Course Curriculum for Master Degree in Poultry Diseases/Veterinary Medicine

The Master Degree in Poultry Diseases /Veterinary Medicine, is awarded by the Faculty of Graduate Studies at Jordan University of Science and Technology (JUST) upon the fulfillment of the following requirements:

1) Compliance with the J.U.S.T. Master Degree regulations approved by the Dean Council (No. 492/2006), dated 8/8/2006.

2) Successful completion of (34) credit hours:

1. Compulsory Requirements: (16) credit hours as follows:

Course Code	Course Name	Credit Hours
CS 700	Computer Application Lab.	1(0+1)
VM 711	Biostatistics	2(2+0)
VM 713	Practical training I	2(0+2)
VM 714	Practical training II	2(0+2)
VM 741	Avian Viral Diseases	3(2+1)
VM 742	Avian Bacterial & Parasitic Diseases	3(2+1)
VM 743	Poultry Management	2(1+1)
VM 791	Seminar	1

2. Elective Requirements: (6-9) credit hours from the following* :

Course Code	Course Name	Credit Hours
VM 720	Clinical Pharmacology	2(1+1)
VM 726	Laboratory Diagnosis	2(1+1)
VM 728	Veterinary Epidemiology	2(1+1)
VM 733	Surgical Anatomy	2(1+1)
VM 739	Neuroanatomy	2(1+1)
VM 744	Avian Anatomy & Physiology	2(1+1)
VM 753	Advanced Immunology	2(1+1)
VM 756	Advanced Biochemistry	2(1+1)
VM 764	Pathology of Reproductive System	2(1+1)
VM 774	Food Chemical Analysis	2(1+1)
VM 775	Food Technology	2(1+1)
VM 776	Environmental Health	2(2+0)
VM 777	Animal Nutrition & Nutritional Diseases	2(1+1)
VM 780	Histochemistry	2(1+1)
VM 782	Oncology	2(1+1)
VM 789	Special Topics	2(1+1)
VM 794	Physiology of Endocrine and Reproduction	2(1+1)

* The student may study not more than 3 credit hours from courses of 700 or 800 level offered by other programs related to his field of study upon approval of the Dean of Graduate Studies based on the recommendation of the departmental graduate studies committee.

3. Master Thesis (VM 99): (9 credit hours) as follows:

Course Code	Course Name	Credit Hours
VM 799 A	Master Thesis	9
VM 799 B	Master Thesis	6
VM 799 C	Master Thesis	3
VM 799 D	Master Thesis	0

Course Description

(T: Theoretical Hours, P: Practical Hours)

CS 700: Computer Application Lab (1H: 0T, 1P)
This course covers the introduction to computer, hardware and software components, computer variable PC(s) operating system, word processing, spread sheet, internet, integration project.

VM 711: Biostatistics (2H: 2T, 0P)
Applying statistical technique in veterinary research. The course covers descriptive statistics, probability rules, applying screening test and differentiating between sensitivity and specificity of a test. Calculating confidence interval for population parameters as well as applying some techniques for testing hypotheses such as Z-test, t-test and Chi-squared-test.

VM 713: Practical Training I (2H: 0T, 2P)
VM 714: Practical Training II (2H: 0T, 2P)
In these courses the students will be exposed to clinical cases where they can obtain information related to the history of the case and collecting information on the clinical signs and findings. Problem-solving skills and application of material from the basic science will also be applied. Self-directed learning, developing good team work and interpersonal communication skills will also be emphasized. The student will be trained to use appropriate methods and techniques to reach clinical diagnosis. Blood, urine and tissue samples will be taken whenever needed to reach an accurate diagnosis. Appropriate treatment whether conservative or surgical will be carried out. The students will also be exposed to advance techniques and more diversified cases to broaden and upgrade their skills and background. All students will be trained mainly in the Veterinary Health Center and in specialized laboratories in the faculty. In addition to laboratory work, students specialized in food hygiene will be trained in slaughterhouses and in food factories.

VM 720: Clinical Pharmacology (2H: 1T, 1P)
This course will include the following topics: pharmacokinetics and disposition of drugs in domestic animals. Chemotherapy of parasitic, bacterial and fungal diseases will also be covered. Growth promoters, feed additives, drug-drug interaction and drug toxicity will be studied.

VM 726: Laboratory Diagnosis (2H: 1T, 1P)
This course focuses on general laboratory methods and specific test methodology with reviews of related pathophysiologic mechanisms, clinical applications and species differences. Topics include principles of interpretation of specific tests for diagnosis of animal diseases.

VM 728: Veterinary Epidemiology (2H: 1T, 1P)
Measures of disease morbidity and mortalities identifying methods and transmission of maintenance of infection. Applying methods used for descriptive and analytical epidemiological studies. Knowledge and skills used in veterinary screening programs and field investigation of an outbreak.

VM 733: Surgical Anatomy (2H: 1T,1P)
The student will review the basic anatomy of small and large animals with special emphasis on the anatomy of common surgical sites and nerve blocks in addition to position accessibility of organs in animal body.

VM 739: Neuroanatomy (2H: 1T, 1P)
The anatomy of the brain and the spinal cord will be covered extensively including the nuclei and tracts with their connections and functions. Besides, the course will cover certain neurological defects due to damages to nuclei or tracts inside the central nervous system.

