FACULTY OF VETERINARY MEDICINE –BENHA UNIVERSITY

Program specification

Bachelor in veterinary medicine

Teaching hours bylaw 2017

2025/2026

Program Specification

(2025)

1. Basic Information

ProgramTitle (according to what is stated in the bylaw):	Bachelor in veterinary **medicine**
Total number of credit hours/points of the program:	4545 teaching hour[theoretical: 2070, practical :2475]
Number of academic years/levels (expected program duration):	5 academic years [include 6 month practical and clinic training] plus a mandatory internship year [minstrel decree no 407 in 2021]
Department (s) Participating (if any) in teaching the program:	21 department
Faculty/Institute:	Faculty of veterinary Medicine
University/Academy:	Benha university
Program majors/divisions/tracks/specialties in the final year (if any):	**-**
Partnerships with other parties and the nature of each (if any):	**-**
Name of the program coordinator (attach the assignment decision):	Prof. Dr. Mahmoud A. AbuElroos **(Faculty council No. 490, date: 19-2-2025)**
Program Specification Approval Date:	**8/27/2025**
Council responsible for Program Specification Approval (Attach the Decision / Minutes):	Faculty Council No. 496, date: 27-8-2025

2. Program Aims (Brief description of the overall purpose the program)

The primary aim of a veterinary medicine program is to produce graduates equipped with the knowledge, skills, and practical experience to diagnose, treat, and prevent diseases and disorders in animals. This program also aims to equip students with the knowledge and skills to promote animal welfare, public health, and food safety. Furthermore, veterinary programs often foster critical thinking, research, and lifelong learning in the field of veterinary medicine. More ever, the veterinary program apply international ethical and legal frame of medical practice-code, show satisfactory interpersonal and communication skills confirming the sensitive role of the veterinarian in society and disseminating the awareness of maintaining animal and human health

Intended Learning Outcomes of the Program (ILOs)[NARS outcomes]

2. Knowledge and Understanding

Graduates of Veterinary Medical Program must acquire the following knowledge and understanding

2.1. Basic sciences of biology, chemistry, biophysics, genetics, biostatics, computer science and veterinary terminology.
2.2. Basics of normal behavior, management, breeding, veterinary economics and health maintenance of domestic animals, laboratory animals, poultry, and fish.
2.3. Normal macro, and micro-structure of body tissues, organs and systems of animals, birds and fish
2.4. Physiological and biochemical bases of different organ functions, metabolic processes and homeostasis.
2.5. Principle of welfare, production and health maintenance of food producing and pet animals, sporting animals, wildlife , poultry and fish
2.6. Basics of nutrition and feeding practices of healthy and diseased animals.
2.7. Various causes of animal diseases, their pathogenesis, macro- and micro-scopic pathological lesions, and laboratory diagnosis.
2.8. Veterinary medications, uses, marketing, the impact of drug residues on human health and quality control of pharmaceutical practices
2.9. General and specific epidemiological pattern of animal population diseases and the most effective immunization protocols.
2.10. Toxicology and forensic medicine, animal medicine, theriogenology and veterinary surgery.
2.11. The most appropriate diagnosis and differential diagnosis of animals, poultry and fish diseases
2.12. The accurate measurements of veterinary quarantine.
2.13. Public health, including food hygiene of animal origin and zoonotic diseases that are transmitted from animals to humans.
2.14. Basics of law and ethical codes relevant to animals and food hygiene.
2.15. Basics of social sciences, communication, and human rights.

3. Practical and professional skills

Graduates must attain the capacity to:

3.1. Employ all the gained knowledge and understanding in clinical practice in a skillful pattern.

3.2. Safely, correctly and humanely restrain animals for examination

3.3. Obtain the history of the case whether it is of an individual animal or a group of animals.

3.4. Perform clinical examination of diseased cases and collect relevant samples.

3.5. Appropriately select and interpret findings of the common clinical and laboratory diagnostic procedures to reach and adopt the most convenient therapeutic and manage mental approach.

3.6. Write a report about hygiene and safety of food of animal origin for human consumption.

3.7. Assess and advise about animal management, nutrition under conditions of health and disease, and reproductive efficiency.

3.8. Skillfully and appropriately gain and use new information remain current with the emerging biomedical knowledge and therapeutic options.

3.9. Conduct evidence-based problem-solving of field–presented problems tasks.

3.10. Provide emergency care to all species of animals.

3.11. Utilize appropriate safety procedures to protect clients and co-workers.

3.12. Correctly deal with procedures related to food hygiene, public health issues, notifiable diseases and disposal of animal wastes.

3.13. Minimize the risk of contamination, cross infection and predisposing factors of diseases.

4. Intellectual skills

Graduates must have the ability to:

4.1. Foster critical thinking and scientific curiosity.

4.2. Assess and criticize, at the fundamental level, how data are derived.

4.3. Inculcate a rigorous approach to problem identification and solving.

4.4. Proficiently secure diagnostic reasoning, develop problem lists and differential diagnosis in order to deductively and critically reach the most appropriate solution (s) and management of the addressed clinical problems.

4.5. Remain committed to life – long learning and updating / upgrading their biochemical sense and clinical skills

5. General and Transferable Skills

Graduates must have the ability to:

5.1. Work under pressure and / or contradictory conditions.

5.2. Function in a multidisciplinary team

5.3. Communicate appropriately verbally and non-verbally.

5.4. Organize and control tasks and resources

5.5. Search for new information and technology as well as adopt life–long self-learning ethics

5.6. Utilize computer and internet skills

3. Program Structure (Curriculum)

- **Program Components**

Requirement Category/Type		Number of Courses	Number of Credit Hours/Points	Percentage from the total number of hours/points
University Requirements		**----------**	**----------**	**----------**
Faculty/College Requirements (if applicable)		**----------**	**----------**	**----------**
Program Requirements		**74**	**4545** teaching hour	**100%**
Requirements of the majors/ divisions/ tracks/ specializations in the final year (if any)		**----------**	**----------**	**----------**
Other requirements	**Field Training**		6th month internship[distributed in summer of 3rd ,4th , and 5th year]	**----------**
	Graduation Project		Every student must complete a research project in one of the veterinary fields before graduation during the training program that covers the practical and general skills	**----------**
	Mandatory training year		**One academic year [** 8hr per day, five days per week**]**	
	Other (to be mentioned)		**----------**	**----------**
Total Compulsory Courses		**74**	**4545** teaching hour	**100%**
Elective Courses		**----------**	**----------**	**----------**
Total		**74**	**4545** teaching hour	**100%**

