and Ronning,M. Animal Agriculture.
- Miller,W.C. practical Animal Husbandry.
- عبدالكريم محمود عبدالكريم , وليد خضير المراني , رياض محمد حسن , ادارة الحيوان

- **Course Level:** First-Year Level
- **Course Name:** Animal Management II
- **Theoretical:** 2 hours
- **Practical:** 2 hours
- **Semester:** Second
- **Unit:** 3

Course Objectives

Upon completion of this course, students will be able to:

1.Critically evaluate the theories and methods of animal behavior and/or welfare research.
2.Assess and evaluate the welfare of various animal species used in livestock production, research, zoos ,as companions, or other situations.
3.Compare and contrast the various philosophical views concerning our duties toward animals.
4.Evaluate current issues involving animals in society and formulate a justifiable argument based on objective and critical evaluation of both the philosophical views and scientific data.

Course Contents

Week	Topics	Hours
1-5	**Theoretical Subject** **Sheep and Goats** Types and breeds of sheep and goats. Identification and description of sheep. Terminology of sheep. Origin of sheep and goats from animal kingdom. 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 newborn , adoption or fostering on orphan lamb, suckling and weaning , care of rams , breeding seasons, application of hormones, effect of artificial light. Feeding and managing type of feed in pregnancy and parturition, feeding of lambs and their fattening problems of feeding. Grazing management. Milking production and udder. Wool and mohair. Livestock building and equipment (disinfection, construction, ventilation standards).	10
6 and 7	**Camels** Types and breeds of camels. Origin of camel from animal kingdom. General characters. Breeding camels: (age of puberty, sexual maturity, signs of estrous, signs of pregnancy, diagnosis of pregnancy, suckling, weaning and care	4

	of the young camel). Feeding and watering of camels.	
8 and 9	**Farm animal health and diseases** Signs of health in animals (pulse rate, respiration rate, body temperature, condition of the skin appetence, defecation, urination, animal postures, routes of drug administration. Diseases of animals (cattle, sheep, horses), hygienic methods of disposal of dead animals.	4
10 and 11	Sanitation foot bath. Transportation of animals. Bedding (litter) and its importance for farm animals. Behavior of farm animals.	4
12 and 13	Examinations for soundness Examination of horses. Examination of cattle. Examination of sheep. Examination of camels.	4
14 and 15	Dentition How to age horses. How to age cattle. How to age sheep. How to age camels.	4
Total		**30**

Course Contents

Week	Topics	Hours
	Practical Subject	
1 - 3	Bad vices of horses and cow	6
4 - 7	Mouth ages for different animals, signs of heath: pulse and respiration, body temperature mucous membranes condition	8
8 - 10	Care of farm animals, grooming, washing, heating, clipping, drying of wet horses	6
11 and 12	Sheep dipping	4
13 and 14	Shoeing of horses	4
15	Exam	2
Total		**30**

Mode of Assessment

Assessment	Score	Period
First Exam	10	5-6th weeks
Second Exam	10	10-11th weeks
Practical Exam	10	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th
Final Exam	60	After the 16th.

Textbooks And Recommended References

- AL-Wahab,R. and Bryant,M.J. Animal production.
- Anonymous, Sheep Breeding Management. U.K.
- Col,H.H. and Ronning,M. Animal Agriculture.
- Miller,W.C. practical Animal Husbandry.
- عبدالكريم محمود عبدالكريم , وليد خضير المراني , رياض محمد حسن , ادارة الحيوان

- **Course Level:** First-Year Level
- **Course Name**: General Chemistry I
- **Theoretical:** 2 hours
- **Practical:** 2 hours
- **Semester:** First
- **Unit:** 3

Course Objectives

Upon completion of this course, the student should be familiarized with:

1.To provide students with important knowledge about the content, principles and methods of chemistry; Develop an appreciation for the relevance of chemistry in our daily lives; Improve analytical and problem-solving skills; Learn and improve experimental skills and methods.

2.To make students understand the solving stoichiometry problems involving solids, liquids, gases and solutions. Balance chemical equations, classify reactions, identify and analyze the role of the chemicals involved in chemical reactions.

3.To make students familiar with manipulate thermochemical equations and calculate the amount of energy involved in chemical reactions. Predict physical and chemical properties of elements based on electronic structure and location in the Periodic Table.

4.Students will be trained on how they deal with Predict physical and chemical properties of compounds based on chemical bonding, geometry and intermolecular interactions.

5.To make students familiarized with Predict the behavior of gases while undergoing changes in volume, pressure, temperature and quantity.

Course Contents

week	Topics	Hours
	Theoretical Subject	
1 and 2	**Atoms and electronic structure**:- Atomic and mass number, isotopes, quantum numbers and atomic orbitals, electronic configuration, periodic table, ionization energy, atomic radii, electronegativity, electron affinity.	4
3 - 5	**Types of the chemical bonds**:- Covalent, coordinate covalent bonds, hydrogen bonding, hybridization theory(sp^{-} , sp^{2-} , sp^{3-} hybridization), atomic- , formula-, and molecular mass.	6
6 and 7	**Acid base theory**:- Definition of acids and bases, dissociation constant, pH value in different solutions(strong bases, weak acids or weak bases).	4
8 and 9	**Volumetric analysis**:- Titration of acids and bases, definition of titration, indicator, equivalent point, end point, standard solution, normal solution, molar solution. The equivalent weights in neutralization reactions, formula weight, calculation of the normality of concentrated acids. Buffer solution , biochemical buffers.	4

10 and 11	**Organic chemistry**:- Functional groups, alkanes and cycloalkanes (nomenclature, synthesis and reactions). Alkenes(nomenclature, synthesis and reactions). Chemical test of alkenes.	4
12 and 13	**Alkynes and aromatic compounds**:- Synthesis, reactions and chemical test of alkynes. Benzene(nomenclature and electrophilic substitution), reaction of the side chain of alkyl benzene.	4
14 and 15	**Organichalides, ethers, alcohols and phenols**:-Nomenclature, synthesis and reactions. Chemical test of alcohols.	4
Total		**30**

Course Contents

week	Topics	Hours
	Practical Subject	
1 and 2	Qualitative analysis of cations	4
3 and 4	Analysis of group(1) Ions. (Ag,Hg, Pb)	4
5 and 6	Analysis of mixture of group(1) ions.	4
7 and 8	Analysis of group (2) ions. Cu,Cd,bi,Hg).	4
9 and 10	Analysis of mixture of group(2) ions.	4
11 and 12	Analysis of mixture of group(1) and group(2).	4
13	Titration, practice on titration with water	3
14	Preparation of standard Na_2CO_3 solution	3
Total		**30**

Mode of Assessment

Assessment	Score	Period
First Exam	10	5-6th weeks
Second Exam	10	10-11th weeks
Practical Exam	10	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks and Recommended References

- Mary Anna Thrall , Glade Weiser , Robin Allison , Terry W. Campbell,September 2012, ©2012, Wiley-Blackwell. Veterinary Hematology and Clinical Chemistry, 2nd Edition

- **Course Level:** First-Year Level
- **Course Name**: General Chemistry II
- **Theoretical:** 2 hours
- **Practical:** 2 hours
- **Semester:** Second
- **Unit:** 3

Course Objectives

Upon completion of this course, the student should be familiarized with:

1.To provide students with important knowledge about the content, principles and methods of chemistry; Develop an appreciation for the relevance of chemistry in our daily lives; Improve analytical and problem-solving skills; Learn and improve experimental skills and methods.

2.To make students understand the solving stoichiometry problems involving solids, liquids, gases and solutions. Balance chemical equations, classify reactions, identify and analyze the role of the chemicals involved in chemical reactions.

3.To make students familiar with manipulate thermochemical equations and calculate the amount of energy involved in chemical reactions. Predict physical and chemical properties of elements based on electronic structure and location in the Periodic Table.

4.Students will be trained on how they deal with Predict physical and chemical properties of compounds based on chemical bonding, geometry and intermolecular interactions.

5.To make students familiarized with Predict the behavior of gases while undergoing changes in volume, pressure, temperature and quantity.

Course Contents

week	Topics	Hours
	Theoretical Subject	
1 and 2	Aldehydes and ketones:-Nomenclature, synthesis and reactions, chemical test of aldehydes and aldehydes or ketones with CH_3-group.	4
3 and 4	Carboxylic acids and carboxylic acid derivatives:- Nomenclature, synthesis and reactions of carboxylic acids and acid chlorides.	4
5 and 6	Antydrides, esters, and amides of carboxylic acids:- Nomenclature, synthesis and reactions. Amines, nomenclature, synthesis and reactions	4
7 and 8	Biochemistry:- introduction, water (physical and chemical properties). Carbohydrates: mono-, di-, oligo- and polysaccharides, classification, cyclization and reactions of monosaccharides.	4
9 and 10	Disaccharides (Maltose, cellobiose, Lactose and sucrose) Polysaccharides(cellouose, starch, glycogen and chitin) Lipids, fat oils: selected fatty acids and their sources, triglycerides.	4
11 and 12	Amino acids: the name and structures of amino acids, essential amino acids, synthesis and identification of amino acids.	4
13	Peptides: structures, synthesis and biosynthesis of peptides. Protein : structures and classification of proteins, high structures of proteins.	3

14	Nucleic acids: DNA (deoxyribonucleic acids), RNA (ribonucleic acids). The structure of DNA and RNA partial and complete hydrolysis of DNA, hydrolysis of RNA	3
Total		**30**

Course Contents

week	Topics	Hours
	Practical Subject	
1 and 2	Standardization of HCl solution with standard solution of Na_2CO_3.	4
3 and 4	Analysis of a mixture of $NaHCO_3$ and Na_2CO_3.	4
5 and 6	Iodometric titration:-Standardization of $Na_2S_2O_3$ and determination of Cu in $CuSO_4$ solution.	4
7 and 8	Self-indicator titration:-Standardization of $KMnO_4$ solution, determination of Fe in Fe SO_4 solution.	4
9 and 10	Precipitation titration:- Determination of chloride by Maher method.	4
11 and 12	Determination of the strength volume of H_2O_2 solution.	4
13	Crystallization.	3
14	Determination of melting point.	3
Total		**30**

Mode of Assessment

Assessment	Score	Period
First Exam	10	5-6th weeks
Second Exam	10	10-11th weeks
Practical Exam	10	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks and Recommended References

- Mary Anna Thrall , Glade Weiser , Robin Allison , Terry W. Campbell,September 2012, ©2012, Wiley-Blackwell. Veterinary Hematology and Clinical Chemistry, 2nd Edition

- **Course Level:** First-Year Level
- **Course Name**: Computer I
- **Theoretical:** 1 hours
- **Practical:** 2 hours
- **Semester:** First
- **Units:** 2

Course Objectives

Upon completion of this course, the student should be familiarized with:

1. To provide students with basic knowledge about computer.
2. Students will be develop skills to deal with modern technology.
3. Develop students' abilities and teach them to use a computer for the purpose of writing and printing of scientific researches and graduate researches.
4. To make students familiarized with Identification the components of a computer and its parts, and the most important characteristics of Computing and kinds.

Course Contents

week	Topics	Hours
	Theoretical Subject	
1	Computing Fundamentals: Recognizing computers ,How computers can be used	1
2	Elements of personal computers	1
3	Looking at the system unit	1
4	Looking at memory	1
5	What are Input/Out devices	1
6	Looking at monitor, Using video cards	1
7	Using the keyboard, Using the mouse	1
8	Recognizing ports	1
9	What are storage systems	1
10	Working with CD drives, Working with hard disk drives	1
11	Using printers	1
12	What is a software program	1
13	Looking at operating systems, Using windows XP.	1
14	Starting/shutting down the computer	1
15	Practicing with windows, Using the recycle bin	1
Total		**15**

Course Contents

week	Topics	Hours
	Practical Subject	
1	Computing Fundamentals: Recognizing computers ,How computers can be used?	2
2	Elements of personal computers	2
3	Looking at the system unit	2
4	Looking at memory	2
5	What are Input/Out devices	2
6	Looking at monitor, Using video cards	2
7	Using the keyboard, Using the mouse	2
8	Recognizing ports	2
9	What are storage systems	2
10	Working with CD drives, Working with hard disk drives	2
11	Using printers	2
12	What is a software program?	2
13	Looking at operating systems, Using windows XP.	2
14	Starting/shutting down the computer	2
15	Practicing with windows, Using the recycle bin	2
Total		**30**

Mode of Assessment

Assessment	Score	Period
First Exam	10	5-6th weeks
Second Exam	10	10-11th weeks
Practical Exam	10	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks and Recommended References

- Al- ja'bari B. 2012. Pioneers of computer.www.alrowadpub.com.
- Basic Knowledge of Computers. http://wikieducator.org/Basic Knowledge of Computers
- Computing fundamentals using Windows XP IC3 module A. learning solutions Inc. Canada. http//www.ccilearning.com/data.
- The essential guide to IC3 courseware 7605-1.2005.ccl learning solutions Inc. Canada.
- www.creativecommons.org.au. (2012). Introduction to computers,windows7 operating system.

- **Course level:** First-Year Level
- **Course Name**: Computer II
- **Theoretical:** 1 hours
- **Practical:** 2 hours
- **Semester:** Second
- **Unit:** 2

Course Objectives

Upon completion of this course, the student should be familiarized with:

1. To provide students with basic knowledge about computer.
2. Students will be develop skills to deal with modern technology.
3. Develop students' abilities and teach them to use a computer for the purpose of writing and printing
4. of scientific researches and graduate researches.
5. To make students familiarized with Identification the components of a computer and its parts, and the most important characteristics of Computing and kinds.

Course contents

week	Topics	hours
	Theoretical Subject	
1	Common Elements	1
2	Starting word/ Excel /Power point	1
3	Exiting word/ Excel /Power point	1
4	Microsoft Office Word 2007	1
5	Using the Menus	1
6	Working with Files	1
7	Identifying Problems with Files	1
8	Resolving Possible Problems with Files	1
9	Printing Files	1
10	Using Microsoft Office	1
11	Working with Documents	1
12	Selecting Text	1
13	Checking the Spelling and Grammar	1
14	Understanding how Tables Work	1
15	Working with Text	1
Total		**15**

Course contents

week	Topics	hours
	Practical Subject	
1	Common Elements	2
2	Starting word/ Excel /Power point	2
3	Exiting word/ Excel /Power point	2
4	Microsoft Office Word 2007	2
5	Using the Menus	2
6	Working with Files	2
7	Identifying Problems with Files	2
8	Resolving Possible Problems with Files	2
9	Printing Files	2
10	Using Microsoft Office	2
11	Working with Documents	2
12	Selecting Text	2
13	Checking the Spelling and Grammar	2
14	Understanding how Tables Work	2
15	Working with Text	2
Total		**30**

Mode of Assessment

Assessment	Score	Period
First Exam	10	5-6th weeks
Second Exam	10	10-11th weeks
Practical Exam	10	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks and Recommended References

- Al- ja'bari B. 2012. Pioneers of computer.www.alrowadpub.com.
- Basic Knowledge of Computers. http://wikieducator.org/Basic Knowledge of Computers
- Computing fundamentals using Windows XP IC3 module A. learning solutions Inc. Canada.
- http//www.ccilearning.com/data.
- The essential guide to IC3 courseware 7605-1.2005.ccl learning solutions Inc. Canada.
- www.creativecommons.org.au. (2012). Introduction to computers,windows7 operating system.

- **Course Level:** First-Year Level
- **Course Name**: English language I
- **Theoretical:** 1 hours
- **Semester:** First
- **Unit:** 1

Course Objectives

Upon completion of this course, the student should be familiarized with:

1.Understanding English verb forms.
2.The classification of English verb tenses.
3.Determination of the most important tenses that used in academic writing.
4.The use of passive voice form in academic writing.
5.Understanding the use of articles and prepositions in academic writing.

Course Contents

week	Topics	Hours
	Theoretical Subject	
1	Regular and irregular verbs This topic will focus on the difference between regular and irregular verbs and how their pasts and past participles are formed.	1
2 - 6	Tenses (Present simple, present continuous, present perfect, past simple, and future simple) These tenses are important in academic writing. Each tense will be taken separately.	5
7 - 9	Passive voice In this part, the student will learn how to convert active voice sentences to passive voice form. This is very important in academic writing.	3
10 and 11	Conditional sentences There are three types of conditional sentences, Type I, Type II, and type III.	2
12 and 13	Articles This will include (a, an, and the). The student will learn how to use these articles in academic writing.	2
14 and 15	Prepositions This will include (in, at, and on). These prepositions are used to indicate location and time.	2
Total		**15**

Mode of Assessment

Assessment	Score	Period
First Exam	30	10-11th weeks
Final Exam	70	After the 15th

Textbooks and Recommended References

- Murphy Raymond. English grammar in use. Cambridge University Press 2009.
- Cambridge dictionary.org
- Cambridge English (www.cambridge english.org).
- Oxford English dictionary (www.oed.org).

- **Course Level:** First-Year Level
- **Course Name**: English language II
- **Theoretical:** 1 hours
- **Semester:** Second
- **Unit:** 1

Course Objectives

Upon completion of this course, the student should be familiarized with:

1.Understanding medical term formation
2.Understanding the majority of scientific terms that are important in the veterinary field.
3.Differentiation between British and American medical terms spelling.
4.Writing short essays using academic vocabulary.
5.Making scientific presentation which is important for the students to be confident when they speak in front of audiences.

Course Contents

week	Topics	Hours
	Theoretical Subject	
1	Introduction to veterinary medicine	1
2 and 3	Basic medical term formation	2
4	Understanding histology terms	1
5	Understanding immunology and microbiology terms	1
6	Understanding physiology terms	1
7	Understanding epidemiology terms	1
8 and 9	British and American medical terms	2
10 -12	Academic writing	3
13 - 15	Scientific presentation	3
Total		**15**

Mode of Assessment

Assessment	Score	Period
First Exam	30	10-11th weeks
Final Exam	70	After the 15th

Textbooks and Recommended References

- Murphy Raymond. English grammar in use. Cambridge University Press 2009.
- Cambridge dictionary.org
- Cambridge English (www.cambridge english.org).
- Oxford English dictionary (www.oed.org).

- **Course Level:** First -Year Level
- **Course Name**: حقوق الانسان I
- **Theoretical:** 2 hours
- **Semester:** First
- **Unit:**2

Course Objectives

الهدف العام من تدريس مادة حقوق الانسان هو تعريف الطالب الجامعي بماهية حقوق الانسان من وجهات نظر عالمية وإنسانية وعلمية ودينية وبشكل موضوعي بعيداً عن التأثيرات السياسية والفكرية والمذهبية, اما الهدف الخاص هو السعي لإحداث تغيير في سلوك الطالب بما يتوافق مع الهدف العام من خلال توجيه انتباه الطالب الى المضامين الحقيقية لحقوق الانسان وأبعادها القانونية ودراسة الاعلانات والمواثيق الدولية.

