National Academic Reference Standards (NARS)

Veterinary Medicine

February 2009

1st Edition

Table of Contents

Introduction to Veterinary Medical Education

Veterinarians are concerned with securing the best output / productivity of livestock, poultry and fish resources via maintaining proper health and production indices. They are also concerned with public health via application of the appropriate measures for disease control and food hygiene for protection of humans against zoonotic diseases transmitted from animals and / or animal by products to man. Veterinarians are regarded as guardians of animal and human health, and animal welfare.

As the human population is growing rapidly, and more people are moving to urban areas, there is an increasing demand for food and animal protein. Since livestock and poultry production are major components of the national agricultural income, this situation provides a good prospect for the veterinary profession. The profession also takes care of companion animals. It is believed that the standing of the profession will be judged by how it will be able to provide the community with the range and quality of needed services.

The high turn-over rate of development in the domains of veterinary sciences and research all over the world matched well with the enhancement of the educational standards and quality to face the socio-economic needs and challenges. This, in Egypt, initiated and motivated the need for educational reform and empowerment to ultimately contribute to the sustainable national development in order to cope with the current globalization policies.

Veterinary education has a unique feature as it is a combination of science, art, practical and personal skills, and human-animal interaction.

Hence, the veterinary education in Egypt, being facilitated by the NARS and the Veterinary Education Sector of the Supreme Council of Egyptian Universities, is seeking to ensure and continuously improve the best quality of veterinary education that satisfies community confidence in the graduates' caliber to carry out the best possible professional practice.

Veterinary graduates have a wide range of governmental and nongovernmental career opportunities. The graduates have the opportunity to work in; General Authority for Veterinary Services performing governmental and nongovernmental services at different sectors, Veterinary hospitals, and animal, poultry and fish farms, Animal and poultry abattoirs, Industries for preparing meat and milk products, Pharmaceutical companies for veterinary drug manufacture and their marketing centers, Food hygiene and control in human hospitals, hotels and airport companies, Veterinary Research Institutes and the Veterinary Sections in the National Research Center, the Desert Research Institute and, and the Army, Veterinary diagnostic laboratories, Zoo and laboratory animals' facilities, Academic staff members at veterinary faculties and Advisory services in veterinary medicine.

I. National Academic Reference Standards

1. Attributes of the Graduates of Veterinary Medicine

The graduate must be able to:

1.1. Demonstrate the proper application of the professional knowledge and skills with positive attitudes and behavior towards better health and productivity of livestock, poultry and fish resources.

1.2. Be committed to continuous enhancement, coping with the most recent effective and efficient performance standards of the veterinary profession, and gaining community confidence.

1.3. Apply research concepts and technologies in different fields of veterinary sciences.

1.4. Express proper evaluation capacity and uncover curiosity.

1.5. Consider life-long learning skills.

1.6. Apply international ethical and legal frame of medical practice-code

1.7. 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.

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.

II. Curriculum Structure

The percentages mentioned in the following table for each area of study are just a guide for the faculty and not obligatory to follow:

Subjects	Range	Sciences characterization
Basic sciences	22– 28	Biology,Biophysics,Chemistry, Biostatics, Animalhusbandry,Embryology,Histology, Physiology, Anatomy.
Pre-clinical sciences	17 – 23	Genetics, Microbiology, Nutrition, Mycology, Immunology, Pharmacology, Parasitology, Virology, Pathology, & Milk and Meat hygiene.
Clinical sciences	40 – 44	Epidemiology and pathogenesis, Internal medicine, Infectious diseases, Forensic medicine and toxicology, Poultry and fish diseases,Hygiene,Surgery, Zoonoses, Theriogenology and Clinical investigation, and treatment of animals.
Training	2 –6	Field Trips and clinical investigations.
Computing and ICT	1-3	Computer sciences, and application IT.
Humanities	2– 4	English, economics, human rights and social studies
Discretionary subjects	4–8	Allowed to each faculty to be used based on its mission.