- **Curriculum structure based on NARS**

No	Subject area	Tolerance %	Sciences Characterization	النسبة المئوية للساعات التدريسية لبرنامج طب بيطري مشتهر
A	Basics and Basic veterinary sciences		Biology بيولوجي Biophysics فيزياء حيوي Chemistry كيمياء عامة Biostatistic احصاء حيوي Animal husbandary سلوكيات حيوان Histology هستولوجيا Physiology فسيولوجيا Anatomy تشريح Biochemistry كيمياء حيوي Animal & poultry and production انتاج حيوان ودواجن	0.99 0.99 0.99 0.66 2.97 4.29 4.62 5.28 5.28 1.98
	Total	22-28 (25)		28.05
B	Pre – Clinical Sciences		Genetics وراثة Nutrition تغذية Bacteriology,Mycology&immunology بكتريا virology فيروسات Parasitology طفيليا Pathology باثولوجي Pharmacology Foodفارماكولوجي hygiene (Milk –meat) صحة اغذية	2.31 2.97 2.97 2.64 3.63 5.19 2.97 5.28
	Total	17-23		28.38
C	Clinical Sciences		Intermal medicine امـراض باطنـة Infactious diseases أمـراض معديـة Forensic medicine and Toxicology طب شرعي poultry diseases دواجـن Hygiene صـحة Surgery جراحـــة Zoonoses أمـــراض مشـــتركة Theriogenology ولادة Clinical pathology باثولوجيا اكلينيكية Fisht disease and management أمراض ورعاية الاحياء المائيه	6.6 3.96 2.64 3.3 3.3 6.6 2.64 6.6 2.64 2.64
	Total	40-44		40.92
E	Computing	1-3 (2)	Computer basic I.T. and application IT كمـ بـ يوتـ ر	0.66
F	Homanities and social sciences	2,4 (3)	*English (terminology) انـ جـلـ يزي *Economics and veterinary projects اقتصاد وادارة مشروعات بيطريـة Human*right حقوق انسان	0.33 1.32 0.33
	Total			1.98

G	**Training**	Clinical investigation and training provided by different departments. Field trips and veterinary convoys	**720hr**

Summer Training:

- According to a definite syllabus, the students have to spend a period of six months for training in terms of 6 hours/ day. The training is divided into three main parts each part consists of eight weeks in the summer between the third and fourth years, fourth and fifth years and after the end of the fifth year, respectively.
- Summer training program covers the practical, professional and intellectual skills. This training includes visits to the veterinary clinics, governmental research institutes, abattoirs, feed mills and commercial projects of animal and poultry production in addition to aquatic farms. The students will also be learned, during this training period, the field applications of biostatistics and computer skills. The training is held under the supervision of the staff members and their assistants; the faculty council determines the number of groups and arranges the schedule and program of training every year.
-The student must attend not less than 75% of the total hours for the training, or he/she will not be allowed to take the final practical and applied exams held at the end of the training.
- The student must pass the practical and applied exams of the training held by the scientific departments according to the rules of the faculty council.
- Students' evaluation at the end of the training with one of the following grades (that will be mentioned in the Graduation Certificate):
• Pass = 50% - less than 65%- Good = 65% - less than 75%
• Very good = 75% - less than 85 % - Excellent equal to or more than 85%.
- The assessment includes 50% for the attendance (should be more than 75%) and 50% for the practical exam held by the scientific department.
- The student who fails to pass the training obtain less than 50% or decreased attendance less than 70%) have another chance to do this according to the rules of the faculty council.
-Every student must complete a research project in one of the veterinary fields before graduation during the training program that covers the practical and general skills. The student must pass his project through scientific committee and his grade must be written in the graduation certificate (Pass-Good-Very Good- Excellent).
- The students who admitted to the college in the academic year (2021-2022) spent five years studying the courses and one year as internship (instead of Summer Training) as training year to get the bachelor degree in veterinary medicine. This is based on the ministerial decree (407) on 2021 (Article 182)

- **Program courses according to the expected study plan**

Academic Level	Semester	Course Code	Course Title	Course Type (Compulsory / Elective)	Requirement Category/ Type	Number of teaching hours	Number of Weekly Hours		
							Theoretical teaching	Practical training	Other
First year	First semester	101 A I	Biophysics	compulsory	Faculty	45	1	2	
		102 A I	General chemistry	compulsory	Faculty	45	1	2	
		103 A I	Anatomy and Embryology	compulsory	Faculty	60	2	2	
		104 A I	English language (English and medical terminology)	compulsory	Faculty	15	1	0	
		105 A I	Histology (Cytology and cell biology)	compulsory	Faculty	45	1	2	
		106 A I	Biochemistry	compulsory	Faculty	60	2	2	
		107 A I	Physiology	compulsory	Faculty	60	2	2	
		108 A I	Computer Science	compulsory	**university**	30	1	1	
	Second semester	109 B I	Human rights	compulsory	Faculty	15	1	0	
		110 B I	Biostatistics	compulsory	Faculty	30	1	1	
		111 B II	Anatomy and Embryology	compulsory	Faculty	60	2	2	
		112 B I	Biology (animal and plant)	compulsory	Faculty	45	1	2	
		113 B II	Histology (Genral histology)	compulsory	Faculty	45	1	2	
		114 B II	Biochemistry			60	2	2	
		115 B II	Physiology	compulsory	Faculty	45	1	2	
Second year	First semester	201 A III	Animal Histology (Histology of animals)	compulsory	Faculty	45	1	2	
		202 A III	Animal anatomy (Anatomy and Embryology)	compulsory	Faculty	60	2	2	
		203 A III	Animal Physiology	compulsory	Faculty	60	2	2	
		204 AIII	Biochemistry and clinical Biochemistry (Biochemistry)	compulsory	Faculty	60	2	2	
		205 A I	Animal and poultry Behaviour and mangement	compulsory	Faculty	75	3	2	
		206 A I	Animal production and poultry (Animal and poultry breeding and production)	compulsory	Faculty	45	1	2	
		207 A I	Genetic and Genetic engineering (Genetics)	compulsory	Faculty	45	1	2	
	Second semester	208 B IV	Animal Histology (Histology of poultry and fish)	compulsory	Faculty	60	2	2	
		209 B IV	Animal anatomy (Anatomy and Embryology)	compulsory	Faculty	60	2	2	
		210 B IV	Animal Physiology	compulsory	Faculty	45	1	2	
		211 B IV	Biochemistry and clinical Biochemistry	compulsory	Faculty	60	2	2	

			(Biochemistry)						
		212 B II	Animal and poultry Behaviour and mangement	compulsory	Faculty	60	2	2	
		213 B II	Animal production and poultry (Animal and poultry breeding and production)	compulsory	Faculty	45	1	2	
		214 B II	Genetic and Genetic engineering (Genetic engineering)	compulsory	Faculty	60	2	2	

Academic Level	**Semester**	**Course Code**	**Course Title**	**Course Type (Compulsory / Elective)**	**Requirement Category/ Type**	**Number of teaching hours**	**Number of Weekly Hours**		
							Theoretical teaching	**Practical training**	**Other**
Third year	First semester	301 AI	pharmacology	compulsory	Faculty	75	2	3	
		302 AI	Bacteriology , immunology and mycology (General)	compulsory	Faculty	75	2	3	
		303 AI	Virology	compulsory	Faculty	60	2	2	
		304 AI	Parasitology (Entomology and protozoology)	compulsory	Faculty	90	3	3	
		305 AI	Hygienic control of milk and its products,oil, fat and eggs	compulsory	Faculty	60	2	2	
		306 AI	Animal Nutrition (Animal, poultry and fish Feeding and malnutrition) diseases (A)	compulsory	Faculty	75	2	3	
		307 AI	pathology	compulsory	Faculty	60	2	2	
	Second semester	308 BII	pharmacology	compulsory	Faculty	60	2	2	
		309 BII	Bacteriology , immunology and mycology (Systemic)	compulsory	Faculty	60	2	2	
		310 BII	Virology	compulsory	Faculty	60	2	2	
		311 BII	Parasitology (Helminthology)	compulsory	Faculty	90	3	3	
		312 BII	Hygienic control of milk and its products,oil, fat and eggs	compulsory	Faculty	60	2	2	
		313 BII	Animal Nutrition (Animal, poultry and fish	compulsory	Faculty	60	2	2	