Course Contents

week	Topics	Hours
	الموضوع النظري	
1	التطور التاريخي لفكرة حقوق الانسان.	2
2	حقوق الانسان والتعريف بها .	2
3	انواع حقوق الانسان.	2
4 and 5	المواثيق الاقليمية لحقوق الانسان .	4
6 - 8	حقوق الانسان في التشريع الاسلامي(الحقوق العامة و الخاصة).	6
9	مقارنة بين حقوق الانسان في الاسلام وفي الوثائق الوضعية الدولية	2
10	الاعلان العالمي لحقوق الانسان.	2
11-13	حقوق الانسان بين الشريعة الاسلامية والفكر القانوني.	6
14 and 15	ظاهرة الفساد الاداري مفهومه وأسبابه ومظاهره.	4
Total		**30**

Mode of Assessment

Assessment	Score	Period
Theoretical Exam	20	10-11th weeks
Assignment, Projects, Quizzes, Reports	10	1st- 15 th week
Final Exam	70	After the 16th

- **Course Level:** First-Year Level
- **Course Name:** حقوق الانسان II
- **Theoretical:** 2 hours
- **Semester:** Second
- **Unit:** 2

Course Objectives

الهدف العام من تدريس مادة حقوق الانسان هو تعريف الطالب الجامعي بماهية حقوق الانسان من وجهات نظر عالمية وإنسانية وعلمية ودينية وبشكل موضوعي بعيداً عن التأثيرات السياسية والفكرية والمذهبية، اما الهدف الخاص هو السعي لإحداث تغيير في سلوك الطالب بما يتوافق مع الهدف العام من خلال توجيه انتباه الطالب الى المضامين الحقيقية لحقوق الانسان وأبعادها القانونية ودراسة الاعلانات والمواثيق الدولية.

Course Contents

week	Topics	Hours
	الموضوع النظري	
1	الجذور الحضارية للديمقراطية في العراق.	2
2	الديمقراطية والمدخل اليها.	2
3	اركان الديمقراطية وشروط النظام الديمقراطي.	2
4 and 5	مكونات او عناصر الديمقراطية.	4
6 and 7	الشروط العامة لنجاح النظام الديمقراطي, ونظم الانتخابات.	4
8	الاليات العامة للديمقراطية.	2
9	تقييم النظام الديمقراطي.	2
10 and 11	تطبيق النظام الديمقراطي في العراق, واهم المشكلات التي واجهت تجربة الديمقراطية في العراق.	4
12 and 13	الآراء الاسلامية في نظام الحكم الديمقراطي.	4
14	الحريات العامة وأنواعها.	2
15	الحريات في الاسلام.	2
Total		**30**

Mode of Assessment

Assessment	Score	Period
Theoretical Exam	20	10-11th weeks
Assignment, Projects, Quizzes, Reports	10	1st- 15 th week
Final Exam	70	After the 16th

- **Course Level:** First-Year Level
- **Course Name:** Poultry Management
- **Theoretical:** 1 hour
- **Practical:** 2 hours
- **Semester:** Second
- **Unit:** 2

Course Objectives

Upon completion of this course, students will be able to:

1.Critically evaluate the theories and methods of animal behavior and/or welfare research.
2.Assess and evaluate the welfare of various animal species used in livestock production, research, zoos, as companions, or other situations.
3.Compare and contrast the various philosophical views concerning our duties toward animals.
4.Evaluate current issues involving animals in society and formulate a justifiable argument based on objective and critical evaluation of both the philosophical views and scientific data.

Course Contents

Week	Topics	Hours
	Theoretical Subject	
1 and 2	Poultry science and industry development- terminology-classification of poultry	2
3 and 4	Poultry breeding and strains differences-chromosomal studies-traits inheritance	2
5 and 6	Internal systems of a chicken.	2
7 and 8	Artificial hatching and hatcheries-egg storage-disinfection and fumigation	2
9 and 10	Rearing baby chicks-preparation of houses –hygiene measurements required tools.	2
11	Factors affecting egg production and feed efficiency indices.	1
12	Nutrition and rations formulation.	1
13	Design of poultry houses.	1
14	Vaccination methods – some diseases due to faulty management.	1
15	Marketing and economic.	1
Total		**15**

Course Contents

Week	Topics	Hours
	Practical Subject	
1 and 2	Phenotypic parts of chicken	4
3	Solving problems related to some inherited traits	2
4 and 5	Anatomy of birds	4
6	Demonstration of hatcheries	2
7 and 8	Demonstration of poultry houses and equipment	4
9 and 10	Solving related problems	4
11	Calculation of feed component ratio	2
12	Studying common management faults and corrections	2
13	Demonstration of possible cases	2
14 and 15	Possible visit to broiler slaughter house or video show	4
Total		**30**

Mode of Assessment

Assessment	Score	Period
First Exam	10	5-6th weeks
Second Exam	10	10-11th weeks
Practical Exam	10	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks And Recommended References

- Abbote Laboratories (1968).The chicken in anatomical Tramsparencies , U.S.A.
- Card,L.E and M.C.,Nesheim(1972).Poultry Production 11th Ed.Lea and Febiger, Philadelphia, U.S.A.
- National Research council (1984).Nutrient Requirements of Domestic Animals,NO. 1, Nutrient
- Requirements of poultry .8th Ed., National Academy of Science Washington D.C., U.S.A.
- North, M.O.,(1984).Commercial Production Monoual.Third Edition .AVI Publishing Company, Inc. Westport, Connecticut.

- **Course Level:** Second Year Level
- **Course Name**: Anatomy III
- **Theoretical:** 2 hour
- **Practical:** 2 hours
- **Semester:** First
- **Unit:** 3

Course Objectives

Upon completion of this course, the student should be familiarized with:

This course will introduce the students to basic anatomical concepts including anatomy terminologies and directional terms. The course focuses on comparative gross anatomy of the bones, muscles, skin and other organs in different animals . The course focuses also on comparative gross anatomy of the viscera and other organs in different animals

Course Contents

week	Topics	Hours
	Theoretical Subject	
1-10	**Digestive system** 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.	20
11-15	**Nervous system** Development of the brain. Central nervous system: brain, parts of the brain (spinal cord, cranial nerves, spinal nerves). Autonomic nervous system: sympathetic division, parasympathetic division. Meninges, cerebrospinal fluid.	10
Total		**30**

Course Contents

week	Topics	Hours
	Practical Subject	
1 and -2	General description of the skull	4
3	Cranial cavity ,nasal cavity ,hyoid bone ,mandible.	2
4	Skull comparative ,paranasal sinuses.	2
5 and 6	Cervical vertebrae comparative.	4
7	Oral cavity	2
8	Pharynx and esophagus	2
9 and 10	Viscera :stomach small intestine and large intestine: (comparative)	4
11	Liver (comparative)	2
12	The brain, cranial, and spinal meninges, parts of brain ,cranial nerves.	2
13	Nasal cavity and larynx ,trachea	2
14	Anatomy of lungs (comparative)	2
15	Avian anatomy	2
Total		**30**

Mode of Assessment

Assessment	Score	Period
First Exam	10	5-6th weeks
Second Exam	10	10-11th weeks
Practical Exam	10	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks and Recommended References

1.Veterinary anatomy by Dyce-Wensing 2010
2.Anatomy of domestic animals by R-Getty

- **Course Level:** Second Year Level
- **Course Name**: Anatomy IV
- **Theoretical:** 2 hour
- **Practical:** 2 hours
- **Semester:** Second
- **Unit:** 3

Course Objectives

Upon completion of this course, the student should be familiarized with:

This course will introduce the students to basic anatomical concepts including anatomic terminologies and directional terms. The course focuses on comparative gross anatomy of the bones, muscles, skin and other organs in different animals . The course focuses also on comparative gross anatomy of the viscera and other organs in different animals.

Course Contents

week	Topics	Hours
	Theoretical Subject	
1-6	**Lymphatic system** 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 .	12
7-12	**Respiratory system** Introduction ,nose ,nasal cavity ,nasopharynx , paranasal sinuses, larynx, trachea, lung thoracic cavity, pleura	12
13-15	**Cardiovascular system** 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	6
Total		**30**

Course Contents

week	Topics	Hours
	Practical Subject	
1	The eye (tunics, muscles, nerves, chambers).	2
2 and 3	Dissection of neck region (lateral and ventral surfaces)including chief veins ,nerves ,arteries ,muscles ,thyroid gland lymph nodes ,trachea, esophagus	4
4	Dissection of neck region	2
5 and 6	Disscation of thorax ,thoracic fascia ,muscles of thoracic wall respiratory muscles, internal thoracic fascia pleura pulmonary ligament ,thymus ,lung comparative ,trachea ,bronchial tree	4
7	Aortic arch ,common brachiocephalic trunk with its branches	2
8	Diaphragm	2
9 and 10	Superficial dissection of face region (muscles ,nerves ,arteries ,veins).	2
11 and 12	Deep dissection of face region (muscles ,nerves ,arteries ,veins ,parotid auricular region ,Buccal region mental region).	2
13	Lymph centers in abdominal cavity ,spleen	2
14 and 15	Abdominal aorta with its branches distribution of autonomic nervous system in region behind diaphragm	4
Total		**30**

Assessment	Score	Period
First Exam	10	5-6th weeks
Second Exam	10	10-11th weeks
Practical Exam	10	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks and Recommended References

1.Veterinary anatomy by Dyce-Wensing 2010
2.Anatomy of domestic animals by R-Getty

- **Course Level:** Second Year Level
- **Course Name**: Histology I
- **Theoretical:** 2 hour
- **Practical:** 3 hours
- **Semester:** First
- **Unit:** 4

Course Objectives

Upon completion of this course, the student should be familiarized with:

The fundamental principles of histology, the microscopic study of body tissues and organ systems in domestic animals, are presented in lecture and laboratory formats.

Course Contents

week	Topics	Hours
	Theoretical Subject	
1-4	Introduction: Definition of histology and its relation to other sciences, microscopic measurements, basic histology techniques , cytology	8
5	Epithelial tissue	2
6	Connective tissue	2
7	Bone , cartilage , blood	2
8 and 9	Muscular tissue	4
10 and 11	Nervous tissue	4
12 and 13	Digestive system	4
14 and 15	Accessory gland of digestive tract	4
Total		**30**

Course Contents

week	Topics	Hours
	Practical Subject	
1	General information, working in the laboratory ,using and maintaining microscope , structure and type of cell,	3
2	Epithelial tissue : Different types of epithelial tissue	3
3	Connective tissue general	3
4	Compact bone	3
5	Spongy bone	3
6	Cartilage	3
7	blood	3
8	Muscle tissue	3
9	Nervous tissue	3
10	Digestive system	3
11	Oral cavity: Tongue structure	3

12	Salivary gland	3
13	Fundic gland region of stomach	3
14	Small intestine and large intestine	3
15	Liver , gall bladder , pancreas	3
Total		**45**

Mode of Assessment

Assessment	Score	Period
First Exam	10	5-6th weeks
Second Exam	10	10-11th weeks
Practical Exam	10	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks and Recommended References

1.Text book of veterinary histology by DON A-Samuelson .2010
2.Text book of veterinary histology by Dellmann and Brown .2007

- **Course Level:** Second Year Level
- **Course Name**: Histology II
- **Theoretical:** 2 hour
- **Practical:** 3 hours
- **Semester:** Second
- **Unit:** 4

Course Objectives

Upon completion of this course, the student should be familiarized with:

The fundamental principles of histology, the microscopic study of body tissues and organ systems in domestic animals, are presented in lecture and laboratory formats.

Course Contents

week	Topics	Hours
	Theoretical Subject	
1 and 2	Cardiovascular system	4
3 and 4	Urinary system	4
5 and 6	Endocrine system	4
7 and 8	Male reproductive system	4
9-11	Female reproductive system	6
12 and 13	Respiratory system	4
14	Skin	4
Total		**30**

Course Contents

week	Topics	Hours
	Theoretical Subject	
1	Introduction ,oogenesis , spermatogenesis	1
2 and 3	Fertilization ,cleavage , implantation	2
4	Trilaminar embryonic disc	1
5	Placentaion with classification	1
6	Development of urogenital system	1
7 and 8	Development of body cavity	2
9	Development of digestive system	1
10 and 11	Development of respiratory system	2
12 and 13	Development of nervous system	2
14 and 15	Development of cardiovascular system	2
Total		**15**

Mode of Assessment

Assessment	Score	Period
First Exam	10	5-6th weeks
Second Exam	10	10-11th weeks
Practical Exam	10	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks and Recommended References

- Text book of veterinary histology by DON A-Samuelson .2010
- 2.Text book of veterinary histology by Dellmann and Brown .2007

- **Course Level:** Second-Year Level
- **Course Name**: Physiology I
- **Theoretical:** 4 hours
- **Practical:** 2 hours
- **Semester:** First
- **Unit:** 5

Course Objectives

Upon completion of this course, the student should be familiarized with:

- To provide students with important knowledge about of the major physiological systems, and be able to associate anatomical areas with their specific function.
- To make students understand the role of evolutionary processes(e.g. natural selection) in driving the organization of physiological systems. .
- To make students familiar with physiological challenges animals face, how those challenges vary in relation to the animals' environment, and the processes by which animals deal with these challenges.
- Students will be trained on how they deal with describe structural differences of major physiological systems that characterize different taxonomic groups of animals.
- To make students familiarized with relate physiological processes, from the biochemical to the system level, to the function of the entire organism in its environment.

Course Contents

week	Topics	Hours
	Theoretical Subject	
1	Introduction to physiology	1
	The cell and its function(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)	3
2	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.	4
3	Muscle(types of muscles and structures, General mechanism of muscle contraction, molecular mechanism of muscle contraction, molecular characteristics of the contractile filaments energetic of muscle contraction, characteristics of whole muscle contraction, mechanics of skeletal muscle contraction, rigor moris and physiology of cardiac muscle).	4
4	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,	4

	chemical transmission at autonomic junctions, basic characteristics of sympathetic and parasympathetic function, receptors on the effector organs, effects of sympathetic and parasympathetic stimulation on specific organs ″Alarm ″ or ″Stress″ response of the sympathetic nervous system and system and control of the autonomic nervous system).	
5- 7	Blood composition and physiology(formed elements, functions of the blood, erythrocytes, erythropoiesis, hemoglobin, reactions of hemoglobin, white blood cells, chemotaxis, platelets, plasma proteins, blood coagulation, blood groups, immunity.	10
	Lymph: Composition and function.	1
	Cerebrospinal fluid: Composition and function.	1
8-10	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 output, blood flow in vessels, blood pressure, capillary circulation, venous circulation, cardiovascular regulatory mechanisms, innervations of blood vessels, cardiac innervation, vasomotor center, baroreceptors and blood-brain barrier).	12
11-12	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)	8
13-15	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.	12
Total		**60**

Course Contents

week	Topics	Hours
	Practical Subject	
1	Introduction to apparatus and instruments.	2
2	Fragility of Red Blood cell.	2
3	Red blood cell count.	2
4	White blood cell count.	2
5	Differential leukocyte count	2
6	Estimation of hemoglobin	2
7	Estimation of packed cell volume	2
8	Estimation of erythrocyte sedimentation	2

9	The Wintrobe erythrocyte indexes	2
10	Blood groups	2
11	Coagulation time	2
12	Bleeding time	2
13	Blood pressure	2
14 and 15	Effect of exercise and gravity on blood pressure and venous pressure	4
Total		**30**

Mode of Assessment

Assessment	Score	Period
First Exam	10	5-6th weeks
Second Exam	10	10-11th weeks
Practical Exam	10	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks and Recommended References

- Ganong, W.F.(2011). Review of Medical Physiology. 20th Edition. Lange Medical Books/McGraw-Hill Medical Publishing Division. USA; p.543.
- Guyton,A.C. and Hall,J.E.(2011). Textbook of medical physiology. 11th Ed. Saunders Company
- Vander, A.; Sherman, J. and Lucianoo, D.(2001). Human physiology, 7th Ed. WCB/Graw Hill Co.Inc. New York, U.S.A
- Germann,W.J. and Stanfield,C.L.(2002). Principles of human physiology. Benjamin Cumming, San Francisco Boston New York.
- Cunningham,J.G.(2002). Textbook of Veterinary Physiology, 3rd Ed.,W.B. Saunders Co. 341-8.
- McDonald,D.V.M.(2003). Veterinary endocrinology and reproduction, 2nd Ed. Lea and Febiger. Philadelphia.
- Walter H. Hsu .Handbook of Veterinary Pharmacology 1st Edition

- **Course Level:** Second-Year Level
- **Course Name**: Physiology II
- **Theoretical:** 4 hours
- **Practical:** 2 hours
- **Semester:** First
- **Unit:** 5

Course Objectives

Upon completion of this course, the student should be familiarized with:

- To provide students with important knowledge about of the major physiological systems, and be able to associate anatomical areas with their specific function.
- To make students understand the role of evolutionary processes(e.g. natural selection) in driving the organization of physiological systems. .
- To make students familiar with physiological challenges animals face, how those challenges vary in relation to the animals' environment, and the processes by which animals deal with these challenges.
- Students will be trained on how they deal with describe structural differences of major physiological systems that characterize different taxonomic groups of animals.
- To make students familiarized with relate physiological processes, from the biochemical to the system level, to the function of the entire organism in its environment.

Course Contents

week	Topics	Hours
	Theoretical Subject	
1-3	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.	12
4-8	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.	20
9-11	Male and female reproductive system: structures, spermatogenesis, structure of mature spermatozoon, endocrine function of the testes and control of testicular function. Structure 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.	12
12-14	Kidney: nephron structure and blood supply, plasma volume, total blood volume, glomerular filtration, factors affecting the GFR, tubular function, tubular secretion, water excretion, osmotic dieresis, diuretics, factors affecting sodium excretion, regulation of potassium excretion, functions of	12

	ureter and urinary bladder.	
15	Acid-base balance: Chemical buffer, regulation of CO_2 concentration by the respiratory system, regulation of plasma HCO_3^- concentration by the kidney, fate of H^+ in the urine and body fluids.	4
Total		**60**

Course Contents

week	Topics	Hours
	Practical Subject	
1	Lung volumes(measurement of respiratory volume spirometry).	2
2	Measurement of pulmonary ventilation and respiratory movements.	2
3	Urine examination.	2
4	Frog sciatic nerve and gastronemius muscle preparation.	2
5	The simple muscle twitch.	2
6	The effect of temperature on muscle contraction.	2
7	Effect of stimulus strength on muscle contraction and fatigue.	2
8	Summation of two stimuli and tetanus.	2
9	Frogs heart(sequence of the heart beat and effect of acetylcholine on heart).	2
10	Extrasystole and compensatory pause and Stannius ligatures.	2
11	Evaluation of seminal quality.	2
12	Estrous cycle of the rat.	2
13	Overiectomy in rat.	2
14	Concentration of spermatozoa	2
15	Review	2
Total		**30**

Mode of Assessment

Assessment	Score	Period
First Exam	10	5-6th weeks
Second Exam	10	10-11th weeks
Practical Exam	10	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks and Recommended References

- Ganong, W.F.(2011). Review of Medical Physiology. 20th Edition. Lange Medical Books/McGraw-Hill Medical Publishing Division. USA; p.543.
- Guyton,A.C. and Hall,J.E.(2011). Textbook of medical physiology. 11th Ed. Saunders Company
- Vander, A.; Sherman, J. and Lucianoo, D.(2001). Human physiology, 7th Ed. WCB/Graw Hill Co.Inc. New York, U.S.A
- Germann,W.J. and Stanfield,C.L.(2002). Principles of human physiology. Benjamin Cumming, San Francisco Boston New York.
- Cunningham,J.G.(2002). Textbook of Veterinary Physiology, 3rd Ed.,W.B. Saunders Co. 341-8.
- McDonald,D.V.M.(2003). Veterinary endocrinology and reproduction, 2nd Ed. Lea and Febiger. Philadelphia
- Agamemnon Despopoulos, M.D. and Stefan Silbernagl, M.D.(2003). Color Atlas of Physiology.