VM 741 Avian Viral Diseases (3H: 2T, 1P)
The course will cover viral diseases in commercial poultry and pet birds. Detailed description of morphology, biological properties, and laboratory host system for each virus will be discussed. This course will also include natural and experimental hosts, transmission, incubation period, clinical signs, gross and histological lesions, pathogenesis, immunity, serology, diagnosis, and prevention control for each virus.

VM 742 Avian Bacterial and Parasitic Diseases (3H: 2T, 1P)
This course will cover bacterial and parasitic diseases in commercial poultry and pet birds. Detailed description of morphology, biological properties, and laboratory host system for each bacterium/ parasite will be discussed. This course will also include natural and experimental hosts, transmission, incubation period, clinical signs, gross and histological lesions, pathogenesis, immunity, serology, diagnosis, control, prevention (e.g. Vaccination), and treatment for bacteria/ parasite.

VM 743 Poultry Management, (3H: 2T, 1P)
This course will cover biosecurity, management related diseases or infection, heating and cooling systems, feeding systems, vaccination programs, methods of vaccination, lighting programs, egg storage and management, housing systems, types of feeders, and types of drinkers. In this course students are also expected to develop an understanding for the poultry industry organization.

VM 744: Avian Anatomy and Physiology (2H: 1T, 1P)
This course includes the study of osteology and all body systems of birds in addition to comparative anatomy of these systems among species. The physiological aspects of different functions of reproduction in birds will also be covered. Besides, the course will cover different theories of digestions and functional aspects of organs with emphasis on differences with mammals. Also, the effect of endocrine system secretion on different body systems will be discussed.

VM 753: Advanced Immunology (2H: 1T, 1P)
Advance aspects of animal's immune systems, mechanisms against infectious and non-infectious disease agents will be covered in addition to immunochemistry, vaccination and immunodiagnosis.

VM 756: Advanced Biochemistry (2H: 1T, 1P)
This course will cover all advance aspects of intermediary metabolism, its endogenous and exogenous control and the congenital as well as acquired disorders and its clinical significance.

VM 764: Pathology of Reproductive System (2H: 1T, 1P)
This course is concerned with systematic study of pathology of male and female genital systems of farm and pet animals. Pathology of abortions will also be discussed.

VM 774: Food Chemical Analysis (2H: 1T, 1P)
The course includes: chemical examination of food of animal origin including meat, meat products, meat by- products fish, poultry meat and its products, milk and its products edible fats oils and eggs. Testing food of animal origin for detection of adulteration and examination of these food for their coincidence with the standards locally and internationally chemical examination for detection food spoilage especially the incipient ones. Detection of the harmful residues in food. Detection of energies causing changes in food.

VM 775: Food Technology (2H: 1T, 1P)
The course covers detergents and disinfectants used in dairy plants, methods of preparation of cream, butter, dried dairy products, concentrated food products, fermented dairy products and ice cream. Also, this course will deal with the contamination of food products during processing and handling.

VM 776: Environmental Health (2H: 2T, 0P)
The course includes: environmental contaminants which come in contact with food of animal origin, impact of environmental contaminants in productivity and public health, health surveillance and management procedures for food handling and food animal personnel. Also risk assessment of environmental contaminant, role of codex alimintarius commission in clearance of food of animal origin from environmental pollutants.

VM 777: Animal Nutrition and Nutritional Diseases (2H: 1T, 1P)
The course will cover basic principles of gastrointestinal tract and nutrition, nutrient metabolism, applied animal nutrition, nutritional diseases and nutritional therapy.

VM 780: Histochemistry (2H: 1T, 1P)
This course will offer a chance for the student to understand the basic concepts of arrangement of different tissue components and link their structures to fixation, processing and staining of different cells and organelles. Furthermore, the course will cover the chemical basis for routine and special staining. The student will also understand and be able to execute the immunohistological techniques used for the detection and diagnosis of different tissues and cells in the animal body.

VM 782: Oncology (2H: 1T, 1P)
This course deals with the study of tumors with emphasis on mechanism of oncogenesis, classification and histological diagnosis of tumors.

VM 789: Special Topics (2H: 1T, 1P)
The student after consultation with the advisor can register for this specific course with his advisor or with other instructor within the faculty according to his specific needs. The course could cover theoretical materials, procedures or techniques. A specific title could be offered according to the need intended providing that such title was not addressed in the master program.

VM 791: Seminar (1H: 1T, 0P)
Each student is expected to attend all seminars presented by his colleagues and also present at least one seminar during his study. The seminar should address the proposal of the student, the preliminary findings or the final version of the research the student is working on.

VM 794: Physiology of Endocrine and Reproduction (2H: 1T, 1P)
This course covers the role of endocrine system in regulation of metabolism and reproduction and body homeostasis and their intimate relationships with each other .

VM 799A: Thesis (9 Credit Hour)
VM 799B: Thesis (6 Credit Hour)
VM 799C: Thesis (3 Credit Hour)
VM 799D: Thesis (0 Credit Hour)
The student will carry out a research in his/her major specialty. After finishing experimentation, data collection and analysis of data, the student will write a thesis on his/her subject according to the regulations of the university. The student can register for any number of credit hours mentioned above.