			Feeding and malnutrition) diseases (B)						
		314 B II	Pathology(systemic and tumor)	compulsory	Faculty	60	2	2	
Fourth year	First semester	401 A I	Surgery (general surgery)	compulsory	Faculty	75	2	3	
		402 A I	internal medicine (Pet animal medicine)	compulsory	Faculty	75	2	3	
		403 A I	Theriogenology (Reproduction and infertility)	compulsory	Faculty	75	2	3	
		404 A I	Forensic medicine and toxicology (Forensic medicine and veterinary legislation)	compulsory	Faculty	60	2	2	
		405 A III	Special pathology (Pathology of bacterial and parasitic diseases and postmortem)	compulsory	Faculty	60	2	2	
		406 A I	Clinical pathology (hematology)	compulsory	Faculty	60	2	2	
		407 A I	Animal , poultry and environmental hygiene	compulsory	Faculty	75	2	3	
		408 A I	Economics and farm management	compulsory	Faculty	60	2	2	
	Second semester	409 B II	Surgery (Anesthesiology and radiology)	compulsory	Faculty	75	2	3	
		410 B II	Internal medicine (Equine medicine)	compulsory	Faculty	75	2	3	
		411 B II	Theriology (andrology and disease causing abortion)	compulsory	Faculty	75	2	3	
		412 B II	Forensic medicine and toxicology (toxicology)	compulsory	Faculty	60	2	2	
		413 B IV	Special pathology (Pathology of viral and mycotic diseases and postmortem)	compulsory	Faculty	60	2	2	
		414 B II	Clinical pathology (clinical Chemistry and organs function)	compulsory	Faculty	60	2	2	

		415 B II	Animal, poultry and environmental hygiene	compulsory	Faculty	75	2	3	
Fifth year	First semester	501 A I	Hygienic control of meat ,poultry and their products	compulsory	Faculty	60	2	2	
		502 A III	Theriology (Obstetrics)	compulsory	Faculty	75	2	3	
		503 A III	Internal medicine (Small ruminant and camel medicine)	compulsory	Faculty	75	2	3	
		504 A III	special surgery (Regional surgery)	compulsory	Faculty	75	2	3	
		505 A I	Poultry diseases	compulsory	Faculty	75	2	3	
		506A I	Zoonoses	compulsory	Faculty	60	2	2	
		507 A I	Aquatic animal disease and management (Aquatic animal management and aquaculture)	compulsory	Faculty	60	2	2	
		508 A I	Infectious diseases (Infectious diseases of equine, camel & pets)	compulsory	Faculty	90	3	3	
	Second semester	509 B II	Hygienic control of meat ,poultry and their products	compulsory	Faculty	60	2	2	
		510 B IV	Theriogenology (Artifical insemination and embryo transfer	compulsory	Faculty	75	2	3	
		511 B IV	Internal medicine (large ruminant medicine)	compulsory	Faculty	75	2	3	
		512 B IV	Special surgery (Lameness)	compulsory	Faculty	75	2	3	
		513 B II	Poultry diseases	compulsory	Faculty	75	2	3	
		514 B II	Zoonoses	compulsory	Faculty	60	2	2	
		515 B II	Aquatic animals Diseases	compulsory	Faculty	60	2	2	
		516 B II	Infectious diseases (Infectious diseases of ruminants)	compulsory	Faculty	90	3	3	

- **Courses content written in the program bylaw**

First year

First semester

1- Course: Biophysics
Code Number: 101 A I
Content:
Determination of specific gravity, specific heat of liquid, electrical chemical equivalent and refractive index

2- Course: General chemistry
Code Number: 102 A I
Content:
Physical chemistry (states of matter, solutions, chemical equilibrium and kinetics)
Thermo chemistry, electrolytic conduction, application of ionic theory
Organic chemistry (General principles of alkenes, alcohols, ethers, aldehydes and ketones); saturated monocarboxylic acids, monocarboxylic acid derivatives, amines, monocarboxylic acids, carbohydrates, isomerism, aromatic compounds.

3- Course: Anatomy and Embryology
Code Number: 103 A I
Content:
Introduction of general anatomy, topograpgic anatomy in animals

4- Course: English language (English and medical terminology)
Code Number: 104 A I
Content:
Reading skills, reviewing, recognizing, perception, analysis, evaluation and comprehending. Writing skills, thinking and itemizing points, choosing effective phrases, planning, preparing good sentences and better ones, comprehension and revising. Basic principles of medical terminology

5- Course: Histology (Cytology and cell biology)
Code Number: 105 A I
Content:
Introduction to cytology, cell biology, cytochemistry, cytogenetics, tissue culture and immunohistochemistry.

6- Course: Biochemistry
Code Number: 106 A I
Content:
Classification of carbohydrates, chemistry of monosaccharides, chemistry of disaccharides, chemistry of polysaccharides and chemistry of carbohydrate derivatives

7- Course: Physiology
Code Number: 107 A I
Content:

Cell physiology, physiology of blood and body fluids and physiology of respiratory system

8- Course: Computer Science
Code Number: 108 A I
Content:
History of the computer. What is the computer system? Central processing unit (CPU).
Core memory. Access time. Input output devices. Direct access storage. Auxilliary storage systems. Distributed system. Application of electronic spread sheets. Introduction of Basics

Second semester
1- Course: Human rights
Code Number: 109 B I
Content:
المصـادر الدوليـة لحقـوق الانسـان العالميـة والاقليميـة. المصـادر الوطنيـة لحقـوق الانسـان. الأجهـزة العالميـة القائمـة علـي حمايـة حقـوق الانسـان. الحمايـة الوطنيـة لحقـوق الانسـان. حقـوق الانسـان فـي الشـريعة الاسـلامية. عـرض لـبعض طوائف حقوق الانسان.

2- Course: Biostatistics
Code Number: 110 B I
Content:
Introduction: population and sampling, measures of tendency. Dispersion and variability Normal and binomial distribution; Estimation and hypothesis testing Analysis of frequencies Analysis of variance; correlation and regression

3- Course: Anatomy and Embryology
Code Number: 111 B II
Content:
Male gentile system, female gentile system, general embryology, bones of the pelvic limb, dissection of the pelvic limb of horse, special arthrology of pelvic limb of horse and hoof anatomy.

4- Course: Biology (animal and plant)
Code Number: 112 B I
Content:
Classification of the plant kingdom; plant physiology(colloids, osmosis, enzymes, respiration); Genetics.
Classification of the animal kingdom; General characteristics of each class.

5- Course: Histology (Genral histology)
Code Number: 113 B II
Content:
Introduction to the histology of the different tissues (epithelial, muscular and connective tissues including blood and cardiovascular and lymphatic system) . Nervous tissue and nervous system

6- Course: Biochemistry
Code Number: 114 B II
Content:

Classification of lipids, chemistry of fatty acids, chemistry of simple lipids, chemistry of compound lipids and chemistry of derived lipids.
Classification of protein, chemistry of amino acid, chemistry of protein compounds, properties of proteins, immunochemistry and different types of immunity.

7- Course: Physiology
Code Number: 115 B II
Content:
Muscles and nerves physiology, physiology of urinary system and physiology of metabolism.