- **Course Level:** Second-Year Level
- **Course Name**: Biochemistry I
- **Theoretical:** 3 hours
- **Practical:** 2 hours
- **Semester:** First
- **Unit:** 4

Course Objectives

Upon completion of this course, the student should be familiarized with:
Teaching of principles of physical chemistry as applicable to veterinary sciences, which Includes**:**

1.demonstrate knowledge and understanding of the molecular machinery of living cells.
2.demonstrate knowledge and understanding of the principles that govern the structures of macromolecules and their participation in molecular recognition.
3.demonstrate knowledge and understanding of the principles and basic mechanisms of metabolic control and molecular signaling**.**

Course Contents

week	Topics	Hours
	Theoretical Subject	
1 and 2	**Cell biochemistry**	6
3 - 6	**Carbohydrate Metabolism** Chemistry of Carbohydrates, function of carbohydrates, Digestion and absorption of Carbohydrates, Glycolysis, Gluconeogenesis, Glycogen Metabolism, Pentose phosphate pathway.	12
7 and 8	**Enzymes** Principles and classifications of Enzymes , Mechanism action of Enzymes , Enzyme Inhibition, Regulation of Enzyme activity.	6
9 and 10	**Integrative Metabolism Bioenergetics** Introduction , Formation and utilization of ATP , Kreb's cycle, Function and regulation of Krebs's cycle, Electron transport system and oxidative Phosphorylation.	6
11 and 12	**Amino acids and Proteins** Classification of amino acids , Properties of amino acids Proteins ,Classifications of proteins , structures of proteins , denaturation of proteins , Digestion and absorption of proteins . Amino acid catabolism , Nitrogen balance, excretion and the urea cycle.	6
13 and 14	**Vitamins** Water soluble vitamins, Fat soluble vitamins.	7
15	Exam	2
Total		**45**

Course Contents

week	Topics	Hours
	Practical Subject	
1	General instruction ,Carbohydrates	2
2	General qualitative test	2
3	Unknown of carbohydrates	2
4	glycogens	2
5	Proteins : Fibros proteins	2
6	Separation of albumin and globin by precipitation	2
7	Glycoprotein	2
8	Phosphoprotein : Enzymes	2
9	Amyolytic activity of amylase	2
10	Effect of pH on amylase activity.	2
11	Effect of temperature on amylase activity	2
12	Urine: Physical properties of urine	2
13	Normal and abnormal constituents of urine	2
14	Unknown of urine	2
15	Exam	2
Total		**30**

Mode of Assessment

Assessment	Score	Period
First Exam	10	5-6th weeks
Second Exam	10	10-11th weeks
Practical Exam	10	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks and Recommended References

- Medical biochemistry (Solomon Adugna , Lakshmi Ahuja Mekonnen Alemu)
- Text book of veterinary physiological chemistry / Second Edition (larry R. Engelking)

- **Course Level:** Second-Year Level
- **Course Name**: Biochemistry II
- **Theoretical:** 3 hours
- **Practical:** 2 hours
- **Semester:** Second
- **Unit:**4

Course Objectives

Upon completion of this course, the student should be familiarized with:

Teaching of principles of physical chemistry as applicable to veterinary sciences, which includes:

1.demonstrate knowledge and understanding of the molecular machinery of living cells.

2.demonstrate knowledge and understanding of the principles that govern the structures of macromolecules and their participation in molecular recognition.

3.demonstrate knowledge and understanding of the principles and basic mechanisms of metabolic control and molecular signaling

Course Contents

week	Topics	Hours
	Theoretical Subject	
1-5	**-Lipid Metabolism** Classification of Lipids , Digestion and absorption of Lipids , Metabolism of Fatty acids , β-Oxidation of Fatty acids , Biosynthesis of Fatty acids, Cholesterol , Lipoproteins.	15
6-7	**- Hormones** Definition and classification, Biosynthesis, storage, transport , Cellular receptors , Chemical messengers , signal transduction , Mechanism action of hormones.	6
8-14	**-Nucleic acids** Structure of Nucleic acids , Types of Nucleic acids , Replication of DNA , RNA synthesis , transcription , Translation/Protein synthesis , The Genetic code.	22
15	**Exam**	2
Total		**45**

Course Contents

week	Topics	Hours
	Practical Subject	
1 and2	Photometric methods in biochemical analysis	4
3	Determinate of serum total protein	2
4	Calibration curve of protein	2
5	Determinate of serum amylase activity	2
6	Determinate of serum inorganic phosphate	2
7	Determinate of serum total calcium	2

8	Determinate of serum bilirubin	2
9	Determinate of serum creatinine	2
10	Determinate of serum uric acid	2
11	Determinate of serum cholesterol	2
12	Enzymatic method for glucose	2
13	Determinate of serum total lipid	2
14	Determinate of serum urea	2
15	Exam	2
Total		**30**

Mode of Assessment

Assessment	Score	Period
First Exam	10	5-6th weeks
Second Exam	10	10-11th weeks
Practical Exam	10	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks and Recommended References

- Medical biochemistry (Solomon Adugna , Lakshmi Ahuja Mekonnen Alemu)
- Text book of veterinary physiological chemistry / Second Edition (larry R. Engelking)

- **Course level:** Second –year level
- **Course name:** Animal nutrition I
- **Theoretical:** 2 hours
- **Practical:** 2 hours
- **Semester:** First
- **Unit:** 3

Course objective:

To develop an understanding of the principle of nutrition and their application to meeting the nutrient requirements of livestock and other animal species.

Course content

	Course content	
Week	**Topics**	**Hours**
	Theoretical Subject	
1 and 2	**Orientation and general information** Development of nutritional science, Animal nutrition: It's Role in Modern Agriculture and society, Definition of terms, Composition of animal feed, Composition of the Animal body	2
3 and 4	**Water and its function** Properties and function of water, Absorption, distribution and turnover of water, Sources of water supply, Sources of water loss, Water requirement, Water restriction, Water Quality, Water regulation.	4
5 and 6	**Carbohydrate metabolism** Chemical forms and dietary sources, carbohydrate metabolism, Importance of glucose, Sources of blood glucose, Glycogen breakdown, Glucose anabolism, Glucose Utilization	4
7 and 8	**Lipid and volatile fatty acid** Classification of lipid, Structures and function of lipid, Lipid Anabolism, Lipid synthesis (lipogenesis), Lipid catabolism. Sources of Volatile fatty acids, Ruminal production and absorption, Post-absorptive Metabolism, Post-hepatic tissues metabolism, metabolism In ruminant tissue	2
9 and 10	**Proteins and nucleic acid metabolism** Biological Functions and Properties, Composition and Structure, Structural classification, General properties of amino acids, Essential and nonessential amino acids, amino acid composition and protein quality, protein metabolism, Protein synthesis, Protein synthesis versus degradation animal responses to protein nutrition, Practical considerations.	4
11and 12	**Energy metabolism** Energy terminology, Methods of measuring heat production, important concept in energy metabolism, Efficiency of energy utilization	4

13 and 14	**Trace elements** Mineral classification, General minerals functions, Factors affecting requirements, Deficiencies and Excesses of minerals, Biological function-dietary sources-and deficiency symptoms of minerals.	4
15	Exam	2
Total		**30**

Course content

Week	Topics	Hours
	Practical Subject	
1	Using the nutrition laboratory	2
2	Feedstuff approximate analysis	2
3 and 4	How take sample for analysis	4
5 - 8	Moisture determination in feedstuff green roughage,, milk, meat and egg	8
9	determination of ash	2
10	determination of silo	2
11 and 12	Preparing standard solution	4
13 and 14	determination of crude protein	4
15	Exam	2
Total		**30**

Mode of Assessment

Assessment	Score	Period
First Exam	10	5-6th weeks
Second Exam	10	10-11th weeks
Practical Exam	10	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks and Recommended References

1- Animal nutrition/ 2002by Peter McDonald and Richard Alan Edwards
2- Basic Animal nutrition and feeding/1998-2005 by Wilson G. Pond and David B. Church

- **Course level:** Second –year level
- **Course name:** Animal nutrition II
- **Theoretical:** 2 hours
- **Practical:** 2 hours
- **Semester:** Second
- **Unit:** 3

Course objective:

To develop an understanding of the principle of nutrition and their application to meeting the nutrient requirements of livestock and other animal species

Course content

Week	Topics	hours
	Theoretical Subject	
1 and 2	**Vitamins** Definition, Classification, Feature and General functions, fat soluble vitamins, biological function-dietary sources and deficiency symptoms, water soluble vitamin, biological function-dietary sources and symptoms	4
3 and 4	Meeting Nutrient Requirements for Animal production and Health General considerations, Energy potent of food ,protein requirement, Rumen degradable protein (RDP) and rumen degradable protein (RUP).	4
5-7	Maintenance Definition and significance , Maintenance Energy Components, Muscular work, Temperature regulation	6
8 - 10	Reproduction and nutrition General concept, Nutrition and reproductive development, Age at puberty, Nutrition of mature breeding animal, relation of body mass/ Adipose reserves to reproduction	6
11- 13	Nutrition at Pregnancy Net nutrient requirement, Early and Mid-pregnancy, Late pregnancy, Fetal nutrient requirement, Maternal metabolic impact	6
14 and 15	Neonatal Animal Perinatal adaptation, nutrient metabolism, importance of colostrum, development of GIT	4
Total		**30**

Course content

Week	Topics	Hours
1 and 2	determination of crude fiber	4
3 and 4	determination of ether extract	4
5	determination of NFE BY calculated method	2
6	determination of gross energy by calculated method	2
7	Determination of energy by bomb calorimetry	2
8 -11	Digestive trials	8
12-14	Making standard ration for farm animals	6
15	Exam	2
Total		**30**

Mode of Assessment

Assessment	Score	Period
First Exam	10	5-6th weeks
Second Exam	10	10-11th weeks
Practical Exam	10	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks and Recommended References

1- Animal nutrition/ 2002by Peter McDonald and Richard Alan Edwards
2- Basic Animal nutrition and feeding/1998-2005 by Wilson G. Pond and David B. Church

- **Course Level:** Second-Year Level
- **Course Name:** Genetics
- **Theoretical:** 2 hours
- **Semester:** First
- **Unit**: 2

Course Objectives

Upon completion of this course, the student should be familiarized with:

1.Critically basic patterns of genetic inheritance.

2.Techniques for sequencing both nucleic acids and proteins, worked out the relationship between the two forms of biological molecules.

3.Understand the student of Chromosomal Mutation, Gene frequency, Linkage, crossing over and genetic map, selection and Method of matting

Course Contents

week	Topics	Hours
	Theoretical Subject	
1	Genetic history	2
2	Cell and Chromosome	2
3	Mandelian inheritance	2
4	Genetic Materials	2
5	Chromosomal Mutation	2
6	Gene interaction	2
7	Multiple alleles, Pseudoalleles	2
8	Exam	2
9	Gene frequency	2
10	Sex determination	2
11	Linkage, crossing over and genetic map	2
12	Selection	2
13	Method of matting	2
14	Resemblance between relatives	2
15	Exam	2
Total		**30**

Mode of Assessment

Assessment	Score	Period
First Exam	15	5-6th weeks
Second Exam	15	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks And Recommended References

- Genetics : analysis & principles / Robert J. Brooker. — 4th ed

- **Course Level:** Second Year Level
- **Course Name**: Embryology
- **Theoretical:** 1 hours
- **Semester:** Second
- **Unit:** 1

Course Objectives

Upon completion of this course, the student should be familiarized with:

this coarse consist of detailed survey of the animal embryology involving lecture discussion , students who take this course will develop in depth understanding of embryo development .

Course Contents

week	Topics	Hours
	Theoretical Subject	
1	Introduction ,oogenesis , spermatogenesis	1
2 and 3	Fertilization ,cleavage , implantation	2
4	Trilaminar embryonic disc	1
5	Placentaion with classification	1
6	Development of urogenital system	1
7 and 8	Development of body cavity	2
9	Development of digestive system	1
10 and 11	Development of respiratory system	2
12 and 13	Development of nervous system	2
14 and 15	Development of cardiovascular system	2
Total		**15**

week	Topics	Hours
	Theoretical Subject	
1	Introduction ,oogenesis , spermatogenesis	1
2 and 3	Fertilization ,cleavage , implantation	2
4	Trilaminar embryonic disc	1
5	Placentaion with classification	1
6	Development of urogenital system	1
7 and 8	Development of body cavity	2
9	Development of digestive system	1
10 and 11	Development of respiratory system	2
12 and 13	Development of nervous system	2
14 and 15	Development of cardiovascular system	2
Total		**15**

Mode of Assessment

Assessment	Score	Period
First Exam	15	5-6th weeks
Second Exam	15	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks and Recommended References

- Essential of Domestic animal embryology by poul Hytte/fred sinowats .20107

- **Course Level:** Second-Year Level
- **Course Name**: Statistics
- **Theoretical:** 2 hours
- **Practical:** 2 hours
- **Semester:** Second
- **Unit:** 3

Course Objectives

Upon completion of this course, the student should be familiarized with:

To provide students with important knowledge about Biostatistics To make students understand the specific topics include tools for describing central tendency and variability in data; methods for performing inference on population means and proportions via sample data; statistical hypothesis testing and its application to group comparisons; issues of power and sample size in study designs; and random sample and other study types.

Course Contents

week	Topics	Hours
	Theoretical Subject	
1	Introduction to statistics and statistics symbols.	2
2 and 3	Tabular and graphical Presentation.	4
4	Measures of central tendency	2
5	Measures of dispersion or variation.	2
6 and 7	Elementary probability theory.	4
8	Discrete probability distribution.	2
9	Continuous probability distribution, normal distribution.	2
10	Simple regression and correlation.	2
11 and 12	Tests of hypothesis, Z-distribution.	4
13	T-distribution.	2
14	Chi-square distribution.	2
15	F-distribution	2
Total		**30**

Course Contents

week	Topics	Hours
	Practical Subject	
1	Introduction to statistics and statistics symbols	2
2 and 3	Tabular and graphical Presentation	4
4	Measures of central tendency	2
5	Measures of dispersion or variation	2
6 and 7	Elementary probability theory	4
8	Discrete probability distribution	2
9	Continuous probability distribution, normal distribution.	2
10	Simple regression and correlation.	2
11 and 12	Tests of hypothesis, Z-distribution	4
13	T-distribution	2
14	Chi-square distribution	2
15	F-distribution	2
Total		**30**

Mode of Assessment

Assessment	Score	Period
First Exam	10	5-6th weeks
Second Exam	10	10-11th weeks
Practical Exam	10	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks and Recommended References

- Medical biochemistry (Solomon Adugna , Lakshmi Ahuja Mekonnen Alemu)
- Text book of veterinary physiological chemistry / Second Edition (larry R. Engelking)

- **Course Level:** Third-Year Level
- **Course Name**: General Pathology
- **Theoretical:** 3 hours
- **Practical:** 3 hours
- **Semester:** First
- **Unit:** 5

Course Objectives

Upon completion of this course, the student should be familiarized with:

1.To provide students with important knowledge about general aspects of pathology.
2.To make students understand the pathogenesis aspects of diseases.
3.To make students familiar with etiological factors of different diseases.
4.Students will be trained on how they deal with preparation of tissues samples.
5.To make students familiarized with characteristics lesions of diseases, macroscopic and microscopic recognition of veterinary diseases.

Course Contents

week	Topics	Hours
	Theoretical Subject	
1	Introduction / Degeneration and its types	3
2	Necrosis and its types	3
3	Gangrenous necrosis and its types / Gout	3
4	Disturbances of pigmentation (Jaundice causes and types, hemosiderin, melanin, calcification and its types)	3
5	Disturbance of growth (atrophy, hypertrophy, hyperplasia, hypoplasia, metaplasia, aplasia, congenital anomalies)	3
6 and 7	Disturbances of circulation (congestion, hemorrhage, thrombi, emboli, infarction, edema types and causes	6
8-10	Inflammation (definition, causes, types of inflammatory cells, types of inflammation)	9
11 and 12	Healing and repair / immunopathology	6
13 -15	Tumors (definition, theories, of origin, classification, differentiation between benign and malignant tumors, histological characters of tumors, methods of transmission	9
Total		**45**

Course Contents

week	Topics	Hours
	Practical Subject	
1and 2	Solutions and fluids used in fixation and preservation of tissue samples used as preservative samples.	6
3 and 4	Methods of processing and preparation of tissue for microscopically examination.	6

5 -7	Methods of embedding and preparation of tissues blocks	9
8 and 9	Methods of cryostat for frozen sections	6
10 and 11	methods of reaction and special tissue stain	6
12 and 13	frozen section microtome for pathological detection of fat and enzymes	6
14 and 15	practical training in examination and diagnosis of many pathological conditions as histological section, lintin slides, digital photos and fixed samples (gallery samples)	6
Total		**45**

Mode of Assessment

Assessment	Score	Period
First Exam	10	5-6th weeks
Second Exam	10	10-11th weeks
Practical Exam	10	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks and Recommended References

- Harsh Mohan. (2015).Textbook of pathology. 7th edition. The health sciences publishers.
- James Zachary and M. McGavin. (2017). Pathologic Basis of Veterinary Disease. 6th Edition. Elsevier.
- Harsh Mohan. (2015).Textbook of pathology. 7th edition. The health sciences publishers.
- Simon S. Cross.(2013). Under wood of pathology a clinical approaches. 6th ed. Churchill Livingstone Elsevier.
- Kumar, V.; Abas, A. and Jon, A. (2013). Robin basic pathology. 9th ed. Elsevier.

- **Course Level:** Third-Year Level
- **Course Name**: Systematic Pathology
- **Theoretical:** 3 hours
- **Practical:** 3 hours
- **Semester:** Second
- **Unit:**5

Course Objectives

Upon completion of this course, the student should be familiarized with:

An overview of all causes, pathogenesis, macroscopical and microscopical aspects of different diseases in the body of animals.

Course Contents

week	Topics	Hours
	Theoretical Subject	
1 and 2	Systematic pathology Diseases of respiratory system / upper and lower tract/ lung / pleura	6
3 and 4	Diseases of cardiovascular system	5
5	Diseases of hemopoetic and lymphatic tissues	3
6 - 8	Diseases of digestive system	8
9	Diseases of urinary system	4
10	Diseases of male and female genital system	3
11	Diseases of musculoskeletal system	4
12	Diseases of nervous system	3
13	Diseases of endocrine system	3
14	Diseases of skin and accessory	3
15	Diseases of eye and special organs	3
Total		**45**

Course Contents

week	Topics	Hours
1	Histopathological practice for examining of upper respiratory tract	3
2 and 3	Histopathological section and fixed gross samples of endocarditis and myocarditis and pericarditis caused by bacteria and parasites	6
4 and 5	Pathological affections of aorta and other blood vessels (gross and histopathological section)	6
6 and 7	Pathological affection of digestive system including gingivitis and other mucosal epithelial affection (FMD, and wooden tongue)	6
8 and 9	Gastroenteritis, parasitic affection of stomach, intestinal obstruction, Coccidiosis, (gross and histopathological practice)	6
10and 11	Liver necrosis, liver cirrhosis, abscess, parasitic infection of liver and bile duct and dall bladder.	6

	Microscopic slides of pathological infection of kidney urethras and urinary bladder. Hematuria in farm animals.	
12 and 13	Microscopic slides of metritis and salpinigitis, suppurative metritis, mastitis, testis and urinary tract	6
14	Microscopical slides of bone infection and cartilage, joints, osteomalacia, vit D deficiency, skin infection, myocytic and parasitic infection of skin**.**	3
15	Microscopic slides from general diseases cases	3
Total		**45**

Mode of Assessment

Assessment	Score	Period
First Exam	10	5-6th weeks
Second Exam	10	10-11th weeks
Practical Exam	10	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks and Recommended References

- James Zachary and M. McGavin. (2017). Pathologic Basis of Veterinary Disease. 6th Edition. Elsevier.
- Harsh Mohan. (2015).Textbook of pathology. 7th edition. The health sciences publishers.
- Simon S. Cross.(2013). Under wood of pathology a clinical approaches. 6th ed. Churchill Livingstone Elsevier.
- Kumar, V.; Abas, A. and Jon, A. (2013). Robin basic pathology. 9th ed. Elsevier.