III.   Glossary

1. **Institution**

   A University, faculty or higher institute providing education programs leading to a first university degree or a higher degree (Master's or Doctorate).

2. **Graduate Attributes**

   Competencies expected from the graduate based on the acquired knowledge and skills gained upon completion of a particular program.

3. **National Academic Reference Standards (NARS)**

   Reference points designed by NAQAAE to outline / describe the expected minimum knowledge and skills necessary to fulfill the requirements of a program of study.

4. **Academic Standards**

   Reference points defined by an institution comprising the collective knowledge and skills to be gained by the graduates of a particular program. The academic standards should surpass the NARS, and be approved by NAQAAE.

5. **Subject Benchmark Statements**

   Guideline statements that detail what can be expected of a graduate in terms of the learning outcomes to satisfy the standards set for the program. They enable the outcomes to be compared, reviewed and evaluated against agreed upon standards.

6. The Program

A set of educational courses and activities designed by the institution to determine the systematic learning progress. The program also imparts the intended competencies required for the award of an academic degree.

7. Intended Learning Outcomes (ILOs)

Subject-specific knowledge, understanding and skills intended by the institution to be gained by the learners completing a particular educational activity. The ILOs emphasize what is expected that learners will be able to do as a result of a learning activity.

8. Knowledge and Understanding

Knowledge is the intended information to be gained from an educational activity including facts, terms, theories and basic concepts. Understanding involves comprehending and grasping the meaning or the underlying explanation of scientific objects.

9. Intellectual Skills

Learning and cognitive capabilities that involve critical thinking and creativity. These include application, analysis, synthesis and evaluation of information.

10. Professional and Practical Skills

Application of specialized knowledge, training and proficiency in a subject or field to attain successful career development and personal advancement.

11. General and Transferable Skills

Skills that are not subject-specific and commonly needed in education, employment, life-long learning and self development. These skills include communication, team work, numeracy, independent learning, interpersonal relationship, and problem solving... etc.

IV. References

1- Washington State Univ. , College of Vet. Medicine
http://www.vetmed.wsu.edu/

2- University of California- Davis, College of Vet. Medicine
http://www.vetmed.ucdavis.edu/

3- University of Florida , College of Vet. Medicine
http://www.vetmed.ufl.edu/

4- Texas A and M, College of Vet. Medicine
http://www.cvm.tamu.edu/

5- Virginia-Maryland Regional, College of Vet. Medicine
http://www.vetmed.vt.edu/

6- University of Wisconsin, School of Vet. Medicine
http://www.vetmed.wisc.edu/home

7- University of London , Royal Veterinary College
http://www.rvc.ac.uk/

8- Free University. Berlin, , Faculty of veterinary medicine.
http://www.vetmed.fu-berlin.de/

9- Leipzig University. , Faculty of veterinary medicine.
http://www.uni-leipzig.de/fak/vet.htm

10- Cornell Univ., College of veterinary medicine.
11- Georgia University , Faculty of Veterinary Medicine, USA.

12- Western University, College of Veterinary Medicine, USA.
13- Ross University, School of Veterinary Medicine, USA.
14- Western Canada, College of Veterinary Medicine, Canada.
15- University of Veterinary Medicine, Vienna Austria.
16- Dublin University, College of Veterinary Medicine, Ireland.
17- Faculty of Veterinary Medicine, Hanover, Germany.
18- London University, Royal Veterinary College, UK.
19- Queensland University, Faculty of Veterinary Science, Australia

Websites

1- http://niah.naro.affrc.go.jp/link/collection/veterinary/USA.html

2- http://www.gradschools.com/programs/veterinary_medicine.html

3- http://www.gradschools.com/programs/veterinary_medicine.html
4- http://netvet.wustl.edu/vschool.htm

5- http://www.vetmed.wsu.edu/prospectivestudents/academicStandards.aspx