Second year

First semester
1- Course: Animal Histology (Histology of animals)
Code Number: 201 A III
Content: Histology of Digestive system and teeth , Respiratory , skin, Endocrine system , urogential system and sense organs (Eye and ear).

2- Course: Animal anatomy (Anatomy and Embryology)
Code Number: 202 A III
Content:
Digestive system, lymphatic system, vertebral column, anatomy of ribs and sternum and dissection of the abdomen and thorax

3- Course: Animal Physiology
Code Number: 203 A III
Content:
Physiology of cardiovascular system, physiology of endocrine system and physiology of CNS

4- Course: Biochemistry and clinical Biochemistry (Biochemistry)
Code Number: 204 A III
Content:
Classification of enzymes, chemical composition of enzymes, enzyme kinetics, chemistry of Co-enzymes and classification and function of Co-enzymes

5- Course: Animal and poultry Behaviour and mangement
Code Number: 205 A I
Content:
General behavior , behviour and management of horse, behavior and management of cattle and buffalo,behavior and management of camel. Behavior and management of sheep and goat, points of the farm animals, types of restraint, grooming of animals, clipping of animals, washing of animals, clothing of animals, bedding and animal identification.

6- Course:Animal production and poultry (Animal and poultry breeding and production)
Code Number: 206 A I
Content:
Dairy industry and essential of establishing a profitable dairy farm, reproduction performance, manipulation of lactation and factors affecting yield and composition, herd replacement and culling, herd health program, dry cow management and poultry production.

7- Course: Genetic and Genetic engineering (Genetics)
Code Number: 207 A I
Content:
Cytological basis of inheritance, mathematical principles required for genetic problems, linkage, crossing over and chromosome mapping, some special cases of interphase chromosome, chromosomal banding technique, chromosomal aberration, sex determination, the genetic material, DNA replication and the genetic code.

Second semester
1- Course: Animal Histology (Histology of poultry and fish)
Code Number: 208 B IV
Content:
Histology of poultry include muscular tissue, nervous tissue, lymphatic tissue and system, digestive system, respiratory system, urinary system, male and female genitle, endocrine system and feather and skin.
Histology of fish inculde: digestive , respiratory, urinary, male and female systems , endocrine system of fish , lymphatic system and skin.

2- Course: Animal anatomy (Anatomy and Embryology)
Code Number: 209 B IV
Content:
Respiratory system, nervous system, special Embryology, skull anatomy and dissection of head and neck

3- Course: Animal Physiology
Code Number: 210 B IV
Content:
physiology of reproduction, digestive system, fish and poultry

4- Course: Biochemistry and clinical Biochemistry (Biochemistry)
Code Number: 211 B IV
Content:
Classification of vitamins, chemistry of Fat Soluble Vitamin, chemistry of water, Vitamins deficiencies
Classification of minerals, properties of major and trace elements properties of electrolytes Role of minerals as Co- factors of enzymes, mineral deficiency and detoxication

5- Course: Animal and poultry behavior and management
Code Number: 212 B II
Content:
Behavior and management of poultry, cat, dog and laboratory animals. Gags, muzzles, administration of medicine, signs of health,dentition, shoeing, destroying of animals and body conformation and its defects.

6- Course: Animal production and poultry (Animal and poultry breeding and production)
Code Number: 213 B II
Content:
Zoological classification of animals, selecting and judging dairy cattle, body condition, body condition scores of dairy cattle, the major breeds of dairy cattle, mammary gland structure and milk secretion, milking and milking machine, correction of records for non genetic factors and breeding value of cow, the major breeds of beef cattle, types and breeds of sheep and goats, poultry classification and artificial incubation.

7- Course: Genetic and Genetic engineering (Genetic engineering)
Code Number: 214 B II
Content:
Chromosomal studies, chromosomal banding technique, chromosomal aberration, sex determination, fertility as affected by chromosome , the genetic material, DNA replication, the genetic code, genetic expression, regulation of protein synthesis, mutation and DNA repair mechanism, the genetic manipulation, recombinant DNA and genetic engineering, immunogenetics, genetic resistance and pathogens and control of inherited diseases.

Third year

First semester
1- Course: pharmacology
Code Number: 301 A I
Content:
General pharmacology and systemic pharamacology

2- Course: Bacteriology , immunology and mycology (General)
Code Number: 302 A I
Content:
general bacteriology, immunology, mycology, microscopyand micrometry, smear preparation and staining, sterilization, preparation of culture media, biochemical reactions, serological tests and antibiotic senstivity test.

3- Course: Virology
Code Number: 303 A I
Content:
Introduction, fundamental characters of viruses, general properities of viruses, viral heamagglutination, virus cell relationships, pathogensis of viral infection, interference

phenomenona, viral immunity, viral vaccines and effect of physical and chemical agents on viruses.

4- Course: Parasitology (Entomology and protozoology)
Code Number: 304 A I
Content:
Entomology: introduction , insects, arachnids, fish crustacean, immunity for arthropods.
Protozoa: introduction, flagellates, entamoeba, apicomplexa, fish protozoa and immunity of protozoa.

5- Course: Hygienic control of milk and its products,oil, fat and eggs
Code Number: 305 A I
Content:
Introduction and overview of milk products, probiotics in dairy industry, cream, butter and related butter products, cheese varieties and technology, cheese defect and abnormalities and fermented milk technology.

6- Course: Animal Nutrition (**Animal, poultry and fish Feeding and malnutrition**)
Code Number:306 A I
Content:
Plant composition, water, the carbohydrates and its metabolism, the proteins and its metabolism, the lipid and its metabolism, nutritional microbiliogy, vitamins, minerals, technical terms.

7- Course: Pathology (general)
Code Number:307 A I
Content:
Inflammation, healing, disturbance in circulation,disturbance in metabolism, ditrubance in cell growth, immunopathology, necrosis, gangrene and post mortem changes.

Second semester
1- Course: Pharmacology
Code Number: 308 B II
Content:
Endiocrine pharamacology, chemotherapy, drug toxicity, clinical pharamacology and drug interaction

2- Course: Bacteriology , immunology and mycology (Systemic)
Code Number: 309 B II
Content:
Different bacteria of medical importance, methods for diagnosis of bacterial and fungal diseases and different techniques for isolations and identification

3- Course: Virology
Code Number: 310 B II
Content:
Classification of viruses, riboviruses (RNA viruses), deoxyriboviruses (DNA viruese), immune electrophoresis, molecular virology

4- Course: Parasitology (Helminthology)
Code Number: 311 B II
Content:
Introduction, trematodes, snails, trematodes of fish, cestodes, nematods, cestodes and nematodes of fish and immunity

5- Course: Hygienic control of milk and its products,oil, fat and eggs
Code Number: 312 B II
Content:
Concentrated milk products, dried milk and infent milk, frozen desserts technology, food poisoning and sanitation programs, labeling and legalization, value added milk products, edible fats and oils and egg and egg products.

6- Course: Animal Nutrition (Animal, poultry and fish Feeding and malnutrition)
Code Number: 313 B II
Content:
Feeding standards for maintance , growth and fattening, requirements of reproduction, lactation, work, wool and production, special feeding of dairy and beef cattle, special feeding of camal, , horse, sheep, goat, rabbits, poultry, pet, laboratory, wild and zoo animals, clinical nutrition, ration formulation for different animal species, feed preparation and processing and feed storage and storage problems.