- **Course Level:** Third-Year Level
- **Course Name**: Microbiology I
- **Theoretical:** 3 hours
- **Practical:** 2 hours
- **Semester:** First
- **Unit:** 4

Course Objectives

Upon completion of this course, the student should be familiarized with:

- To provide students with important knowledge about pathogenic microorganisms of veterinary significance
- To make students understand the zoonotic aspects of microbial pathogens .
- To make students familiar with pathogens that cause food and feed poisoning
- Students will be trained on how they deal with clinical specimens of infectious diseases
- To make students familiarized with culture characteristics, macroscopic and microscopic recognition of veterinary microbial pathogens

Course Contents

week	Topics	Hours
	Theoretical Subject	
1 and 2	Introduction & History of Microbiology: Introduction to Microbiology: Definition and branches of Microbiology, Historical introduction including work of Pasteur, Koch, Lister. Recent developments. History of Antibiotics	6
3	Structure of the Prokaryotic Cell	3
4	Microbial Growth & Nutrition	3
5	Control of Microbial Growth: Disinfectants, antibiotics and chemotherapy.	3
6	Microbial Metabolism	3
7 and 8	Bacterial Genetics	6
9	Mycology	3
10	Genus: Staphylococcus	3
11	Genus: Streptococcus and related cocci	3
12	genus: Corynebacterium species and Rhodococcus equi	3
13	Genus: Arcanobacterium Genus: Nocardia Genus: Dermatophilus	3
14	Spirochaetes Genus: Leptospira	3
15	Genus: Borrelia Genus: Listeria	3
Total		**45**

Course Contents

week	Topics	Hours
	Practical Subject	
1	Safety in the microbiological laboratory, demonstration of laboratory equipments, their basic functions and handling. Microscope and microscopy: Bright field, dark field, phase contrast, fluorescent, etc.	2
2	Sterilization and disinfection: Physical agents including moist heat, dry heat, ionizing radiation, filtration, etc. Chemical agents including types, factors influencing activity, evaluation of antimicrobial activity (phenol coefficient)..	2
3	Bacteriological media: Preparation and demonstration of various culture media: (basic, enriched, selective, differential, enrichment, transport and storage media).	2
4	Isolation: processing of specimen for isolation, isolation in culture, Pure culture techniques. Colony morphology: Types and characteristics. Morphology: Shape and arrangement	2
5	Bacterial motility	2
6 - 8	Bacterial morphology : Bacterial staining technique Simple stain, Gram stain, Negative stain , Capsule stain ,Spore stain Flagella Stain	6
9	Measurement of bacterial growth: Total count, Turbidometric methods, viable count-standard plate count	2
10	Antibiotic tests	2
11	Biochemical tests	2
Detailed and comparative study of following bacteria with reference to morphology, biochemical reactions, physiology, serology and pathogenicity. Isolation from field materials, identification and characterization.		
12	Laboratory diagnostics of veterinary important agents from genera *Staphylococcus and streptococcus*	2
13	Laboratory diagnostics of veterinary important agents from genera *Corynebacterium, Rhodococcus*	2
14	Laboratory diagnostics of veterinary important agents from genera *Arcanobacterium, Nocardia and Dermatophilus*	2
15	Laboratory diagnostics of veterinary important agents from genera Leptospira, Borrelia, Listeria	2
Total		**30**

Mode of Assessment

Assessment	Score	Period
First Exam	10	5-6th weeks
Second Exam	10	10-11th weeks
Practical Exam	10	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks and Recommended References

- P.J. Quin, BK Markey, ME Carter, WJ Donnelly and FC Leonard. Veterinary Microbiology and Microbial Disease. Blackwell Science
- Peter Borriello, Patrick R. Murray and Guido Funke. Topley and Wilson's Microbiology and Microbial Infections, Bacteriology Volumes I & II. Hodder Arnold
- Glen Sonder J & Karen W Post. Veterinary Microbiology: Bacterial and Fungal Agents of Animal Diseases. Cold Spring Harbor Lab. Press.
- Veterinary clinical microbiology, By Patrick Quinn Bryan Markey , Mark Carter and G.R. Carter. 2nd Revised edition.2013.

- **Course Level:** Third-Year Level
- **Course Name**: Microbiology II
- **Theoretical:** 3 hours
- **Practical:** 2 hours
- **Semester:** Second
- **Unit:**4

Course Objectives

Upon completion of this course, the student should be familiarized with:

An overview of classification and nomenclature of bacteria. Morphology, cultural characteristics, biochemical activities, resistance to physico-chemical agents, antigenic properties, toxins, association with animal diseases, diagnosis and immuno-prophylaxis for the following genera/groups:

Course Contents

week	Topics	Hours
	Theoretical Subject	
1 and 2	*Genus: Bacillus* *Genus: Clostridium*	6
3	*Genus: Mycobacterium*	3
4	*Genus: Pasteurella* *Genus: Moraxella*	3
5 -7	*Family: Enterobacteriaceae- General features and classification* *Genus: Escherichia* *Genus: Salmonella* *Genus: Klebsiella* *Genus: Proteus* *Genus: Yersinia*	9
8	*Genus: Pseudomonas* *Genus: Burkholderia* *Genus: Manheimia*	3
9	*Genus: Brucella* *Genus: Campylobacter*	3
10	*Genus: Taylorella* *Genus: Haemophilus*	3
11	*Genus: Mycoplasma*	3
12	*Rickettsia and Chlamydia*	3
13	Systematic Mycology *Dermatophytes* *Genus: Microsporum,* *Genus: Trichophyton,*	3
14	*Genus Aspergillus:* *Candida albicans* *Cryptococcus neoformans*	3

	Malassezia pachydermatis *Blastomyces dermatitidis* *Coccidioides immitis*	
15	*Histoplasma capsulatum* *Histoplasma farciminosum* *Sporothrix schenckii* *Zygomycoses: Mucoqwrmycosis, Entomophthomycosis* *Rhinosporidium seeberi* *Fungi associated with mastitis and abortions in animals* *Mycotoxicoses*	3
Total		**45**

Course Contents

week	Topics	Hours
	Practical Subject	
1	Laboratory diagnostics of veterinary important agents from genera *Bacillus*	2
2	Laboratory diagnostics of veterinary important agents from genera Clostridium	2
3	Laboratory diagnostics of veterinary important agents from genera *Mycobacterium*	2
4	Laboratory diagnostics of veterinary important agents from genera Pasteurella and Moraxella	2
5 -7	Laboratory diagnostics of veterinary important agents from genera *Salmonella spp, E coli, Proteus, Shigella, Klebsiella and other members of Enterobacteriaceae*	6
8	Laboratory diagnostics of veterinary important agents from genera *Pseudomonas .*	2
9	Laboratory diagnostics of veterinary important agents from genera *Brucella* and Campylobacter	2
10	Laboratory diagnostics of veterinary important agents from genera Taylorella and Haemophilus	2
11	Laboratory diagnostics of veterinary important agents from genera *Mycoplasma .*	2
12	Laboratory diagnostics of veterinary important agents from genera *Rickettsia and Chlamydia*	2
13-15	Laboratory diagnostics of veterinary important agents of mycotic infections: Dermatophytes, Aspergillus, Candida albicans, Histoplasma…..etc.	6
Total		**30**

Mode of Assessment

Assessment	Score	Period
First Exam	10	5-6th weeks
Second Exam	10	10-11th weeks
Practical Exam	10	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks and Recommended References

- P.J. Quin, BK Markey, ME Carter, WJ Donnelly and FC Leonard. Veterinary Microbiology and Microbial Disease. Blackwell Science
- Peter Borriello, Patrick R. Murray and Guido Funke. Topley and Wilson's Microbiology and Microbial Infections, Bacteriology Volumes I & II. Hodder Arnold
- Glen Sonder J & Karen W Post. Veterinary Microbiology: Bacterial and Fungal Agents of Animal Diseases. Cold Spring Harbor Lab. Press.
- Veterinary clinical microbiology, By Patrick Quinn Bryan Markey , Mark Carter and G.R. Carter.2nd Revised edition.2013.

- **Course Level:** Third-Year Level
- **Course Name**: Parasitology I
- **Theoretical:** 3 hours
- **Practical:** 2 hours
- **Semester:** First
- **Unit:** 4

Course Objectives

Upon completion of this course, the student should be familiarized with:

1. The taxonomical aspects for parasites.
2. The differentiation between each one.
3. The diagnostic features.
4. The veterinary important.
5. The clinical signs for parasitic infection.
6. The control and treatment animals with parasitic infection.

Course Contents

week	Topics	Hours
	Theoretical Subject	
1 and 2	General Introduction, Definitions & Terms, Life cycle, Pathogenicity, Immunology, Transmission.	4
3-8	Phylum: Nematoda includes the families: 1- Hetrakidae 2- Subuluridae 3- Oxyuridae 4- Rhabdatidae 5- Strongyloidae 6- Trichonematidae 7- Ancylostomatidae 8- Trichostrongylidae 9- Dictyocaulidae 10- Metastrogyloidae 11- Trichuridae 12- Trichinellidae 13- Spriurodae 14- Fillaridae	25
9-12	Phylum: Platyhelminthes, Class: Trematoda includes the families: 1-Fasciolidae 2-Schistosomatidae 3-Paramphistomatidae 4-Dicrocoelidae	8

13-15	Phylum: Platyhelminthes, Class: Cestoda includes the families: 1-Taeniidae 2-Anoplocephalidae 3-Thysanosonidae 4-Davaineidae 5-Dipylidiidae 6-Hyminolipididae 7-Mesocestoidae 8-Diphylobothiridae	8
Total		**45**

Course Contents

week	Topics	Hours
	Practical Subject	
1-3	General Introduction, Collect, Preserve, Diagnose the parasites, include: 1-Feacal Sample 2-Urine & Genital Sample 3-Blood Sample	6
4	Trematoda, General Introduction *Fasciola sp., Dicrocolium sp.*	2
5	*Schistosoma sp., Paragonimus sp.*	2
6	*Clonorchis sinensis, Paramphistomum cervi*	2
7	*Ascaris lumbricoides & Parascaris equorum*	2
8	*Toxocara canis, Toxascaris leonina, Ascaridia galli*	2
9	*Heterakis gallinarum, Enterobius vermicularis*	2
10 and 11	*Strongyloides stercoralis* *Trichuris trichiura, Trichinella spirals*	4
12	*Ancylostoma sp., Haemonchus contortus, Bunostumum sp.*	2
13	Cestoda general information *Taenia saginata, Taenia solium*	2
14	*Taenia pisiformis, Taenia hydatigenia*	2
15	*Echinococcus granulosus, Dipylidium caninum*	2
Total		**30**

Mode of Assessment

Assessment	Score	Period
First Exam	10	5-6th weeks
Second Exam	10	10-11th weeks
Practical Exam	10	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks and Recommended References

- Soulsby, E. J. L., (1982). Helminthes, Arthropods and protozoa of domesticated animals, 7th ed. Bailliere
- Tindall, East Sussex, UK.
- Roberts, L. S. & Janovy, J. (1996). Foundations of Parasitology. 5th end., wmc. Brown publ. Chicago, USA.
- Schmidt, G. D. (1986). Hand book of Tapeworm Identification. CRC Press, Inc. Boca Raton, Florida. pp. 675.
- Gibsion, I. (2010). Hand book of Diagnostic parasitology.

- **Course Level:** Third-Year Level
- **Course Name**: Parasitology II
- **Theoretical:** 3 hours
- **Practical:** 2 hours
- **Semester:** second
- **Unit:** 4

Course Objectives

Upon completion of this course, the student should be familiarized with:

1. The taxonomical aspects for parasites.
2. The differentiation between each one.
3. The diagnostic features.
4. The veterinary important.
5. The clinical signs for parasitic infection.
6. The control and treatment animals with parasitic infection.

Course Contents

week	Topics	Hours
	Theoretical Subject	
1-8	Phylum: Protozoa includes the families: 1-Trypanosomatidae 2-Trichomonadae 3-Monocercomonatidae 4-Eimeriidae 5-Sarcocystidae 6-Cryptosporidiidae 7-Plasmodiidae 8-Babesiidae 9-Theileriidae	25
9-15	Phylum: Arthropoda includes the families: 1-Ixodidae 2-Argasidae 3-Sarcoptidae 4-Psoroptidae 5-Tabanidae 6-Culicidae 7-Psychodidae 8-Simuliidae 9-Osteridae 10-Calliophoridae 11-Cimicidae 12-Haematopinidae 13- Crustacean	20
Total		**45**

Course Contents

week	Topics	Hours
	Practical Subject	
1	*Monezia sp., Raillietina sp.*	2
2	Protozoa general information *Entamoeba sp., Giardia sp.*	2
3	*Babeisia sp., Theileria sp.*	2
4	*Leishmania sp., Trypanosoma sp*	2
5	*Trichomonas sp., Toxoplasma sp.*	2
6	*Sarcocystes sp., Eimeria sp*	2
7	*Plasmodium sp.*	2
8	Arthropoda general information : Flea; *Ctenocephalus sp.*	2
9	Lice; *Pediculus sp., Haematopinus sp.*	2
10	Insects; *Anopheles sp., Culex sp.*	2
11	Myiasis: *Oestrus sp., Hypoderma bovis*	2
12	Ticks: *Boophilus sp., Amblyomma sp., Rhpicephulus sp.*	2
13	Ticks: *Argas sp., Hyalomma sp.,*	2
14	Mites: *Sarcoptes sp.,*	2
15	Crustacea: *Cyclops,*	2
Total		**30**

Mode of Assessment

Assessment	Score	Period
First Exam	10	5-6th weeks
Second Exam	10	10-11th weeks
Practical Exam	10	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th
Final Exam	60	After the 16th.

Textbooks and Recommended References

- Soulsby, E. J. L., (1982). Helminthes, Arthropods and protozoa of domesticated animals, 7th ed. Bailliere
- Tindall, East Sussex, UK.
- Roberts, L. S. & Janovy, J. (1996). Foundations of Parasitology. 5th end., wmc. Brown publ. Chicago, USA.
- Schmidt, G. D. (1986). Hand book of Tapeworm Identification. CRC Press, Inc. Boca Raton, Florida. pp. 675.
- Gibsion, I. (2010). Hand book of Diagnostic parasitology.

- **Course Level:** Third-Year Level
- **Course Name**: Immunology
- **Theoretical :** 2 hours
- **Practical:** 2 hours
- **Semester:** First
- **Unit:** 3

Course Objectives

Upon completion of this course, the student should be familiarized with:

1. The principle and excitement of immunology.
2. The important areas of immunology.
3. The impact of modern Veterinary medical practice in pharmacy, especially hypersensitivity and autoimmune diseases.
4. The Humoral and cellular immune responses and their regulations.
5. The immunotherapy for various immunological disorders.
6. The various methods of wider current uses in serology (ELISA, RIA, FAB, etc…).
7. The immune system that will make the student better veterinarian.

Course Contents

Week	Topics	Hours
	Theoretical Subject	
1	Principle of immunity and immune response(specific and nonspecific)	2
2	Antibodies (definition): Immunoglobulin structure, variation ,function and synthesis	2
3 and 4	Immunology of T and B cells	4
5	The complement system: Nature ,Function and pathways	2
6	Cells mediate immunity, Antigen recognition by T cells	2
7	Immunological tolerance	2
8	Types of Hypersensitivity, Mechanisms	2
9	Auto-immunity	2
10	Transplantation immunology	2
11	Principle of immune genetics	2
12	Immunoanaphylaxis reaction	2
13	Immunity of infection	2
14	Immunization and Vaccination (definitions)	2
15	Tumor and cancer immunology (definitions)	2
Total		**30**

Course Contents

Week	Course Contents	Hours
	Practical subject	
1	Introduction to immunology labs	2
2	Lab animals	2
3 and 4	Preservation of antigens and antibodies	4
5	Separation of immunoglobulins.	2
6	Complement Fixation Test	2
7	Precipitation test	2
8	Agglutination test .	2
9	Neutralization Test	2
10 and 11	Separation of lymphocytes from blood and lymph nodes	4
12 and 13	Preparation of antigens	4
14	Leukocytes	2
15	Phagocytosis	2
Total		**30**

Mode of Assessment

Assessment	Score	Period
First Exam	10	5-6th weeks
Second Exam	10	10-11th weeks
Practical Exam	10	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks and Recommended References

1. Mary Louise Turgeon (2014). Immunology &Serology in Laboratory Medicine, 5th Ed., Mosby, an imprint of Elsevier Inc., 3251 Riverport Lane St. Louis, Missouri 63043. 978-0-323-08518-2.
2. Gerald N. Callahan and Robin M. Yates (2014): Basic Veterinary Immunology, Published by University
Press of Colorado 5589 Arapahoe Avenue, Suite 206C, Boulder, Colorado 80303. ISBN 978-1-60732- 218-4.
3. Gerald N. Callahan and Robin M. Yates (2014): Basic Veterinary Immunology, Published by University Press of Colorado 5589 Arapahoe Avenue, Suite 206C, Boulder, Colorado 80303. ISBN 978-1-60732-218-4.
4. Abdul K. Abbas, Andrew H. Lichtman, and Shiv Pillai (2014): Basic Immunology; Functions and disorders of the Immune System, 4th Ed, Elsevier Saunders, 1600 John F. Kennedy Blvd. Ste 1800 Philadelphia, PA 19103-2899. Library of Congress Cataloging-in-Publication Data 978-1-4557-0707-2.

- **Course Level:** Third-Year Level
- **Course Name**: Pharmacology I
- **Theoretical :** 3 hours
- **Practical:** 2 hours
- **Semester:** First
- **Unit:** 4

Course Objectives

Upon completion of this course, the student should be familiarized with:

1.To provide students with important knowledge about base of important concept and principles of veterinary pharmacology and entry level ability to receive clinical instruction.
2.To make students understand of the world of pharmacology ,its culture and its people .
3.To make students familiar with a fundamental grasp of the concepts and principles of pharmacology.
4.Students will be trained on how they deal with pharmacological invegastation.
5.To make students familiarized with competence in oral and written communication concerning veterinary pharmacology .

Course Contents

week	Topics	Hours
	Theoretical Subject	
1-3	**Principles of pharmacology**: definition, Routes of drug administration , Methods of transport of drug across cell membrane, Pharmacokinetics,_absorption, effect of PH on drug absorption, determination of how much drug will be found on either side of a membrane , Factors which effect drug absorption, Bioavailability (F), Factors that influence bioavailability distribution, Factors effect on the drug distribution, Volume of distribution (Vd), Metabolism or biotransformation, Metabolism pathways, Factors with affect biotransformation, Elimination, clearance of drug, pharmacodynamics, Types of receptors, Characteristic features of receptor, Types of drug response, Therapeutic index, Agonists, Antagonists.	9
4-6	**-Drugs acting on autonomic nervous system**: Introduction, Neurotransmitters, The parasympathetic nervous system, Cholinergic drugs, Anticholinergic drugs, Ganglionic blocking drugs, Blockade of neuromuscular transmission (muscle relaxant), Sympathetic nervous system, Adrenergic agonists (sympathomimetic), Adrenergic antagonists, α-adrenergic blockers, β-adrenergic blockers.	10
7-9	**-Drugs acting on central nervous system:** Excitatory neurotransmitter, Inhibitory neurotransmitter, CNS stimulant, CNS depressant, Narcotics, Sedative, Anticonvulsants,	10

	Tranquilizer: Hypnotics, Analgesics: Narcotic analgesic, non-narcotic analgesic, General anesthesia, Stage of general anesthesia, Types of general anesthetic agent, Local anesthetics , mechanism of action, Clinical techniques of local anesthesia, example of local anesthetic agents.	
10 and 11	**Drugs affecting on gastrointestinal function:** Introduction, Sialagogues, Antisialagogues, Appetizer, Antacids, Carminative, Antizymotic, Emetics, Antiemetic, Cholagogues, Stomachic, laxatives, Adsorbant, Astringents, Antidiarrheal agents, antispasmodics, Gastrointestinal prokinetics – stimulants.	5
12-14	**Autacoids and anti-inflammatory drugs:** Introduction, Histamine, Mechanism of action, pharmacological action, Histamine agonists, Histamine antagonist ,Serotonin (5 HT), Pharmacological action, Serotonin agonists, Serotonin antagonists, Eicosanoids, Synthesis of important prostaglandins and leukotriens, Classification of prostanoid receptors, Plasma kinnins, Pharmacological effects of kinnins, Inhibitors of cyclooxygenase, Other autacoids agent .	8
15	**-Dermatopharmacology:** introduction, topical anti-infective agents, topical antibacterial agents, topical antifungal agent, topical antiviral agents, ectoparasiticides, emollients, astringents, skin disinfectants, keratolytics, caustic agents, counter irritants, Corticosteroid.	3
Total		**45**

Course Contents

week	Topics	Hours
	Practical subject	
1	Metrology	2
2 and 3	Nature and source of drugs	4
4	Pharmaceutical preparations and drug forms	2
5	Routes of drug administration	2
6	Variations in drug response(species and individual)	2
7 and 8	Microsomal enzymes activity induction and drug response	4
9	Excretion of drugs	2
10	Prescription writing	2
11 and 12	Dispensing	4
13	Action of drugs on the eyes	2
14	Drugs and effects on the rabbit intestine	2
15	Drugs and effects on the rabbit uterus	2
Total		**30**

Mode of Assessment

Assessment	Score	Period
First Exam	10	5-6th weeks
Second Exam	10	10-11th weeks
Practical Exam	10	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks and Recommended References

- Jim E. Riviere , Mark G. Papich . Veterinary Pharmacology and Therapeutics, 9th Edition
- Walter H. Hsu .Handbook of Veterinary Pharmacology 1st Edition
- Charles,W.E.(2010). Laboratory Guide in Pharmacology.Manuals of Pharmacology.

- **Course Level:** Third-Year Level
- **Course Name**: Pharmacology II
- **Theoretical :** 3 hours
- **Practical:** 2 hours
- **Semester:** Second
- **Unit:** 4

Course Objectives

Upon completion of this course, the student should be familiarized with:

1. To provide students with important knowledge about base of important concept and principles of veterinary pharmacology and entry level ability to receive clinical instruction.
2. To make students understand of the world of pharmacology ,its culture and its people .
3. To make students familiar with a fundamental grasp of the concepts and principles of pharmacology.
4. Students will be trained on how they deal with pharmacological invegastation.
5. To make students familiarized with competence in oral and written communication concerning veterinary pharmacology .

Course Contents

week	Topics	Hours
	Theoretical subject	
1-3	**Chemotherapy of microbial diseases:** Introduction, Chemotherapy, Classification of Antibacterials, Resistance of M.O to antibacterial, mechanism of resistance, method of transfer bacterial resistance, Penicillin, mechanism of action, types of penicillin, antibacterial activity , pharmacokinetic Side effect of penicillins, Dose, Cephalosporins, Mechanism of action, types of cephalosporins. antibacterial activity, pharmacokinetic, Side effect, bacitracin, Mechanism of action, antibacterial activity, pharmacokinetic, uses, Vancomycin, mechanism of action, antibacterial activity, side effect, polymyxins, mechanism of action, antibacterial activity, uses, side effect, Aminoglycosides, mechanism of action, activity, side effect. Tetracyclines, types, mechanism of action, activity, pharmacokinetic, side effect, Chloramphenicol, mechanism of action, activity, side effect, Macrolides, types, mechanism of action, activity, side effect, Lincosamides, types, mechanism of action, Activity, Side effect, Aminocyclitol, mechanism of action, Activity, Uses, Sulfonamides, -absorbable sulfonamide, non-absorbable sulfonamides, topical sulfonamides, mechanism of action, activity, side effect, Trimethoprim, mechanism of action ,uses, Side effect , Nitrofurans, absorbable, non-absorbable, Mechanism of action, Activity, Side effect , Refampin, Mechanism of action, uses, Side effect, Fluroquinolones, Types, Mechanism of action, Activity, Side effect, Metronidazole, Mechanism of action, Activity, Side effect, Basis of antibacterial combination. Types of antibacterial combinations.	9

	Reasons of failure of treatment with antibacterial. growth promoter.	
4-6	**Chemotherapy of parasitic disease**: Introduction, Anthelmintic, antinematodes: avermectins and milbemycins, benzimidazoles, imidazothiazoles, organophosphorous compound, Tetrahydropyrimidines, piprazine, diethylcarbamazine, phenothiazine, Anticestodes:praziquantel, niclosamide, benzimidazole, arecoline hydrobromide, dichlorophen, nitroscanate, anti trematodes, carbon tetrachloride, benzimidazole, clorsulon, oxyclozanide and rafoxanide, nitroxinil, diamfenetide, Antiprotozoal drugs: Anticoccidial drug: sulfonamides , nitrofurans, thiamine antagonist(amprolium, diaveridine, ethopabate), quinolates, robenidine, aprinocid, Antibabesial drugs : quinuronium sulphate, amicarbalide, imidocarb, diminazene, Anti theileriosis : chlortetracycline and oxytetracycline, hydroxynapthoquinones, gloxanane, Antitrypanosomal drugs : quinapyramine, phenanthridinium compound, diminazine, suramin, Antitoxoplasmosis drug: sulfonamide and trimethoprim ,clindamycin and clarthromycin, Antitrichomonal drug : nitroimidazole derivatives, Antihistomoniasis drugs : dimetridazole,	9
7-9	**Drugs acting on cardiovascular system:** introduction, Inotropic drug: cardiac glycosides, Sympathomimetic, Parasympatholytic, xanthine derivatives, Antidysrhythmic agent : Quinidine, procainamide, Lidocaine, Vasodilators : Glyceryl trinitrate, Isosorbide dinitrate, Hydralazine and minoxidil, Coagulants and anticoagulant , Fibrinolytic, Antithrombosis, Hematinics.	9
10 and 11	**Renal pharmacology :**introduction, Diuretics: diuretics acting on early distal tubule, loop diuretics: Potassium – sparing diuretics : Carbonic anhydrase inhibitor : osmotic diuretics : urolith treatment: urinary acidifiers: urinary alkalinizers : xanthine oxidase inhibitors.	6
12 - 14	**Drug acting on the respiratory system:** introduction, expectorant, mucolytics, anti-tussives, anti – asthmatic drugs, bronchodilators, antiinflammatory agents, mast cell stabilizers, respiratoty stimulant, decongestants.	9
15	**Drugs acting on reproductive system**: introduction, pituitary gland hormones: Anterior pituitary hormones, posterior pituitary hormones, pancreas hormone, Thyroid gland hormones, Adrenal cortex hormones, Adrenocortical insufficiency, Hyperadrenocorticism, Gonadotrophin – releasing hormone (GnRH), Sex Hormone, Drugs affecting uterine motility, Uterine muscles stimulants , Uterine muscle relaxants.	3
Total		**45**

Course Contents

week	Topics	Hours
	Practical Subject	
1	Neuromuscular blocking (on the frog)	2
2	Calculation of drug dosage	2
3	Xylazine-ketamine anesthesia in rabbits.	2
4	Dose response relationships(ED50, LD50, TI)	2
5	Anticonvulsants	2
6	Determination of blood cholinesterase activity	2
7	Organophosphate poisoning in rats or mice	2
8	Xylazine effects in sheep	2
9	Diuretics	2
10	Asprin toxicity(comparison with acetaminophen)	2
11 and 12	Veterinary pharmaceutical preparations	4
13	Neurobehavioral effects of drugs and toxicants	2
14 and 15	Effect of drugs on the perfused heart	4
Total		**30**

Mode of Assessment

Assessment	Score	Period
First Exam	10	5-6th weeks
Second Exam	10	10-11th weeks
Practical Exam	10	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th
Final Exam	60	After the 16th.

Textbooks and Recommended References

- Jim E. Riviere , Mark G. Papich . Veterinary Pharmacology and Therapeutics, 9th Edition
- Walter H. Hsu .Handbook of Veterinary Pharmacology 1st Edition
- Charles,W.E.(2010). Laboratory Guide in Pharmacology.Manuals of Pharmacology.

- **Course Level:** Third-Year Level
- **Course Name**: Toxicology
- **Theoretical :** 2 hours
- **Semester:** First
- **Unit:** 2

Course Objectives

Upon completion of this course, the student should be familiarized with:

To provide students with an understanding and knowledge of clinical pharmacology, toxicology and therapeutic. The course particularly covers the mechanisms of various drug actions, the PD/PK principles that are fundamental for the therapeutic uses and safe selection of therapeutic agents in clinical veterinary practice. in addition, students will also gain knowledge of important aspects of toxicology and therapeutics. functions of organs.

Course Contents

week	Topics	Hours
	Theoretical Subject	
1 and 2	Definitions, factors affecting the activity of poisons, Diagnosis , Principle of treatment of poisoning, Classification of toxic agents, (types or degrees) of toxicity, Toxicokinetics:, -Absorption of toxicants, distribution:, metabolism, elimination, routes of elimination / excretion: Toxicodynamics:, -binding -interaction -induction of toxic effects . Steps of poisoning treatment, Metals toxicity: Lead poisoning , Sources of lead toxicity, Clinical signs, Treatment, Mercury poisoning: Sources of poisoning, Clinical signs, Treatment, Arsenic poisoning	4
3 -5	Sources of poisoning : Clinical signs, Treatment, Copper poisoning : Sources of poisoning , Clinical signs, Treatment, Selenium poisoning: Sources of poisoning, Clinical signs, Treatment, Molybdeium poisoning : Sources of poisoning : Clinical signs, Treatment, nitrate and nitrite poisoning: Sources of poisoning : Clinical signs, Treatment, sodium chloride (common salt) poisoning : Sources of poisoning : Clinical signs, Treatment,	6
6-8	- Organophosphorus compound poisoning : Sources of poisoning, Clinical signs, Treatment, Nicotine poisoning : Sources of poisoning, Clinical signs, Treatment, Morphine poisoning : Sources of poisoning, Clinical signs, Treatment, atropine poisoning : Sources of poisoning, Clinical signs, Treatment, Cyanide poisoning : Sources of poisoning, Clinical signs, Treatment, food toxicants : natural contaminants of food . some poisonous plants : aflatoxins : clinical signs , prevention and treatment , Ergot poisoning: Toxicity, Treatment, Ammoniated feed poisoning:	6
9 -11	Toxicity, Clinical signs, Treatment, Gossypol poisoning : Mechanism	6

	of action , Clinical signs, Treatment. Sulfur: Sources, Toxicity, Clinical signs, Treatment, Fungicide poisoning : Toxicological of pesticides : Organophosphates, Insecticidespoisoning, Herbicide poisoning , rodenticide poisoning , Mechanism of action , Clinical signs, Treatment.	
12-14	Environmental toxicology :Air pollution : carbon monoxide , Sulphur dioxide, nitrogen oxides. water pollutants : sources. Toxin s of animal origin : Venoms of bee ,hornets and wasps :clinical signs , treatment, snake venom : Clinical signs, Diagnosis , Treatment.	6
15	Scorpion venom : Clinical signs, Treatment, Spider venom: Clinical signs, Treatment, Black widow spider: Clinical signs, Treatment, Fish toxins : Clinical signs, Treatment. Some poisonous plants in Iraq .	2
Total		**30**

Mode of Assessment

Assessment	Score	Period
First Exam	15	5-6th weeks
Second Exam	15	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks and Recommended References

- Ramesh C. Gupta, Veterinary Toxicology Basic and Clinical Principles. First edition 2007
- Veterinary toxicology by Lander, G. D. (George Druce)

- **Course Level:** Third-Year Level
- **Course Name**: Virology
- **Theoretical :** 2 hours
- **Practical:** 2 hours
- **Semester:** Second
- **Unit:** 3

Course Objectives

Upon completion of this course, the student should be familiarized with:

Student will learn the essential concepts of virology which include the structure of different viruses, properties, replication, types of infection, how viruses cause disease, immune response to infection, treatment and the inhibitory action of the antiviral chemotherapy and laboratory diagnosis..

Course Contents

week	Topics	Hours
	Theoretical Subject	
1	Introduction to virology and Virus architecture	2
2	Properties of animal viruses	2
3	Viral classification	2
4	Replication of animal viruses	2
5	Antiviral drugs	2
6	Viral genetics	2
7	Oncogenic viruses	2
8	Picornaviridae, Orthomyxoviridae, Paramyxoviridae	2
9	Coronaviridae, Reoviridae, Retroviridae	2
10	Rhabdoviridae, Birnaviridae, Bornaviridae	2
11	Bunyaviridae, Togaviredae, Astroviridae	2
12	Arteriviridae, Caliciviridae, Flaviviridae	2
13	Herpesviridae, Poxviridae	2
14	Adenoviridae, Papillomaviridae	2
15	Parvoviridae, Circoviridae, Asfaviridae	2
Total		**30**

Course Contents

week	Topics	Hours
	Practical Subject	
1	Overview about diagnostic methods in veterinary virology	2
2	Collection and preservation of viral specimens	2
3	Electron Microscopy Examination	2
4	Sample Preparation for Virus Isolation	2
5	Cultivation of Viruses in Laboratory animals	2
6	Cultivation of Viruses in Chicken Embryos	2

7	Preparation of Cell Culture	2
8	Cultivation of Viruses in Cell Culture	2
9	Recognition of viral growth in cell culture (Cytopathic effect (CPE) and Hemadsorbtion)	2
10	Hemagglutination Tests and hemagglutination inhibition	2
11	Neutralization Techniques	2
12	Titration Techniques (Plaque assay and Endpoint Method)	2
13	Immunofluorescence Tests	2
14	Polymerase Chain Reaction (PCR) and RT-PCR	2
15	Restriction Endonuclease, Southern blot and western blot	2
Total		**30**

Mode of Assessment

Assessment	Score	Period
First Exam	10	5-6th weeks
Second Exam	10	10-11th weeks
Practical Exam	10	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks and Recommended References

- Fenner's Veterinary Virology", Eds. MacLachlan and Dubovi 4th ed. (2011).
- "Principles of Virology – Molecular Biology, Pathogenesis and Control of Animal Viruses" vol 1and 2, Eds. Flint, Enquist, Racaniello and Skalka, 3rd ed. (2009),
- S. N. Sharma, S. C. Adlakha (2009): **Textbook of Veterinary Virology**, 1st edition International book distributing CO. (Publishing Division) Khushnuma Complex Basement 7, Meerabai Marg (Behind Jawahar Bhawan) Lucknow 226 001 *V.P.* (INDIA). ISBN 978-81-8189-274-4
- Frederick A. Murphy, E. Paul J. Gibbs, Marian C. Horzinek, Michael J. Studdert (2000): **Veterinary Virology**, 3rd Edition, 525 B Street, Suite 1900, San Diego, California 92101-4495, USA. ISBN-13:978-0-12-511340-3

- **Course Level:** Third-Year Level
- **Course Name**: Clinic I/ 2hours
- **Semester:** Second
- **Units :** 1

Course Objectives

Upon completion of this course, the student should be familiarized with:

- Teach the students on history taking Learn how to examine of the sick animal by inspection, palpation , percussion and by use a tools
- Educated on how to provide patient care and treatment

Course Contents

week	Topics	Hours
1	Introduction & History taken	2
2	Clinical examination & diagnosis (Inspection& physical examination	2
3	Temperature	2
4 and 5	Examination of cardiovascular system	4
6 and 7	Examination of respiratory system	4
8 and 9	Examination of digestive system	4
10	Examination of lymph nodes Examination of udder and milk	2
11	Examination of urinary system	2
12	Examination of skin	2
13	Allergic tests	2
14	Routs and administration of drugs	2
15	Revision and Exam.	2
Total		**30**

Mode of Assessment

Assessment	Score	Period
First Exam	15	5-6th weeks
Second Exam	15	10-11th weeks
Assignment Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks and Recommended References

- Clinical Examination of Farm Animals BY Peter G.G. Jackson & Peter D Cockcroft (2002)
- Color atlas of diseases and disorders in cattle by. Blowey, Roger W and Weaver, A. David 2011 3rd Ed .

- **Course Level:** Fourth-Year Level
- **Course Name**: Medicine I
- **Theoretical :** 3 hours
- **Semester:** first
- **Units:** 3

Course Objectives

Upon completion of this course, the student should be familiarized with:

- Student should be able to know the basic principles of internal diseases in animal species such as cattle , horses , sheep , goat and small animals
- Identify the diagnostic principles and treatment

Course Contents

week	Topics	Hours
	Subject	
1 and 2	Introduction and General systemic status	6
3 and 4	Digestive system: principles of alimentary tract dysfunctions	4
5	Manifestations of alimentary tract dysfunctions	4
6-9	Diseases of buccal cavity and associated organs : stomatitis ,pharyngeal obstruction , pharyngeal paralysis .esophagitis ,esophageal obstruction	12
10-12	Diseases of forestomach in ruminants	10
13 and 14	Diseases of stomach and intestine, Equine colic	5
15	Diseases of liver and pancreas	3
	Exam	1
Total		**45**

Mode of Assessment

Assessment	Score	Period
First Exam	15	5-6th weeks
Second Exam	15	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks and Recommended References

- Radostits et al (2007) Veterinary medicine. 10th Ed
- Anderws (2004) Bovine medicine
- Differential Diagnosis in Small Animal Medicine By Alex Gough 2007
- Color atlas of diseases and disorders in cattle by. Blowey, Roger W and Weaver, A. David 2011 3rd Ed

- **Course Level:** Fourth-Year Level
- **Course Name**: Medicine II
- **Theoretical :** 3 hours
- **Semester:** Second
- **Units:** 3

Course Objectives

Upon completion of this course, the student should be familiarized with:

- Student should be able to know the basic principles of internal diseases in animal species such as cattle , horses , sheep , goat and small animals
- Identify the diagnostic principles and treatment

Course Contents

week	Topics	Hours
	Subject	
1-7	Diseases of respiratory system	21
8-12	Diseases of nervous system	15
13-15	Disease of skin	9
Total		**45**

Mode of Assessment

Assessment	Score	Period
First Exam	15	5-6th weeks
Second Exam	15	10-11th weeks
Assignment,Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks and Recommended References

- Radostits et al (2007) Veterinary medicine. 10th Ed
- Anderws (2004) Bovine medicine
- Differential Diagnosis in Small Animal Medicine By Alex Gough 2007
- Color atlas of diseases and disorders in cattle by. Blowey, Roger W and Weaver, A. David 2011

3rd Ed

- **Course Level:** Fourth Year Level
- **Course Name**: Surgery I
- **Theoretical:** 3 hours
- **Practical:** 2 hours
- **Semester:** First
- **Units:** 4

Course Objectives

Upon completion of this course, the student should be familiarized with:

- To provide students with important knowledge about surgery and important to treatment the animals.
- To make students understand different surgical cases .