7- Course: Pathology(systemic and tumor)
Code Number: 314 B II
Content:
Pathology of neoplasm, pathology of digestive system, pathology of resipartory system, pathology of cardiovascular system, pathology of urinary system, pathology of male gentile system, pathology of female gentile system, pathology of nervous system, pathology of haemopoitic system and pathology of skin.

Fourth year

First semester
1- Course: Surgery (general surgery)
Code Number: 401 A I
Content:
Inflammation, bursitis, tendon conditions, joints conditions, phlegmon and gangrene, wounds , fracture, abscess, cyst and tumors, haemorrhage and haemostasis, hernia, fistula and sinus, burns and scalds, antisepsis and aseptic procedures, suture patterns, dressing and bandage and clinical cases.

2- **Course: internal medicine (Pet animal medicine)**
Code Number: 402 A I
Content:
General pet animal medicine, disease of digestive system, respiratory system, cardiovascular system, urinary system and nervous system of pet animals, endocrine disease of pet animal .
clinical examination of disease of digestive system, respiratory system, cardiovascular system, urinary system and nervous system of pet animals and microscopic and macroscopic examination of feces.

3- Course: Theriogenology (Reproduction and infertility)
Code Number: 403 A I
Content:
Hormonal control of reproduction, puberty and sexual maturity, estrous cycle, ovulation and fertilization, infertility in cattle, infertility in equine, estrous detection and synchronization, records and recording systems, scheme of gynecological examination, physical examination of non-pregnant animal , rectal and vaginal examination of non-pregnant case, ultrasound examination of none pregnant case, diagnosis of pregnancy by rectal, ultrasound and by lab. Tests

4- Course: Forensic medicine and toxicology (Forensic medicine and veterinary legislation)
Code Number: 404 A I
Content:
Signs of death, identification, blood spots, adulteration, wound, firearm and burns, asphyxia and medical ethics and Vet. Jorseproduce

5- Course: Special pathology (Pathology of bacterial and parasitic diseases and postmortem)
Code Number: 405 A III
Content:
Pathology of bacterial diseases of farm animal, equines, poultry, pets and fish and pathology of parasitic diseases of farm animal, equines, poultry, pets and fish.

6- Course: Clinical pathology (hematology)
Code Number: 406 A I
Content:
General principles of hematology, hematopoiesis, erythrocyte morphology and disorders , evaluation of erythrocytes, anemia, polycythemia, leukocyte morphology, function and kinetics, evaluation of leukocytes, interpretation of leukogram, hematopoietic neoplasia and hemostatic disorders.

7- Course: Animal , poultry and environmental hygiene
Code Number: 407 A I
Content:
Animal housing: general requirement for animal housing, ventilation, drainage system, housing of dairy herds, beef cattle, sheep, goat, hourse, biosecurity, deign of animal farms.
Environmental hygiene: normal constituents of air, chemical pollutants and animal health, biological pollutants and animal health, temperature , humidity, air movement and solar radiation, normal constituents of drinking water, chemical pollutants and animal health, treatment of water hardness, water sanitizers and treatment of drinking water and treatment of animal manure.

8- Course: Economics and farm management
Code Number: 408 A I
Content
Economic problems, market problems, project estimation, production relationship, risk and uncertainty in animal production, agriculture and animal production in Egypt and principles of project evaluation criteria with application in animal production.

Second semester
1- Course: Surgery (Anesthesiology and radiology)
Code Number: 409 B II
Content:
Basis and terminology, locl analgesia, regional analgesia about the head and neck, paravertebral analgesia, epidural analgesia, narcosis, pre-medications, general anesthesia, basic knowledge about radiology and diagnostic ultrasound

2- Course: Internal medicine (Equine medicine)
Code Number: 410 B II
Content:
General equines medicine, diseases of digestive system, respiratory system, cardiovascular system, urinary system and nervous system of equines , endocrine diseases of equines .
Clinical examination of diseases of digestive system, respiratory system, cardiovascular system, urinary system and nervous system of equines and laboratory examination of urine and feces.

3- Course: Theriology (andrology and disease causing abortion)
Code Number: 411 B II
Content:
Male reproduction physiology, male sexual behavior, semen biology, impotentia eregenti, impotentia coeundi, impotentia generandi
Diseases causing abortion, physio- anatomy of male genitalia, schema of andrological examination, clinical examination of the male , breeding soundness examination and sire selection.

4- Course: Forensic medicine and toxicology (toxicology)
Code Number: 412 B II
Content:
General toxicology, corrosive poisons, mycotoxicosis, food poisoning, radiation, pesticide, irritant poisons and poisonous plants.

5- Special pathology (Pathology of viral and mycotic diseases and postmortem)
Code Number: 413 B IV
Content:
Pathology of viral diseases of farm animals, equines, poultry, pets and fish , pathology of mycotic diseases of farm animals, equines, poultry, pets and fish.

6- Course: Clinical pathology (clinical Chemistry and organs function)
Code Number: 414 B II
Content:
General principles of clinical chemistry, water and electrolytes balance, acid base balance, lipid, carbohydrates and proteins evaluation, cytology, liver and muscle function, renal function and urinalysis, gastrointestinal and pancreas functions, antibiotic sensitivity test, basic of molecular biology and acute phase proteins.

7- Course: Animal, poultry and environmental hygiene
Code Number: 415 B II
Content:
Housing of poultry, biosecurity program of poultry farm, disinfection of animal building, insecticides and eradication of skin parasites, environmental stressor and animal welfare, poisonous plants

Fifth year

First semester
1- Course: Hygienic control of meat, poultry and their products
Code Number: 501 A I
Content:
Abattoirs, ante-mortem inspection, method of slaughter and post-mortem inspection

2- Course: Theriology (Obstetrics)
Code Number: 502 A III
Content:
Physiology of pregnancy, pathology of pregnancy, normal parturition, dystocia, normal pueperium, abnormal pueperium, scheme of obstetrical exam, tools and equipments, exam of normal parturient case, examination of dystocia and maneuvers in case of dystocia.

3- Course: Internal medicine (Small ruminant and camel medicine)
Code Number: 503 A III
Content:
General medicine of small ruminant and camel, diseases of digestive system, cardiovascular system, respiratory diseases, urinary system, skin of sheep and goat Metabolic diseases of sheep and goat and nutritional deficiency diseases of sheep and

goat Diseases affecting digestive and respiratory system, skin and urinary system in camel
Clinical examination of digestive system, respiratory, cardiovascular, urinary, nervous system and skin of sheep and goat, laboratory examination of feces and ruminal juice

4- Course: special surgery (Regional surgery)
Code Number: 504 A III
Content:
Surgery of digestive system, surgery of respiratory system, surgery of urinary system, surgery of the genital systems, surgery of the mammary system, ophthalmology and clinical cases.

5- Course: Poultry diseases
Code Number: 505 A I
Content:
Bacterial diseases: enterbacteriacae, fowl cholera, coryza, O.R.T, mycoplasma, clostridia, strept and staph infection, T.B., other bacterial causes of diseases.
Viral diseases: Newcastle disease, avain influenza, infectious bronchitis, infectious laryngotracheitis, avain pox, pneumovirus, adenovirus, duck virus, avain encephalamylitis, duck virus enteritis, avain leucosis, marek's disease and reticuloendotheliosis.