Course Contents

week	Topics	Hours
	Theoretical Subject	
1	Introduction & classification of surgery : (definition, history , principle of Halsted , indication of surgery)	3
2	Sterilization : (physical ,chemical , modern technique for sterilization)	3
3	Shock & fluid therapy	3
4	Wounds	3
5	Hemorrhage & hemostasis	3
6	Abscess .hematoma , cysts	3
7	Fistula ,sinus , ulcer , gangrene	3
8	Tumor , Burn	3
9 and 10	Radiology: (definition, principles, of x-ray, properties of x-ray ,types of x-ray machine, factors affect s effect on x-ray production)	6
11	Contrast radiology	3
12	Protection of x-ray & hazards	3
13	Modern diagnostic aids : (CT. Scan , MRI , U/S , digital x-ray , Gamma camera)	3
14 and 15	Fractures : (definition , etiology , classification , treatment , fractures healing , complications)	6
Total		**45**

Course Contents

week	Topics	Hours
	Practical Subject	
1	Introduction to surgical theater	2
2 and 3	Sterilization	4
4 and 5	Surgical instruments	4
6 and 7	Pre-operative preparation	4
8 and 9	Suture & ligature : (suture materials)	4
10 and 11	Suture & ligature : (suture patterns)	4
12 and 13	x-ray	4
14 and 15	Fractures	4
Total		**30**

Mode of Assessment

Assessment	Score	Period
First Exam	10	5-6th weeks
Second Exam	10	10-11th weeks
Practical Exam	10	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks and Recommended References

1- small animal surgery (Theresa Fossum)
2-current technique in small animal surgery (fubini and Duchrame)
3-handbook of veterinary anesthesia (Muir)
4-textbook of veterinary radiology (Thrall)

- **Course Level:** Fourth Year Level
- **Course Name**: Surgery II
- **Theoretical:** 3 hours
- **Practical:** 2 hours
- **Semester:** second
- **Units:** 4

Course Objectives

Upon completion of this course, the student should be familiarized with:

- To provide students with important knowledge about surgery and important to treatment the animals.
- To make students understand different surgical cases .

Course Contents

week	Topics	Hours
	Theoretical Subject	
1	Anesthesia: definition & terms in anesthesia	3
2	Introduction of anesthesia , factors affecting anesthesia	3
3 and 4	Pre-anesthesia	6
5	Muscle relaxant	3
6 and 7	Local anesthesia	6
8 and 9	General anesthesia	6
10	Anesthetic accidents	3
11-13	Lameness: definition , classification ,causes , affection of hoof ,affection of) (tendon, affection of ligament ,affection of joint ,laminitis	9
14	Laser surgery	3
15	Endoscopic & laparoscopic surgery	3
Total		**45**

Course Contents

week	Topics	Hours
	Practical subjects	
1-4	Local anesthesia	8
5-7	General anesthesia	6
8 and 9	Intra- articular Injection	4
10 and 11	Tendon surgery	4
12 and 13	Laser & endoscopic surgery	4
14 and 15	Docking & dehorning	4
Total		**30**

Mode of Assessment

Assessment	Score	Period
First Exam	10	5-6th weeks
Second Exam	10	10-11th weeks
Practical Exam	10	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks and Recommended References

1- small animal surgery (Theresa Fossum)
2-current technique in small animal surgery (fubini and Duchrame)
3-handbook of veterinary anesthesia (Muir)
4-textbook of veterinary radiology (Thrall)

- **Course Level:** Fourth—Year Level
- **Course Name**: Poultry Diseases I
- **Theoretical:** 2 hours
- **Practical:** 2 hours
- **Semester:** First
- **Units:** 3

Course Objectives

Upon completion of this course, the student should be provide with:

1.Important knowledge about : Nutritional Deficiency and Metabolic Diseases of Poultry.
2.Important knowledge about: Bacterial and Mycoplasmas Diseases.
3.Important information about : Fungal Diseases.
4.Important information about : Parasitic Diseases.
5.Significant knowledge about methods of Diagnosis, Differential Diagnosis, Treatment, and Prevention of diseases.

Course Contents

week	Topics	Hours
	Theoretical Subject	
1	Introduction to Poultry Diseases & Relation to Poultry Industry. Vitamin A Deficiency: Signs, Lesions, Diagnosis, Treatment.	2
2 and 3	Vitamin B , Vitamin D, Vitamin E Deficiency: Signs , Lesions, Diagnosis. Differential Diagnosis, Treatment.	4
4 and 5	Manganes Deficiency, Gout, Ascites. Definition : Signs, Lesions, Diagnosis, Differential Diagnosis, Treatment, Prevention.	4
6	Avian Salmonellosis: Definition, Etiology, Methods of Spread ,Signs, Lesions, Diagnosis, Differential Diagnosis, Treatment, Control.	2
7	Infectious Coryza, Fowl Cholera: Definition, Etiology, Methods of Spread, Signs, Lesions, Diagnosis, Differential Diagnosis, Treatment, Control.	2
8 and 9	Avian Colibacillosis: Definition ,Etiology, Types, Signs ,Lesions, Diagnosis Differential Diagnosis, Treatment, Prevention .	4
10 and 11	Avian Mycoplasmosis :Definition, Etiology, Strains, Methods of Spread, Signs, Lesions. Diagnosis, Differential Diagnosis, Treatment, Control.	4
12 and 13	Diseases Caused By Anaerobic Spore-forming Bacteria: Types , Etiology, Signs, Lesions, Diagnosis, Differential Diagnosis, Treatment, Control. • Spirochetosis.	4
14	Fungal Diseases: Types, Etiology, Definition, Diagnosis, Treatment, Control.	2
15	Parasitic Diseases: External Parasites Internal Parasites, Protozoa.	2
Total		**30**

Course Contents

week	Topics	Hours
	Practical Subject	
1	Safety in the Poultry Disease Laboratory. Diseases and poultry husbandry.	2
2	Poultry House Requirements and their effect on poultry health.	2
3	Methods of killing birds for necropsy, and carcass disposal.	2
4 and 5	Necropsy Technique.	4
6 and 7	Disease Prevention and Control.	4
8 and 9	Biosecurity.	4
10	Preparation of Technical Report.	2
11	Blood sampling.	2
12	Diagnosis of Nutritional Deficiency Diseases.	2
13	Diagnosis of Avian Colibacillosis.	2
14	Avian Salmonellosis.	2
15	Infectious Coryza, Fowl Cholera, Spirochetosis.	2
Total		**30**

Mode of Assessment

Assessment	Score	Period
First Exam	10	5-6th weeks
Second Exam	10	10-11th weeks
Practical Exam	10	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks and Recommended References

- David E. Swayne, John R. Glisson, Larry R. McDougald.Lisa K. Nolan, David L .Suarez,and Venugopal Nar. Disease of Poultry, 13th EDITION. WILEY-BLACKWELL.
- امراض الدواجن . الدكتور فؤاد الشيخلي.
- التشخيص السريري لامراض الدواجن: د.احمد ماجد العطار و د. تحسين عبد العزيز

- **Course Level:** Fourth—Year Level.
- **Course Name**: Poultry Diseases II
- **Theoretical:** 2 hours
- **Practical:** 2 hours
- **Semester:** Second
- **Units:** 3

Course Objectives

Upon completion of this course, the student should be familiarized with:

An overview on important and recurrent Viral Diseases, Diagnosis, Differential Diagnosis, Prevention ,Control, and Vaccination Programs of these diseases.

Course Contents

week	Topics	Hours
	Theoretical Subject	
1	Newcastle Disease: Definition ,Etiology, Classification ,Signs, Lesions, Diagnosis, Differential Diagnosis, Prevention, Control.	2
2	Avian Influenza : Definition, Etiology, Serotypes ,Signs, Lesions, Diagnosis, Differential Diagnosis, Methods of Spreads, Prevention and Control.	2
3	Infectious Bronchitis : Definition, Etiology, Forms ,Signs, Lesions, Diagnosis, Differential Diagnosis, Methods of Spreads, Prevention and Control.	2
4	Infectious Laryngotracheitis : Definition, Etiology ,Signs, Lesions, Diagnosis, Differential Diagnosis, Methods of Spreads, Prevention and Control.	2
5	Avian Pox : Definition, Forms, Types of Virus, Etiology ,Signs, Lesions, Diagnosis, Differential Diagnosis, Methods of Spreads, Prevention and Control.	2
6	Infectious Bursal Disease: Definition, Forms, , Etiology ,Signs, Lesions, Diagnosis, Differential Diagnosis, Methods of Spreads, Prevention and Control.	2
7	Avian Encephalomyelitis: Definition, Forms, , Etiology ,Signs, Lesions, Diagnosis, Differential Diagnosis, Methods of Spreads, Prevention and Control.	2
8	1.Hydropericardium-Hepatitis Syndrome, 2. Inclusion Body Hepatitis: Definition, Etiology ,Signs, Lesions, Diagnosis, Differential Diagnosis, Methods of Spreads, Prevention and Control.	2
9	Mareks Disease: Definition, Forms, , Etiology ,Signs, Lesions, Diagnosis, Differential Diagnosis, Methods of Spreads, Prevention and Control.	2
10	Lymphoid Leucosis: Definition , Etiology ,Signs, Lesions, Diagnosis, Differential Diagnosis, Methods of Spreads, Prevention and Control.	2
11	Egg Drop Syndrome: Definition , Etiology ,Signs, Lesions, Diagnosis, Differential Diagnosis, Methods of Spreads, Prevention and Control.	2

12	Viral Arthritis: Definition , Etiology ,Signs, Lesions, Diagnosis, Differential Diagnosis, Methods of Spreads, Prevention and Control.	2
13	Chicken Infectious Anemia: Definition , Etiology , Forms ,Signs, Lesions, Diagnosis, Differential Diagnosis, Methods of Spreads, Prevention and Control	2
14	Runting-Stunting Syndrome: Definition , Etiology ,Signs, Lesions, Diagnosis, Differential Diagnosis, Methods of Spreads, Prevention and Control.	2
15	Avian Rhinotracheitis :Definition , Etiology ,Signs, Lesions, Diagnosis, Differential Diagnosis, Methods of Spreads, Prevention and Control.	2
Total		**30**

Course Contents

week	Topics	Hours
	Practical Subject	
1	Diagnosis of Necrotic Enteritis and Ulcerative Enteritis.	2
2 and 3	Mycoplasmosis, Airsacculitis, Hydropericaridum-Hepatitis Syndrome.	4
4	Newcastle Disease: Diagnosis , Prevention and Control.	2
5	Mareks Disease , Lymphoid Leukosis ,Diagnosis and Differential Diagnosis.	2
6	Diagnosis of Avian Encephalomyelitis.	2
7	Infectious Bronchitis and Infectious Laryngotracheitis.	2
8	Infectious Bursal Disease and Inclusion Body Hepatitis.	2
9	Avian Pox.	2
10	Egg Drop Syndrome and related diseases which causing decrease Egg Production.	2
11	Vaccination and Vaccination Programs.	2
12	Parasitic Diseases, Diagnosis, Treatment and Control.	2
13	Fungal Diseases, Diagnosis and Control.	2
14	Samples collection for Laboratory Diagnosis.	2
15	Drugs and disease treatment.	2
Total		**30**

Mode of Assessment

Assessment	Score	Period
First Exam	10	5-6th weeks
Second Exam	10	10-11th weeks
Practical Exam	10	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks and Recommended References.

- David E. Swayne, John R. Glisson, Larry R. McDougald.Lisa K. Nolan, David L .Suarez,and Venugopal Nar. Disease of Poultry, 13th EDITION. WILEY-BLACKWELL.
- امراض الدواجن . الدكتور فؤاد الشيخلي.
- التشخيص السريري لامراض الدواجن: د.احمد ماجد العطار و د. تحسين عبد العزيز

- **Course Level:** Fourth-Year Level
- **Course Name:** Clinical pathology I
- **Theoretical:** 1 hour
- **Practical:** 2 hours
- **Semester:** First
- **Units:** 2

Course Objectives

Upon completion of this course, the student should be familiarized with:

- The student be able to identify the laboratory equipments and instruments.
- Understanding the sample collection, mailing and preserve.
- Identify the most important hematological and functional pathological tests with veterinary importance

Course Contents

week	Topics	Hours
	Theoretical Subject	
1	Introduction : terminology and concepts	1
2-5	Clinical hematology (leukocytes and erythrocytes)	4
6 and 7	Platelets functions, abnormalities and diagnosis of bleeding disorders	2
8 and 9	Examination of bone marrow	2
10 and 11	Clinical biochemistry :Basic principles, total proteins ,ketones ,urea, minerals levels	2
12	Liver function tests	1
13	Kidney function tests	1
14	Water electrolytes and acid base imbalances	1
15	Exam	1
Total		**15**

Course Contents

week	Topics	Hours
	Practical Subject	
1	Collections of different samples	2
2	Erythrocytes count	2
3	Reticulocytes count	2
4	Packed cell volume and Hb determination	2
5	Total leukocytes count	2
6	Differential leukocyte count	2
7	ESR determination	2
8	Bleeding time and clotting time	2
9	Platelets functions and abnormalities	2

10	Blood smear examination	2
11	Lymph smear examination	2
12	Total proteins, ketones, urea, Enzymology ,mineral levels	2
13	Examination of urine (physical and chemical)	2
14	Examination of urine (microscopical examination)	2
15	Exam.	2
Total		**30**

Mode of Assessment

Assessment	Score	Period
First Exam	7.5	5-6th weeks
Second Exam	7.5	10-11th weeks
Practical Exam	15	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks and Recommended References

- Latimer 2011 Duncan and Prasse's Veterinary laboratory medicine- clinical pathology 5th Ed.
- Veterinary Laboratory Medicine CLINICAL BIOCHEMISTRY AND HAEMATOLOGY Second Edition by MORAG G. KERR 2002
- Steven L. and Scott, Michael A 2008 Fundamentals of Veterinary Clinical Pathology, 2nd edition
- Weiss and Wardrop 2006 Schalm's Veterinary Hematology 6th ed.
- other TBD

- **Course Level:** Fourth-Year Level
- **Course Name:** Clinical pathology II
- **Theoretical:** 1 hour
- **Practical:** 2 hours
- **Semester:** Second
- **Units:** 2

Course Objectives

Upon completion of this course, the student should be familiarized with:

- The student be able to identify the laboratory equipment and instruments for microbial and parasitic identification .
- Recognized abnormalities of milk and its evaluation in different diseases conditions.
- Summarizes rumen fluid and transudate and exudate
- Enlighten clinical immunology

Course Contents

week	Topics	Hours
	Theoretical Subject	
1	Introduction	1
2-4	Clinical microbiology	3
5	Antimicrobial sensitivity tests	1
6	Clinical immunology	1
7-10	Clinical parasitological	4
11and 12	Examinations of milk	2
13 and 14	Examinations of rumen fluid and Transudate and exudate	2
15	Exam	1
Total		**15**

Course Contents

week	Topics	Hours
	Practical Subject	
1	Fecal examination	2
2	Fecal examination	2
3 and 4	Examination of skin scraping	4
5 and 6	Clinical microbiology	4
7	Examinations of milk (physical & chemical)	2
8	Examinations of milk (Bacterial)	2
9	Antimicrobial sensitivity tests	2
10	Examinations of rumen fluid	2
11 and 12	Serological tests	4
13 and 14	Tests for detection of toxic substances	4
15	Exam	2
Total		**30**

Mode of Assessment

Assessment	Score	Period
First Exam	7.5	5-6th weeks
Second Exam	7.5	10-11th weeks
Practical Exam	15	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks and Recommended References

- Veterinary clinical microbiology by Quinn et al 1999 reprint 2004
- Steven L. and Scott, Michael A 2008 Fundamentals of Veterinary Clinical Pathology, 2nd edition
- Basic laboratory procedures in clinical bacteriology 2nd Ed by Verheijen et al 2003
- Latimer 2011 Duncan and Prasse's Veterinary laboratory medicine- clinical pathology 5th ed.
- other TBD

- **Course Level:** Fourth-Year Level
- **Course Name**: Infectious and epidemiological diseases I
- **Theoretical:** 3 hours
- **Semester:** First
- **Units:** 3

Course Objectives

Upon completion of this course, the student should be familiarized with:

1.Student should be able to know the infectious diseases prevalent in the country and neighboring countries

2.Identify the most important infectious diseases of epidemiology

Course Contents

week	Topics	Hours
	Subject	
1	Introduction, contagious & communicable diseases Epidemiology of diseases	3
2	Morbidity and mortality rate ,population mortality Types of epidemiological diseases Epidemics, Endemic ,pandemics ,sporadic diseases	3
3	Transmission of diseases Primary & secondary factors in production of diseases Control and Eradications	3
4 and 5	**Diseases caused by bacteria** : Anthrax and *Pasteurella spp.*	6
6	Diseases caused by *Clostridium spp.*	3
7 and 8	Tuberculosis and Johns' diseases, Actinomycosis and Actinobacillosis, Brucellosis	6
9 and 10	Salmonellosis, Colibacillosis , Mastitis	6
11	Diseases caused by *Mycoplasma spp.,* Listeriosis of cattle ,sheep and dogs	3
12	Leptospirosis, *Bordetella* and Borreliosis Foot rot	2
13	Glanders Strangles Ulcerative lymphangitis	4
14	Contagious bovine pyelonephritis Caseous lymph adenitis in sheep Oral and laryngeal necrobacillosis	3
15	Diseases caused by Haemophilus and *Morexella spp.* and Epirithrozoon spp.	3
Total		**45**

Mode of Assessment

Assessment	Score	Period
First Exam	15	5-6th weeks
Second Exam	15	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks and Recommended References

- Veterinary Epidemiology - An Introduction BY Dirk U. Pfeiffer 2002
- Radostits et al (2007) Veterinary medicine. 10th Ed
- Differential Diagnosis in Small Animal Medicine By Alex Gough 2007
- Color atlas of diseases and disorders in cattle by. Blowey, Roger W and Weaver, A. David 2011 3rd Ed
- An Introduction to Veterinary Epidemiology BY Mark Stevenson 2005

- **Course Level:** Fourth-Year Level
- **Course Name**: Infectious and epidemiological diseases II
- **Theoretical:** 3 hours
- **Semester:** Second
- **Units:** 3

Course Objectives

Upon completion of this course, the student should be familiarized with:

1.Student should be able to know the infectious diseases prevalent in the country and neighboring countries

2.Identify the most important infectious diseases of epidemiology

Course Contents

week	Topics	Hours
	Subject	
1	Diseases caused by viruses: Rinderpest, PPR	3
2	FMD, VS	3
3	Blue tongue, BVD/MD	3
4	MCF and IBR	3
5	Equine infectious anemia African horse sickness	3
6	Equine rhinopneumonitis Equine viral arteritis Equine influenza	3
7	Orf, Pox and Pseudopod Lumpy skin disease	3
8	Bovine ephemeral fever Rift valley fever Akabane virus disease	3
9	Rabies & pseudo rabies , Bovine viral leukosis, Scrapie, Louping-ill	3
10	Canine distemper, parvovirus ,canine adenovirus ,corona virus	3
11 and 12	Diseases caused by blood parasitic infection	6
13 and 14	Diseases caused by external and internal parasites	6
15	Diseases caused by fungus	3
Total		**45**

Mode of Assessment

Assessment	Score	Period
First Exam	15	5-6th weeks
Second Exam	15	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th,11th.
Final Exam	60	After the 16th.

Textbooks and Recommended References

- Veterinary Epidemiology - An Introduction BY Dirk U. Pfeiffer 2002
- Radostits et al (2007) Veterinary medicine. 10th Ed
- Differential Diagnosis in Small Animal Medicine By Alex Gough 2007
- Color atlas of diseases and disorders in cattle by. Blowey, Roger W and Weaver, A. David 2011 3rd Ed
- An Introduction to Veterinary Epidemiology BY Mark Stevenson 2005

- **Course Level:** Fourth-Year Level
- **Course Name:** Morbid Anatomy I
- **Theoretical:** 1 hour
- **Practical:** 2 hours
- **Semester:** First
- **Units:** 2

Course Objectives

Upon completion of this course, the student should be familiarized with:

1. To provide students with important knowledge about pathological changes in animals
2. To preparing students with necropsy of animals and make diagnosed the diseases.
3. To make students expertness deals with die animals.
4. Students will be trained on how they deal with clinical specimens of infectious diseases or cadaver.
5. To make students familiarized with pathological anatomy, macroscopic and microscopic appearance of post mortem finding in infected animals or carcass.
6. To taught students how to write necropsy report.

Course Contents

week	Topics	Hours
	Theoretical Subject	
1 - 9	Bovine diseases Tuberculosis, Leptospirosis, Contagious bovine pleuropneumonia, Collibacillosis, Shipping fever, Cattle Plaque, Bovine malignant diarrhea, Foot &Mouth disease, Bovine viral diarrhea, Actinobacillosis, Actinomycosis, Theileriosis, Anaplasmosis, Babesiosis, Lumpy Skin disease.	9
10 - 15	Ovine diseases Contagious Ecthyma, Sheep Pox, Foot Rot, Black leg, Lamb Dysentery, Anthrax, Listeriosis, Enterotoxaemia, Black disease.	6
Total		**15**

Course Contents

week	Topics	Hours
	Practical Subject	
1 and 2	Introduction of post mortem and it is Report.	4
3 and 4	Post mortem technique for large animals	4
5 and 6	Post mortem technique for Lab. animals	4
7-12	Data show of Bovine diseases: Tuberculosis, Leptospirosis, Contagious bovine pleuropneumonia, Colibacillosis, Shipping fever, Cattle Plaque, Bovine malignant diarrhea, Foot &Mouth disease, Bovine viral diarrhea, Actinobacillosis, Actinomycosis, Theileriosis, Anaplasmosis, Babesiosis, Lumpy Skin disease.	12
13-15	Data show of ovine disease: Contagious Ecthyma, Sheep Pox, Foot Rot, Black leg, Lamb Dysentery, Anthrax, Listeriosis, Enterotoxaemia, Black disease.	6
Total		**30**

Mode of Assessment

Assessment	Score	Period
First Exam	10	5-6th weeks
Second Exam	10	10-11th weeks
Practical Exam	10	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks and Recommended References

- Edwards J.F. (2002). Review of Gross Pathology. Diseases of Ruminants.
- Davis C.L. (2002). Macroscopic veterinary pathology. Gross Course. Washington, DC.
- Donald K. Nichols. (2010).Gross pathology of selected zoo animal diseases. USA.
- Corrie, B. (2002).Pathology of forign animal diseases. Georgia. USA.

- **Course Level:** Fourth-Year Level
- **Course Name:** Morbid Anatomy II
- **Theoretical:** 1 hour
- **Practical:** 2 hours
- **Semester:** First
- **Units:** 2

Course Objectives

Upon completion of this course, the student should be familiarized with:

1. To provide students with important knowledge about pathological changes in animals
2. To preparing students with necropsy of animals and make diagnosed the diseases.
3. To make students expertness deals with die animals.
4. Students will be trained on how they deal with clinical specimens of infectious diseases or cadaver.
5. To make students familiarized with pathological anatomy, macroscopic and microscopic appearance of post mortem finding in infected animals or carcass.
6. To taught students how to write necropsy report

week	Topics	Hours
	Theoretical Subject	
1 - 6	Equine disease: Strangles, Glanders, Shigellosis, Epizootic Lymphangitis, Ulcerative Lymphangitis, Equine infectious anemia, Equine influenza	6
7- 12	Canine& Feline disease:Rabies, Canine Distemper, Canine viral hepatitis, Feline parvovirus(Panleukopenia)	6
13-15	Lab. Animals disease:Tyzzers disease, Coccidiosis in rabbit, External parasite.	3
Total		**15**

week	Topics	Hours
	Practical Subject	
1-5	Data Show of Equine diseases: Strangles, Glanders, Shigellosis, Epizootic lymphangitis, Ulcerative Lymphangitis, Equine infectious anemia, Equine influenza.	10
6-10	Data Show of Canine and Feline disease: Rabies, Canine Distemper, Canine viral hepatitis, Feline parvovirus(Panleukopenia).	10
11-15	Data Show of laboratory disease: Tyzzers diseases, Coccidiosis in rabbit, External parasite.	10
Total		**30**

Mode of Assessment

Assessment	Score	Period
First Exam	10	5-6th weeks
Second Exam	10	10-11th weeks
Practical Exam	10	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks and Recommended References

- Davis C.L. (2002). Macroscopic veterinary pathology. Gross Course. Washington, DC.
- Donald K. Nichols. (2010).Gross pathology of selected zoo animal diseases. USA.
- Corrie, B. (2002).Pathology of foreign animal diseases. Georgia. USA.
- Paul, C. S. Gross pathology of rats. Ohio state university. USA.
- Paul, C. S. Gross pathology of rabbits. Ohio state university. USA.

- **Course Level:** Fourth-Year Level
- **Course Name**: Clinic II/ 4 hours
- **Semester:** First
- **Units:** 2

Course Objectives

Upon completion of this course, the student should be familiarized with:

1.Learn how to Report the case
2.Teach the students to examine the sick animal
3.The student can be able to use traditional technical tools for the diagnosis
4.Educated on patient care and treatment

Course Contents

week	Topics	Hours
	Subject	
1-14	Examination of animals ,diagnosis of disease conditions referred to the Veterinary Teaching Hospital or through field visits. Rotation in surgery ,obstetrics, poultry diseases ,internal medicine and clinical pathology .	56
15	Revision and Exam.	4
Total		**60**

Mode of Assessment

Assessment	Score	Period
First Exam	15	5-6th weeks
Second Exam	15	10-11th weeks
Assignment, , Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th
Final Exam	60	After the 16th.

Textbooks and Recommended References

- Clinical Examination of Farm Animals BY Peter G.G. Jackson & Peter D Cockcroft (2002)
- Color atlas of diseases and disorders in cattle by. Blowey, Roger W and Weaver, A. David 2011 3rd Ed

- **Course Level:** Fourth-Year Level
- **Course Name**: Clinic III/ 4 hours
- **Semester:** Second
- **Units:** 2

Course Objectives

Upon completion of this course, the student should be familiarized with:

1. Learn how to interpret case report
2. Teach the students to examine the sick animal
3. The student can be able to use traditional technical tools for the diagnosis
4. Educated on patient care and treatment

Course Contents

Course Content		
week	**Topics**	**Hours**
	Subject	
1-14	Examination of animals ,diagnosis of disease conditions referred to the Veterinary Teaching Hospital or through field visits. Rotation in surgery ,obstetrics, poultry diseases ,internal medicine and clinical pathology .	56
15	Revision and Exam.	4
Total		**60**

Mode of Assessment

Assessment	Score	Period
First Exam	15	5-6th weeks
Second Exam	15	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks and Recommended References

- Clinical Examination of Farm Animals BY Peter G.G. Jackson & Peter D Cockcroft (2002)
- Color atlas of diseases and disorders in cattle by. Blowey, Roger W and Weaver, A. David 2011 3rd Ed

- **Course Level:** Fourth Year Level
- **Course Name**: Female fertility and venereal diseases
- **Theoretical:** 2 hours
- **Practical:** 2 hours
- **Semester:** First
- **Units :** 3

Course Objectives

Upon completion of this course, the student should be familiarized with:

1. To provide students with important knowledge about structure and function of female reproductive system.
2. To provide students with important knowledge about hormonal control of reproduction.
3. To make students understand how can diagnosis and treatment of fertility problems and diseases .

Course Contents

week	Topics	Hours
	Theoretical Subject	
1	Anatomy of the female genitalia	2
2	Puberty and Maturity	2
3	Oestrous cycle in animals	2
4	Oster's detection	2
5	Seasonality and their effect	2
6	Ovulation	2
7	Luteolysis	2
8 and 9	Reproductive hormones	4
10 - 12	Infertility and Sterility	6
13	Reproduction in Mare	2
14	Reproduction in buffalo and camel	2
15	Reproduction in dogs and cats	2
Total		**30**

Course Contents

week	Topics	Hour
	Practical Subject	
1	Anatomy of the female genitalia	2
2	Examine of female genitalia	2
3	Measurements of female genitalia	2
4	Practical examine of female genitalia	2
5	Uses of reproductive hormones	2
6	Vaginal and Uterine samples	2
7	Anomalies of female genitalia	2
8	Intrauterine Therapy	2
9-15	Reproductive performance	14
Total		**30**

Mode of Assessment

Assessment	Score	Period
First Exam	10	5-6th weeks
Second Exam	10	10-11th weeks
Practical Exam	10	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th,11th.
Final Exam	60	After the 16th.

Textbooks and Recommended References

- Richard L.Walker,DVM, and Walter R.Threlf,Large animal Theriogenology . 2003.
- Arthur, Reproduction in farm animals,2001.
- P.L.Senger,Ph.D.Pregnancy and parturition ,2nd ,2003
- Dr.Prafeep kumar.Applied Veterinary Gynaecology and obsterics ,1nd ,2009

- **Course Level:** Fourth- Year Level
- **Course Name**: Obstetrics
- **Theoretical:** 2 hours
- **Practical:** 2 hours
- **Semester:** Second
- **Units:** 3

Course Objectives

Upon completion of this course, the student should be familiarized with:

1. To provide students with important knowledge about fertilization, pregnancy and parturition.
2. To make students understand the development of embryos .
3. To make students understand how can dealing with normal parturition and dystocia.

Course Contents

week	Topics	Hours
	Theoretical Subject	
1	Introduction and history of the obstetrics Physiology of pregnancy	2
2	Development of the embryo	2
3	Maternal recognition of pregnancy	2
4	Fetal membranes and fetal fluids	2
5	Position of uterus during the pregnancy period	2
6	Gestation length and the dactors influencing it	2
7	Maintenance of pregnancy, Pregnancy diagnosis	2
8	Problem of pregnancy: Parturition	2
9	Dystocia: causes, Dystocia: treatment	2
10	Induction of parturition, Postpartum care	2
11	Pueperium period	2
12	Uterine involution, Uterine definse mechanism	2
13	Puerperial diseases: retained placenta	2
14	Uterine prolapse	2
15	Metritis: causes, Metritis: treatment	2
Total		**30**

Course Contents

week	Topics	Hours
	Practical Subject	
1	Fetal membranes	2
2	General examine of female genitalia	2
3	Pregnancy diagnosis	2
4	Uterine tortion	2
5	Fetal anomalies	2

6	Normal position of parturition	2
7	Fetal causes of distocia	2
8	Maternal causes of distocia	2
9	Obstetrical equipments	2
10	Obstetrical maneuvers	2
11	Caesarian section	2
12	Fetotomy	2
13	Uterine and vaginal prolapse	2
14	Pertained placenta	2
15	ovariectomy	2
Total		**30**

Mode of Assessment

Assessment	Score	Period
First Exam	10	5-6th weeks
Second Exam	10	10-11th weeks
Practical Exam	10	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks and Recommended References

- David E. Noakes & David E. Noakes & Timothy J. Parkinson & Timothy J. Parkinson & Gary C. W. England & Gary C. W. England. Veterinary Reproduction & Obstetrics, 9th Edition
- Peter G. G. Jackson BVM&S MA DVM&S FRCVS. Handbook of Veterinary Obstetrics, 2e 2nd Edition

- **Course Level:** Fourth-Year Level
- **Course Name**: Zoonotic diseases
- **Theoretical:** 2 hours
- **Semester:** Second
- **Units:** 2

Course Objectives

Upon completion of this course, the student should be familiarized with:

1.Student should be able to know the diseases that transmitted from animal to man
2.Identify the diseases that transmitted between different animal species
3.Learn the control and prevention from zoonotic diseases.

Course Contents

week	Topics	Hours
	Subject	
1	Introduction to zoonotic diseases	2
2	Principles of zoonotic recognition	2
3	Principles of zoonotic control & prevention Viral zoonosis :FMD,Bovine popular stomatitis ,Cow pox ,Orf,pseudocow pox	2
4	Argentina hemorrghic fever, Crimean-Congo hemorrghic fever,Ebola hemorrghic fever,Rift valley fever ,Viral hepatitis type A,B,C,D Eastern ,Venzuelan&Weatern equine encephalitis	2
5	Loping ill, Mad cow disease Rabies, California encephalitis ,Colorado tick fever	2
6	West Nile fever,Yello fever, Nairobi sheep disease Equine& swine influenza	2
7	Newcastle disease .Psittacosis Q fever Bacterial zoonosis ,Anthrax ,Listeriosis ,Leptospirosis ,Leprosy ,Botulism, Brucellosis, Compylobacteriosis	2
8	Tuberculosis Closterdium perfringes food poisoning,Streptococosis ,Staphylococosis	2
9	Colibacillosis,Vibriosis Salmonellosis,Shigellosis	2
10	Cat scratch disease ,Rat bit fever,Plague Tetanus,Clostridial histotoxic infection	2
11	Glanders & Corynbacterial infection Parasitic Zoonosis : Arthropod infection& tick paralysis	2
12	Cestoda infection :Coenurosis ,Taeniasis Echinococosis ,Dipphyllobothriasis	2
13	Trematoda infection :Fascioliasis,Dictoceliasis Nematode infection:Ascariasis,Capillariasis,Filariasis,Thelaziasis	2

14	Protozoa infection :Toxoplasmosis,Cryptosporidiosis,Giardiasis,Sarcocystosis Babesiosis,balantidiasis,Leshmaniasis ,Trypanosomoiasis	2
15	Ring worm ,candediasis ,Histoplasmosis ,Nocardiosis Cutanous larva migration ,visceral larva migration	2
Total		**30**

Mode of Assessment

Assessment	Score	Period
First Exam	15	5-6th weeks
Second Exam	15	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks and Recommended References

- Animals disease and human society by Joanna Swabe 1999
- Radostits et al (2007) Veterinary medicine. 10th Ed

- **Course Level:** Fifth-Year Level
- **Course Name**: Medicine III
- **Theoretical:** 3 hours
- **Semester:** first
- **Units:**3

Course Objectives

Upon completion of this course, the student should be familiarized with:

1.Student should be able to know the internal diseases in animal species such as cattle , horses, sheep , goat and small animals

2.Identify the diagnostic principles and treatment as well as prevention

Course Contents

week	Topics	Hours
	Theoretical Subject	
1	**Metabolic diseases: Introduction**	3
2	Milk fever	3
3	Downer cow syndrome	3
4	Hypomegnesemic tetanies	3
5	Ketosis	3
6	Pregnancy toxemia	3
7	Postparturient hemoglubinuria	3
8	Azoturia	3
9	**Diseases caused by nutritional deficiencies: Introduction**	3
10	Vitamin A deficiency	3
11	Vitamin E and selenium deficiency	3
12	Vitamin D deficiency	3
13	Copper deficiency	3
14	Iodine deficiency Zinc deficiency	3
15	Deficiency of calcium, magnesium and phosphorus Deficiency of vitamin C and manganese Deficiency of thiamin, B12, riboflavin and choline	3
Total		**45**

Mode of Assessment

Assessment	Score	Period
First Exam	15	5-6th weeks
Second Exam	15	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks and Recommended References

- Radostits et al (2007) Veterinary medicine. 10th Ed
- Anderws (2004) Bovine medicine
- Differential Diagnosis in Small Animal Medicine By Alex Gough 2007
- Color atlas of diseases and disorders in cattle by. Blowey, Roger W and Weaver, A. David 2011 3rd Ed.

- **Course Level:** Fifth-Year Level
- **Course Name**: Medicine IV
- **Theoretical:** 3 hours
- **Semester:** Second
- **Units:**3

Course Objectives

Upon completion of this course, the student should be familiarized with:

1.Student should be able to know the internal diseases in animal species such as cattle , horses , sheep , goat and small animals

2.Identify the diagnostic principles and treatment as well as prevention

Course Contents

week	Topics	Hours
	Theoretical Subject	
1-5	Diseases of cardiovascular system	15
6-8	Diseases of musculoskeletal system	9
9-12	Diseases of urinary system	12
13-15	Diseases caused by poisonous materials	9
Total		**45**

Mode of Assessment

Assessment	Score	Period
First Exam	15	5-6th weeks
Second Exam	15	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks and Recommended References

- Radostits et al (2007) Veterinary medicine. 10th Ed
- Andrews (2004) Bovine medicine
- Differential Diagnosis in Small Animal Medicine By Alex Gough 2007
- Color atlas of diseases and disorders in cattle by. Blowey, Roger W and Weaver, A. David 2011 3rd Ed .

- **Course Level:** Fifth Year Level
- **Course Name**: Surgery III
- **Theoretical:** 2 hours
- **Practical :** 2 hours
- **Semester:** First
- **Units :** 3

Course Objectives

Upon completion of this course, the student should be familiarized with:

1.To provide students with important knowledge about surgery and important to treatment the animals.

2.To make students understand different surgical cases .

Course Contents

week	Topics	Hours
	Theoretical Subject	
1	Digestive system: Affection of salivary gland and tongue	2
2	Affection of teeth	2
3	Affection of soft and hard plate	2
4	Affection of pharynx	2
5	Affection of esophagus	2
6	Affection of simple stomach	2
7	Affection of compound stomach	2
8	Affection of small intestine	2
9	Affection of large intestine	2
10	Affection of digestive accessory organs	2
11	Hernia	2
12	Cardiovascular system: cardial anomalies, Percarditis, Affection of blood vessels	2
13	Ear surgery: ear hematoma ,ear trimming	2
14	Eye surgery:entropian and ectoropain ,extirpation of eye ball	2
15	Central nervous system :Affection of spinal cord and cranial nerves, facial paralysis ,trigeminal paralysis	2
Total		**30**

Course Contents

week	Topics	Hours
	Practical Subject	
1	Digestive system: Extraction of teeth	2
2	Partial glassectomy	2
3	Esophagotomy	2
4	Gastrotomy	2
5	Pyloroplasty and pyloromyotomy	2
6-8	Enterectomy	6
9 and 10	Rumenotomy	4
11	Partial and total splenectomy	2
12	Partial hepatectomy	2
13	Ear surgery: ear trimming ,ear hematoma	2
14	Eye surgery: Extripation of eye ball	2
15	Ectropian and Entropian	2
Total		**30**

Mode of Assessment

Assessment	Score	Period
First Exam	10	5-6th weeks
Second Exam	10	10-11th weeks
Practical Exam	10	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks and Recommended References

1. Small animal surgery (Theresa Fossum)
2. Current technique in small animal surgery (fubini and Duchrame)
3. Handbook of veterinary anesthesia (Muir)
4. Textbook of veterinary radiology (Thrall)

- **Course Level:** Fifth Year Level
- **Course Name**: Surgery IV
- **Theoretical:** 2 hours
- **Practical :** 2 hours
- **Semester:** Second
- **Units:** 3

Course Objectives

Upon completion of this course, the student should be familiarized with:

1.To provide students with important knowledge about surgery and important to treatment the animals.

2.To make students understand different surgical cases .