6- Course: Zoonoses
Code Number: 506A I
Content:
Definiation and classification of zoonoses and terms of zoonoses, immunity and prevention, control and eradication, bacteriosis and rickettsioses and chlamydioses

7- Course: Aquatic animal disease and management (Aquatic animal management and aquaculture).
Code Number: 507 A I
Content: Aquatic animals biology; introduction to aquaculture; site selection, water parameters and water pollution; aquatic animals rearing facilities; stocking rate and pond productivity; aquatic animals hatcheries; fertilization and manuring of ponds; breeding and nursing of aquatic animals; integrated aquaculture;
Biosecurity measures at aquatic animals farms; daily routine work at aquatic animals farms; ecological diseases.

8- Course: Infectious diseases (Infectious diseases of equine, camel & pets)
Code Number: 508 A I
Content:
Bacterial diseases of equine, camel and canine, viral diseases of equine, camel and canine and parasitic diseases of equine, camel and canine,
Clinical examination of equine, camel and canine, sampling and laboratory investigation of field allergic diagnosis, chemotherapy and vaccine and vaccination
.

Second semester

1- Course: Hygienic control of meat, poultry and their products
Code Number: 509 B II
Content:
Inspection and judgment of carcasses for Bacterial, viral and parasitic diseases, meat products and HACCP system, fish and poultry meat hygiene

2- Course: Theriogenology (Artificial insemination and embryo transfer
Code Number: 510 B IV
Content:
Semen collection, semen evaluation, semen dilution and storage, deep frozen semen, insemination technique, management of artificial insemination, IVF and embryo transfer.

3- Course: Internal medicine (large ruminant medicine)
Code Number: 511 B IV
Content:
General medicine small ruminant and camel, diseases of digestive system, cardiovascular system, respiratory diseases, urinary system, skin of large ruminant. Metabolic diseases of sheep and goat and nutritional deficinacy disease of large ruminant
Clinical examination of digestive system, respiratory, cardiovascular, urinary, nervous system and skin of large ruminant, laboratory examination of feces and ruminal juice

4- Course: Special surgery (Lameness)
Code Number: 512 B IV
Content:
Types and diagnosis of lameness, fore limb lameness, hind limb lameness, hoof affection, claw affection, selected topics in small animal lameness and clinical cases.

5- Course: Poultry diseases
Code Number: 513 B II
Content:
Aspergillosis, candidiasis, favus, aflatoxicosis, ochratoxicosis, coccidosis, cryptosporidiosis, histomoniasis, nematodes, cestodes and trematodes, extraparasites, vit A, D, E, K, B1, B2, calcium and phosphorus deficiency
Skin diseases of rabbits, diseases of respiratory, digestive, urogential systems of rabbits and diseases of eye of rabbits

6- Course: Zoonoses
Code Number:514 B II
Content:
Protozooses, helminthiases, cestodiases, nematodiasis, arthropods, viruses and mycoses.

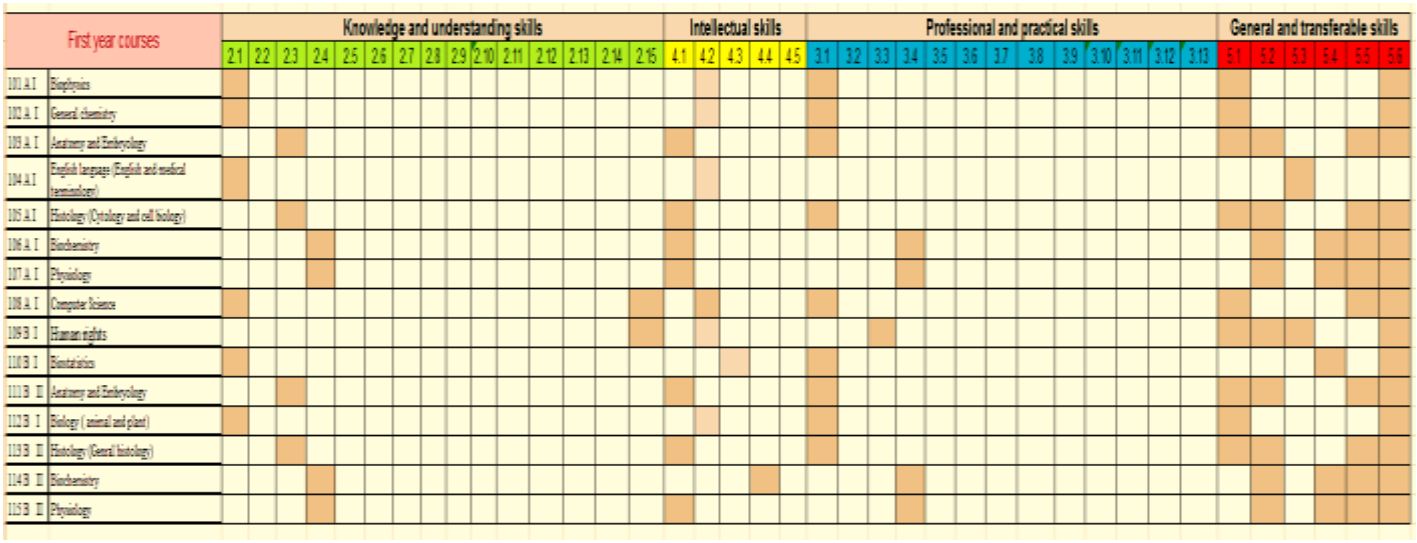
7- Course: poultry and their products (Aquatic animal diseases)
Code Number: 515 B II
Content: Fish and shellfish diseases caused by bacterial pathogens; Fish and shellfish diseases caused by parasitic pathogens; Fish and shellfish diseases caused by viral pathogens; Fish and shellfish diseases caused by mycotic pathogens; Diagnosis of Fish diseases; control of Fish diseases (chemotherapy, immunostimulant, vaccination); diagnosis of shellfish diseases; control of shellfish diseases (chemotherapy and immunostimulants).