Course Contents

week	Topics	Hours
	Theoretical Subject	
1	Respiratory system: Affections of nostrils and nasal cavity	2
2	Affections of sinuses and guttural pouch	2
3	Affections of larynx and trachea	2
4	Affections of lung	2
5	Affections of chest wall	2
6	Male genital system: ,Affections of penis and prepuce	2
7	Preparations of teaser	2
8	Castration	2
9 and 10	Female genital system: Ovarectomy and ovariohysterectomy, caesarian section, rectovaginal fistula, treatment of pneumovagina	4
11	Urinary system: Affections of kidney and ureter	2
12	Affections of urinary bladder	2
13	Affections of urethra	2
14	Mammary gland: Affections of mammary gland	2
15	Teat surgery	2
Total		**30**

Course Contents

week	Topics	Hours
	Practical Subject	
1	Respiratory system: Trephining	2
2	Laryngeotomy	2
3	Tracheotomy	2
4	Rib resection	2
5	Thoracotomy	2
6	Urinary system: Nephrectomy and nephrectomy	2
7	Cystectomy and cystectomy	2
8	Urethrostomy , Urethrostomy, and urethral fistula	2
9 and 10	Male genital system: Castration	4
11	Penis surgery: circumcision, reefing operation, amputation of penis	2
12 and 13	Female genital system: Ovarectomy and ovariohysterectomy, caesarian section	4
14	Mammectomy	2
15	Teat fistula	2
Total		**30**

Mode of Assessment

Assessment	Score	Period
First Exam	10	5-6th weeks
Second Exam	10	10-11th weeks
Practical Exam	10	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks and Recommended References

1- Small animal surgery (Theresa Fossum)
2-Current technique in small animal surgery (fubini and Duchrame)
3-Handbook of veterinary anesthesia (Muir)
4-Textbook of veterinary radiology (Thrall)

- **Course Level:** Fifth-Year Level
- **Course Name:** Food hygiene I
- **Theoretical:** 2 hours
- **Practical :** 2 hours
- **Semester:** First
- **Units :** 3

Course Objectives

Upon completion of this course, students will be able to:

- Critically basic patterns of Food animals Food, Meat Composition and Quality.
- Techniques for Preservation of Meal, as well as humane Slaughter and meat Hygiene Practice.
- Understand the student of Red Meat Inspection and Chemical Residues in Meat

Course Contents

Week	Topics	Hours
	Theoretical Subject	
1	The food animals	2
2	Comparative anatomy of tissues and organs	2
3	Animal transportation	2
4	Abattoir or slaughterhouse	2
5	Ante-mortem and post mortem inspection	2
6	Preservation of meat	2
7	Pathology of the food animals	2
8	Chemical residues in meat	2
9	Food poisoning	2
10	Meat microbiology	2
11	Food-borne zoonotic diseases	2
12	Metabolic & Deficiency Diseases	2
13	Poultry slaughter and inspection	2
14	Environmental pollutants	2
15	Exam	2
Total		**30**

Course Contents

Week	Topics	Hours
	Practical Subject	
1	Measuring bleeding in meat	2
2	Examination the head and judgment	2
3	Examination the viscera and judgment	2

4	Examination the carcass and judgment	2
5	Comparative anatomy of organs	2
6	Determination of age	2
7	Chemical and biological tests to differentiate of meat	2
8	Measuring pH in meat	2
9	Detection of meat spoilage	2
10	Meat quality and the palatability factors	2
11	Identification of abnormal odors in meat	2
12	Poultry carcasses: pathological cases, examination and judgment	2
13	Egg examination	2
14	Canned food examination	2
15	Exam	2
Total		**30**

Mode of Assessment

Assessment	Score	Period
First Exam	10	5-6th weeks
Second Exam	10	10-11th weeks
Practical Exam	10	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks And Recommended References

- 1. J. F. Gracey; D. S. Collins and R. J. Huey (1999). Meat Hygiene. 10th edition. London · Edinburgh· New York · Philadelphia· Sydney· Toronto.
- Adam .k.M. G. paul and V.Zaman.Medical Veterinary Protozology. London.u.k
- 2.Haddad.j.j and Gemel.isolation of salmonella from living and slaughtering in Mosul
- 3 .Wilson. A.practical meat inspection .blackwell.Scientific Puplic . Oxford
- 4.Getty.R. The anatomy of domestic animals . Saunders comp.philadilphia

- **Course Level:** Fifth-Year Level
- **Course Name:** Food hygiene II
- **Theoretical:** 2 hours
- **Practical :** 2 hours
- **Semester:** second
- **Units :** 3

Course Objectives

Upon completion of this course, students will be able to:

1.Critically basic patterns of Food Poisoning and Microbiology, as well as Occupational Injuries and Infections.

2.Infectious disease transmitted from animal to human, as well as Diseases Caused by Helminthes and Arthropod Parasites and Metabolic diseases and Nutritional Deficiencies

3.Understand the student the environmental Pollutants.

4.Study the structure of mammary gland and the milk composition, then study the role of milk in contaminated to transmitted the disease

Course Contents

Week	Topics	Hours
	Theoretical Subject	
1	Milk hygiene	2
2	Composition of milk	2
3	Physical Properties of milk	2
4	Chemical properties of milk	2
5	Factors effecting on composition of milk	2
6	Factors effecting on milk production	2
7	Microbiology of milk	2
8	Sources of contamination in raw milk	2
9	Types of microorganisms and their activity in milk	2
10	Milk fermentation	2
11	Milk borne-diseases	2
12	Animal disease transmitted to human through milk	2
13	Human disease transmitted to human through milk	2
14	Control of diseases transmitted by milk: Heat processing of milk	2
15	Exam	2
Total		**30**

Course Contents

Week	Topics	Hours
	Practical Subject	
1	Sensory evaluation of milk	2
2	Determine the fat percentage of milk and the specific gravity of milk	2
3	Detection the acidity of milk	2
4	The methylene blue and resazurin reduction tests	2
5	Detection the impurities of milk	2
6	Catalase and Phosphatase tests for abnormal milk	2
7	Determination of lactose and chloride in milk	2
8	The bacteriological tests using standard plate count of raw milk	2
9	Detection of antibiotic residue in milk	2
10	Yeast and mold count in milk	2
11	White blood cells count for the detection of mastitis	2
12	Microbiological tests for the detection of mastitis	2
13	California Mastitis Test	2
14	Methods of preservation of milk	2
15	Exam	2
Total		**30**

Mode of Assessment

Assessment	Score	Period
First Exam	10	5-6th weeks
Second Exam	10	10-11th weeks
Practical Exam	10	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks And Recommended References

1.adam.k.M.G.paul and V.Zaman.Medical Veterinary Protozology. London.u.k
2.Haddad.j.j and Gemel.isolation of salmonella from living and slaughtering in Mosul
3 .Wilson. A.practical meat inspection .blackwell.Scientific Puplic . Oxford
4.Getty.R. The anatomy of domestic animals . Saunders comp.philadilphia
5. J. F. Gracey; D. S. Collins and R. J. Huey (1999). Meat Hygiene. 10th edition. London Edinburgh· New York · Philadelphia· Sydney· Toronto.

- **Course level:–**Fifth year level
- **Course name:** Fish diseases
- **Theoretical:** 2 hours
- **Practical :** 2 hours
- **Semester:** First
- **units:** 3

Course objective:

This course focuses on the etiology, pathogenesis, diagnosis, and treatment of the important diseases in fish. Strategies for species management, handling and disease prevention are emphasized. The course deals with various aspects of aquaculture, including food fish, shellfish, pet fish, and public display aquaria.

Course content

Week	Topics	hours
	Theoretical Subject	
1	Introduction of Ichthyology and fish Pathology	2
2 and 3	Prevention and health control	4
4 - 7	Infectious disease	8
8 - 12	Parasitic disease	10
13 - 15	Non infectious diseases	6
Total		**30**

Course content

Week	Topics	hours
	Practical Subject	
1	Introduction in fish breeding and disease	2
2	External appearance for fish and anatomy	2
3	Physical and chemical property of pond water	2
4	Ponds designed	2
5	Fish feeding, breeding ,and types of ponds	2
6	Sample taken and preservation	2
7	Practical examination	2
8	Practical tests and bacterial culture in fish	2
9	Parasitic tests and diagnosis methods in fish	2
10	Practical fishing and field fish exam	2
11	Diagnostic and pathological slides show	2
12	Methods with practical apply	2
13	Practical work on pathological samples for diagnosis	2
14	Ponds fertilization and its methods	2
15	Exam	2
Total		**30**

Mode of Assessment

Assessment	Score	Period
First Exam	10	5-6th weeks
Second Exam	10	10-11th weeks
Practical Exam	10	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks and Recommended References

- Edward J. Noga: Fish Disease: Diagnosis and Treatment, Second Edition

- **Course Level:** Fifth Year Level
- **Course Name**: Artificial Insemination
- **Theoretical:** 1 hours
- **Practical :** 2 hours
- **Semester:** First
- **Units : 2**

Course Objectives

Upon completion of this course, the student should be familiarized with:

1. To provide students with important knowledge about structure and function of male
2. reproductive system.
3. To provide students with important knowledge about spermatogenesis process.
4. To make students understand the artificial insemination in different animals.

Course Contents

week	Topics	Hours
	Theoretical Subject	
1	Introduction and history of A.I.	1
2	Anatomy of the male genitalia	1
3	Spermatogenesis	1
4	Hormonal control in male reproduction	1
5	Breeding soundness	1
6	Semen collection methods	1
7	Composition of semen	1
8	Semen evaluation	1
9	Sperm metabolism	1
10	Semen dilution	1
11	Semen storage	1
12	Artificial insemination	1
13 and 14	Fertility and infertility in male	2
15	Venereal diseases	1
Total		**15**

Course Contents

week	Topics	Hours
	Practical Subject	
1 and 2	Anatomy of the male genitalia	4
3 and 4	Examination of the male genitalia	4
5 and 6	Semen collection methods	4
7 and 8	Semen evaluation	4
9 and 10	Semen dilution	4
11 and 12	Semen cooling storage	4
13-15	Artificial insemination	6
Total		**30**

Mode of Assessment

Assessment	Score	Period
First Exam	10	5-6th weeks
Second Exam	10	10-11th weeks
Practical Exam	10	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks and Recommended References

- Annett Heise (2012). Artificial Insemination in Veterinary Science, A Bird's-Eye View of Veterinary Medicine, Dr. Carlos C. Perez-Marin (Ed.), ISBN: 978-953-51-0031-7,

- **Course Level:** Fifth-Year Level
- **Course Name**: Clinic IV/ 14 hours
- **Semester:** First
- **Units:** 7

Course Objectives

Upon completion of this course, the student should be familiarized with:

- Teach the students to examine the sick animal
- The student can be able to report, present and discuss the case.
- Also can be able use traditional technical tools for the diagnosis
- Educated on patient care, treatment and monitoring

Course Contents

week	Topics	Hours
	Subject	
1-14	Examination of animals ,diagnosis of disease conditions referred to the Veterinary Teaching Hospital or through field visits. Rotation in surgery ,obstetrics, poultry diseases ,internal medicine and clinical pathology .	196
15	Revision and Exam.	14
Total		**210**

Mode of Assessment

Assessment	Score	Period
First Exam	15	5-6th weeks
Second Exam	15	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks and Recommended References

- Clinical Examination of Farm Animals BY Peter G.G. Jackson & Peter D Cockcroft (2002)
- Color atlas of diseases and disorders in cattle by. Blowey, Roger W and Weaver, A. David 2011 3rd Ed

- **Course Level:** Fifth-Year Level
- **Course Name**: Clinic V/ 12 hours
- **Semester:** Second
- **Units:** 6

Course Objectives

Upon completion of this course, the student should be familiarized with:

- Teach the students to examine the sick animal
- The student can be able to report, present and discuss the case.
- Also can be able use traditional technical tools for the diagnosis
- Educated on patient care, treatment and monitoring

Course Contents

week	Topics	Hours
	Subject	
1-14	Examination of animals ,diagnosis of disease conditions referred to the Veterinary Teaching Hospital or through field visits. Rotation in surgery ,obstetrics, poultry diseases ,internal medicine and clinical pathology .	168
15	Revision and Exam.	12
Total		**180**

Mode of Assessment

Assessment	Score	Period
First Exam	15	5-6th weeks
Second Exam	15	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks and Recommended References

- Clinical Examination of Farm Animals BY Peter G.G. Jackson & Peter D Cockcroft (2002)
- Color atlas of diseases and disorders in cattle by. Blowey, Roger W and Weaver, A. David 2011 3rd Ed

- **Course Level:** Student whom pass Forth-Year Level
- **Course Name**: Summer clinic/ 3 hours
- **Semester:** summer
- **Units: 2**

Course Objectives

Upon completion of this course, the student should be familiarized with:

- The student can be able to use different technical tools for the diagnosis
- Educated on how to provide patient care and treatment
- Teach the students to examine the sick animal
- Learn how summarize a patient case

Course Contents

week	Topics	Hours
	Subject	
1-14	Examination of animals ,diagnosis of disease conditions referred to the Veterinary Teaching Hospital or through field visits. Rotation in surgery ,obstetrics, poultry diseases ,internal medicine and clinical pathology .	42
15	Revision and Exam.	3
Total		**45**

Mode of Assessment

Assessment	Score	Period
First Exam	15	5-6th weeks
Second Exam	15	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Note: each evaluation step include; medicine, clinical pathology, surgery, obstetrics and poultry diseases

Textbooks and Recommended References

- Clinical Examination of Farm Animals BY Peter G.G. Jackson & Peter D Cockcroft (2002)
- Color atlas of diseases and disorders in cattle by. Blowey, Roger W and Weaver, A. David 2011 3rd Ed

- **Course Level:** Fifth Year Level
- **Course Name**: Reproductive Techniques
- **Theoretical:** 1 hours
- **Practical :** 2 hours
- **Semester:** Second
- **Units :** 2

Course Objectives

Upon completion of this course, the student should be familiarized with:

- To provide students with important knowledge about new reproductive techniques which used in animals.
- To make students understand how can used this techniques in reproduction of farm animals .

Course Contents

week	Topics	Hours
	Theoretical Subject	
1	Oestrous synchronization	1
2	Super ovulation	1
3 and 4	Sperm sexing	2
5 and 6	Embryo transfer	2
7 and 8	Cloning and splitting of embryo	2
9 and 10	In vetro fertilization	2
11 and 12	ultrasonograrhy	2
13 and 14	Laparoscopic intrauterine insemination	2
15	Suppress of reproductive activity	1
Total		**15**

Course Contents

week	Topics	Hours
	Practical Subject	
1 and 2	Oestrous synchronization	4
3 and 4	Super ovulation	4
5 and 6	Embryo transfer	4
7 and 8	Cloning and splitting of embryo	4
9 and 10	In vetro fertilization	4
11 and 12	Sperm sexing	4
13 and 14	Clinical application of ultrasonography	4
15	Intrauterine insemination	2
Total		**30**

Mode of Assessment

Assessment	Score	Period
First Exam	10	5-6th weeks
Second Exam	10	10-11th weeks
Practical Exam	10	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks and Recommended References

- David E. Noakes & David E. Noakes & Timothy J. Parkinson & Timothy J. Parkinson & Gary C. W. England & Gary C. W. England. **Veterinary Reproduction & Obstetrics, 9th Edition**
- Peter G. G. Jackson BVM&S MA DVM&S FRCVS. **Handbook of Veterinary Obstetrics, 2e 2nd Edition**

- **Course Level:** Fifth-Year Level
- **Course Name:** Forensic Medicine
- **Theoretical:** 1 hour
- **Practical :** 2 hours
- **Semester:** Second
- **Units :** 2

Course Objectives

Upon completion of this course, students will be able to:

The purpose of this course is to introduce the student to the application of veterinary forensic sciences in crimes involving animals, including recognition of abuse, crime scene investigation, and interacting with the legal community.

Course Contents

Week	Topics	Hours
	Theoretical Subject	
1-3	Death, cause of general death, Syncope, Asphyxia.	3
4 and 5	Drowning, sudden death, death from starvation, death from cold, death from effect of heat, death from electric current.	2
6-8	Burns and its types.	3
9-11	Wounds and its types.	3
12-14	Toxins and its types	3
15	Exam	1
Total		**15**

Course Contents

week	Topics	Hours
	Practical Subject	
1	Post mortem changes and its factors with necropsy report.	2
2 and 3	Death, cause of general death, Syncope, Asphyxia	4
4-6	Drowning, Sudden death, death from starvation, death from cold, death from effect of heat, death from electric current.	6
7 -9	Burns and its types	6
10-12	Wounds and its types	6
13-15	Toxins and its types	6
Total		**30**

Mode of Assessment

Assessment	Score	Period
First Exam	10	5-6th weeks
Second Exam	10	10-11th weeks
Practical Exam	10	10-11th weeks
Assignment, Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks And Recommended References

- Nagesh Kumar Rao ,Textbook of Forensic Medicine. Jaypee Brothers Medical Publishers (December 1, 2006)

- **Course Level:** Fifth-Year Level
- **Course Name:** Veterinary ethics
- **Theoretical:** 1 hour
- **Semester:** Second
- **units :** 1

Course Objectives

Upon completion of this course, the student should be familiarized with:

- Student should be able to know the basic principles of veterinary ethics
- Identify the Principles with Supporting Annotations

Course Contents

week	Topics	Hours
	Subject	
1	Introduction: veterinary ethics definition	1
2	Animal right and animal welfare	1
3	The Principles of veterinary ethics	1
4-14	The Principles with Supporting Annotations	11
15	Exam	1
Total		**15**

Mode of Assessment

Assessment	Score	Period
First Exam	15	5-6th weeks
Second Exam	15	10-11th weeks
Assignment Projects, Quizzes, Tutorial	10	2nd, 3rd, 4th, 5th, and 7th, 8th, 9th, 10th, 11th.
Final Exam	60	After the 16th.

Textbooks and Recommended References

- Principles of Veterinary Medical Ethics of the AVMA 2015
- Other TBD

- **Course Level:** Fifth-Year Level
- **Course Name**: Research Projects I
- **Theoretical:** 1 hour
- **Semester:** First
- **units:** 1

Course Objectives

Upon completion of this course, the student should be familiarized with:

1- how can make a research correctly.

2. how can make a student to be a good researcher.

Course Contents

week	Topics	Hours
1	• ما هو البحث العلمي • هل تريد أن تصبح باحثا علميا	1
2	• أخلاقيات البحث العلمي • ما هي مقومات البحث العلمي	1
3	• العلم (مفهومه العام) • أهداف العلم, الوصف, الفهم, التنبؤ, الضبط والتحكم	1
4	• طرائق الحصول على العلم: الذاكرة الإنسانية, السلطة, الحدس • الطريقة العلمية في البحث	1
5	• خصائص المعرفة العلمية • البحث العلمي (تعريفه وميادينه)	1
6	• أساسيات البحث العلمي • مشكلة البحث, مفهومها, مصادر الحصول عليها, اختيار مشكلة البحث, تحديدها, تقويمها, أهمية الدراسات والأبحاث السابقة.	1
7	خطة البحث (محتوياتها): • العنوان • المقدمة • مشكلة البحث • حدود البحث • مسلمات البحث • فرضيات البحث • إجراءات البحث	1
8	أدوات البحث العلمي: • العينات وطرائق جمعها, مفهومها, اختيارها وأنواعها (الاستبيان, المقابلة, الملاحظة) • الاختبارات, تعريفها, استخدامها, صفاتها, ثبات الاختبار والعوامل المؤثرة فيها.	3
9	أساليب البحث: • الأسلوب التاريخي • الأسلوب الوصفي • الأسلوب التجريبي • أسلوب النظم	1

	• البحث الإجرائي	
2	التعامل مع المكتبة والتوثيق في البحث العلمي • معنى التوثيق • التعامل مع المكتبة ومصادر المعرفة فيها • فهارس المكتبة وكيفية التعامل معها • كيفية التعامل مع المراجع • تدوين المعلومات والبيانات أثناء مرحلة الاطلاع • تدوين المراجع	10
2	تقرير البحث والمقالة • مراجع البحث • أهميتها, طرائق كتابتها	11
15		**Total**

Mode of Assessment

Assessment	Score	Period
Theoretical Exam	20	1st-10th week
Assignment, Seminars, Projects, Quizzes, Reports	10	1st- 15 th week
Final Exam	70	After complete the research at the second semester

- **Course Level:** Fifth-Year Level
- **Course Name**: Research Projects II
- **Theoretical:** 1 hour
- **Semester:** Second
- **units:** 1

week	Topics	Hours
	Subject	
1-15	writing , reporting and discussion research project	15
Total		**15**