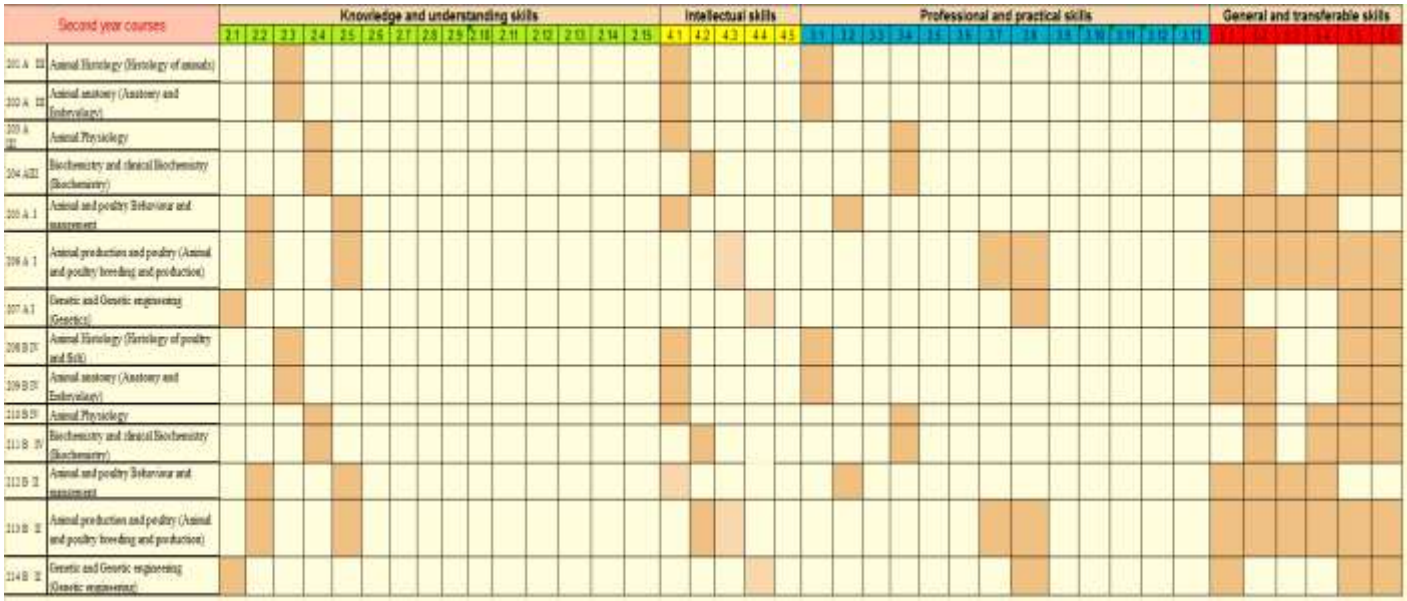
8- Course: Infectious diseases (Infectious diseases of ruminants)
Code Number: 516 B II
Content:
Bacterial diseases of cattle, viral diseases of cattle , parasitic diseases of cattle, bacterial diseases of calves, viral diseases of calves, parasitic diseases of calves, bacterial disease of buffaloes , viral diseases of buffaloes and parasitic diseases of buffaloes Bacterial diseases of sheep and goat, viral diseases of sheep and goat, parasitic diseases of sheep and goat.
Clinical examination of cattle , buffaloes and calves, sheep and goat. sampling and laboratory investigation of field allergic diagnosis, chemotherapy and vaccine and vaccination

4. Academic Standards

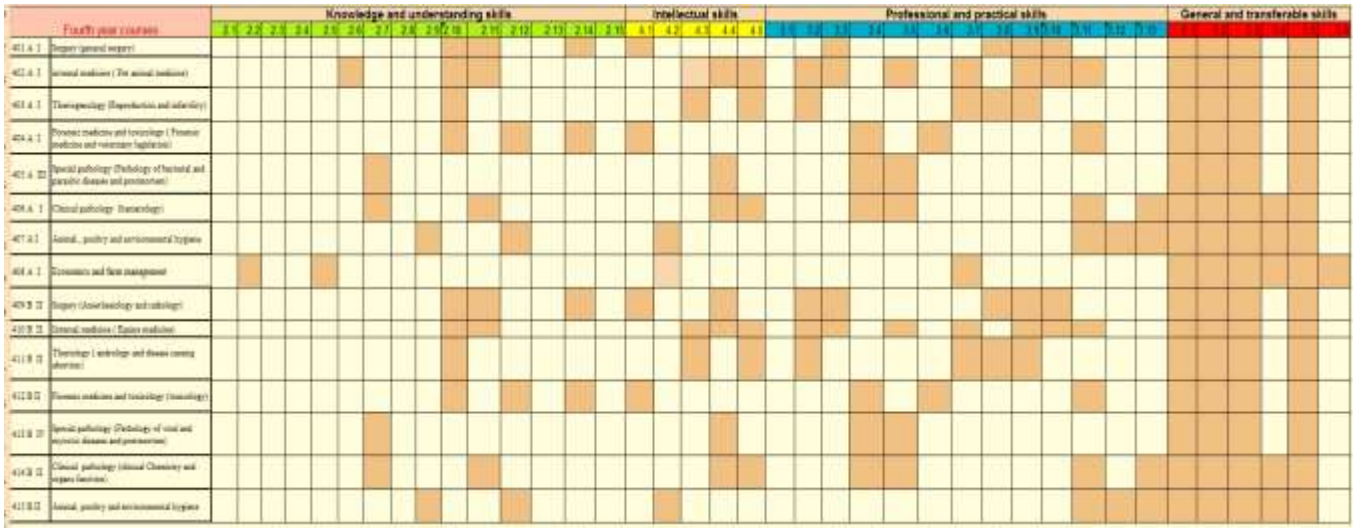
- **Adopted Academic Standards (NARS/ARS): NARS**
  The National Academic References Standards (NARS) for the veterinary sector of higher education in Egypt (Appendix 1) issued by the National authority for Quality Assurance and Accreditation (NAQAAE) (2009) edition 1
- **Date of Adoption of Standards in the governing Council: 6/23/2024**
  ***** NARS were approved by faculty council no (315) since 13-9-2009 and last updated approved by faculty council no (482) on 23/6/2024

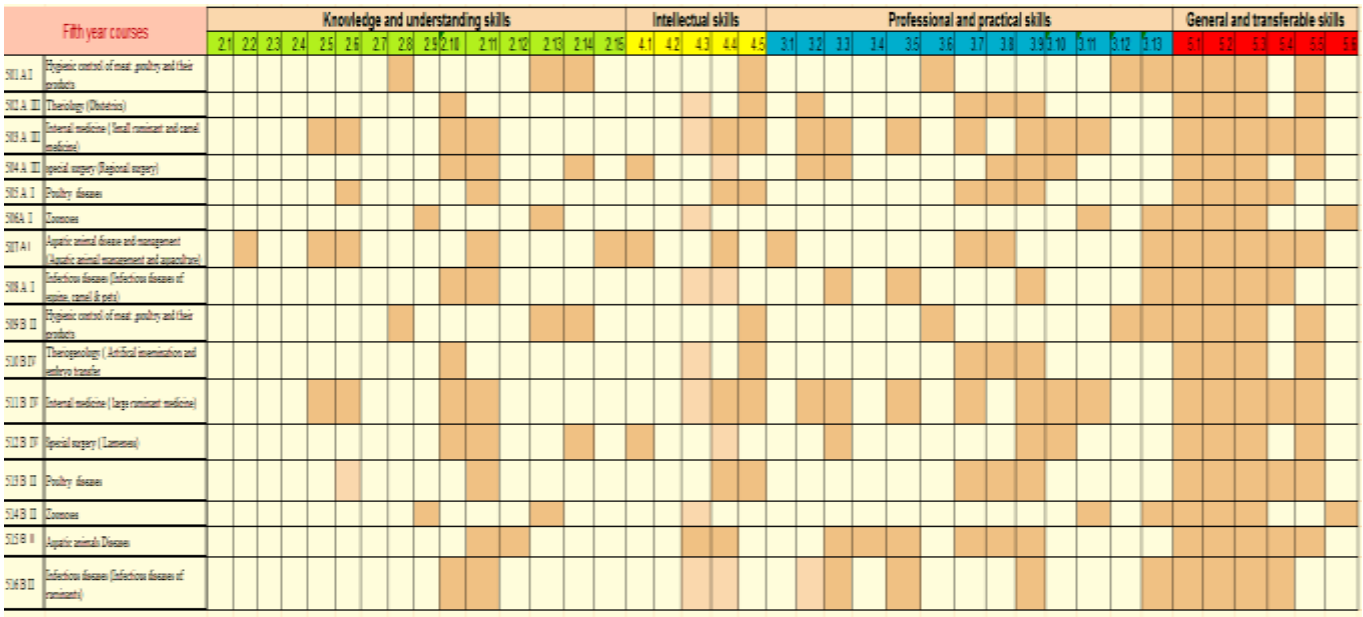
5. Matrix of Academic Standards (Program Outcomes POs) with Courses






Third year courses
Knowledge and understanding skills
Intellectual skills
Professional and practical skills
General and transferable skills


Fourth year courses
Knowledge and understanding skills
Intellectual skills
Professional and practical skills
General and transferable skills


Fifth year courses
Knowledge and understanding skills
Intellectual skills
Professional and practical skills
General and transferable skills

6. Teaching and Learning strategies/methods to achieve Program Outcomes:

1. Modified lectures
2. Blended learning
3. Discussion
4. Team based learning (TBL)
5. Problem-based learning
6. E-learning
7. Field Trips
8. Case based learning (CBL)
9. Critical Thinking
10. Practical and hospital clinical cases
11. Role Play
12. Simulation
13. Cooperative Task
14. Concept mapping
15. Flipped classroom

7. Student Assessment strategies/methods to verify and ensure students' acquisition of Program Outcomes:

- **Summative assessment**
  1. Final Written Exam [MCQ/short notes/case scenario/problem solving]
  2. Final Practical or clinical Exam. [OSPE/OSCE]
  3. Final Oral Exam [viva cards]
  4. Semester work and one hour Mid-term exam [quizzes/class activity and short notes exam]
- **Formative assessment**
  1. Quizzes
  2. Assignment [presentation/seminars/online assignment]
  3. Take home exam
  4. Survey
  5. Practical/clinical work

Program Admission Requirements**:**

The students can be admitted at the veterinary Medical Science Program if they have one of the following certificates:

1- The National General Secondary School certificate (Science branch) with the grades stated by the central admission office.

2- A certain limited number of students with a Secondary School certificates from the Arab countries could also be enrolled (the percentage differs from year to year and determined by the Ministry of Higher Education).

3- Students with equivalent degrees like American diploma or IGCSF could be enrolled (the percentage differs from year to year and determined by the Ministry of Higher Education).
4- Students could be transferred from one of the equivalent national veterinary faculties to the same year if his condition is at least passed and his/her social and /or health status require this transfer.

Regulation of Progression and Program Completion:

The policy of student retention and progression are determined according to the university regulations. Promotion to the next year requires that student should pass all required courses with at least PASS grade. Students failed in one or more courses can enter a second chance exam (Summer Exam) and should pass all failed courses to promote to the next year. If a student fails in one course in the second chance, he/she should remain for another year. To obtain a Bachelor Degree in veterinary medical sciences, the students should pass all courses, clinical and laboratory training, and graduation projector with one of the following grades: excellent, very good, good and pass. The final total grades of the students are the sum of the cumulative grades of all classes with adding the grade of clinical and lab training and the graduation project to the graduation certificate

Distribution of Marks & Examination Systems:

- The exam is held at the end of the first semester and the second semester. The maximum score for each course in the semester is distributed as follows:

50% for the written final exam at the end of the semester.

50% for other assessments, divided into: 20% for practical tests, 15% for oral exams, 15% for coursework.

- To pass a course, the student must obtain the minimum percentage required for a "Pass" grade from the total score allocated to the course. Additionally, the student must obtain at least 30% of the marks allocated to each of the following components: The written exam, and The combined total of practical, oral, and coursework assessments.

A student's success in courses and their overall grade is evaluated according to the following grading scale:

Excellent: 85% or more of the total score.

Very Good: 75% to less than 85% of the total score.

Good: 65% to less than 75% of the total score.

Pass: 50% to less than 65% of the total score.

-A student's failure in a course is evaluated according to one of the following grades:

- Weak: From 30% to less than 50% of the total score.
- Fail (Written or Practical): Less than 30% in either the written exam or the combined total of practical, oral, and coursework assessments.

-Student not be promoted from his current academic level to the next level unless he has passed all the academic courses.

Program evaluation

Evaluator	Method	Sample Size
1- Final year students (Senior Graduates)	**Questionnaire Review of assessment and Review of examination results**	**At least 50%**
2- Graduates	**Interview, questionnaires, depth**	**At least 50%**

	meeting	
3- External evaluator	**Report**	**At least one per 2 years**
4- Internal evaluator	**Report**	**At least one per year**
5- Stakeholders & employees	**Questionnaire, Focus groups**	**Veterinary companies**
6- Other academic leaders of the faculty	**Meetings** **Focus groups**	**Dean and Vice dean**

8. Program Key Performance Indicators (if any)

No.	Performance Indicator	Target Level	Method	Measurement
1.	Percentage of achieved objectives for program improvement and development plan	≥90%	Percentage of results of the educational program evaluation questionnaire for students	Annually
2.	Number of enrolled students	≥0	Statistical analysis of training impact questionnaires (for students) from training providers	Annually
3.	Staff: student ratio	1:25≥	Statistical analysis of training impact questionnaires (specific to training institutions) on students	Annually
4.	Quality of program specification	≥90%	Percentage of results of the educational program evaluation questionnaire by (final year students and graduates) regarding learning resources	Annually
5.	Quality of courses specification	≥90%	Percentage resulting from the statistical analysis of the student opinion survey questionnaire on college services	Annually
6.	Success rates for students	≥85%	Total number of scientific theses and scientific research published by faculty members annually	Annually
7.	Percentage of graduates	≥90%	The result of dividing the total number of annual scientific theses and research papers by the number of	Annually

No.	Performance Indicator	Target Level	Method	Measurement
			faculty members for this academic year	
8.	Effectiveness of teaching, learning and assessment methods	≥85%	Outside the division of the total local research by the international research published in the same academic year	Annually
9.	Quality of training	≥80%	The result of dividing the total number of annual international publications by the number of faculty members for that academic year.	Annually
10.	Impact of training	≥80%	Statistical analysis of the number of community activities in which faculty members and support staff participate	Annually
11.	Efficiency of learning resources and material resources	≥80%	Percentage of results of the educational program evaluation questionnaire for students	Annually
12.	Student satisfaction with services and effectiveness of student support	≥80%	Statistical analysis of training impact questionnaires (for students) from training providers	Annually
13.	Number of Research production for the faculty	≥200	Statistical analysis of training impact questionnaires (specific to training institutions) on students	Annually
14.	Average research production of faculty members	≥2	Percentage of results of the educational program evaluation questionnaire by (final year students and graduates) regarding learning resources	Annually
15.	Ratio of international publication to local publication of scientific research	≥1:2	Percentage resulting from the statistical analysis of the student opinion survey questionnaire on college services	Annually
16.	Average international faculty publication	≥1.5	Total number of scientific theses and scientific research published by faculty	Annually

No.	Performance Indicator	Target Level	Method	Measurement
			members annually	
17.	Rate of community activities	≥85%	The result of dividing the total number of annual scientific theses and research papers by the number of faculty members for this academic year	Annually

Name & Signature **Program Coordinator** **Prof.Dr. Mahmoud A. Abu-Elroos**	**Name & Signature** **Vice Dean for Education and Student Affairs** **Prof.Dr. Hossam F. Attia**