

Tuskegee University
College of Veterinary Medicine, Nursing and Allied Health
Master of Science (MS) in Veterinary Science

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Degree Offered: Master of Science (M.S.) in Veterinary Science

* For additional information please refer to the Graduate Handbook.

The Master of Science in Veterinary Science graduate program at the College of Veterinary Medicine, Nursing and Allied Health produces successful academicians and investigators in the areas of cancer cell biology, HIV/AIDS, cancer and nano-therapy, reproductive biology, risk analysis / epidemiology, food safety and control of food intake.

Admission Requirements:

- Applicants must have completed the B.S. degree from an accredited college or university.
- Cumulative GPA of 3.0 or better
- Completed Online Application and Application Fee
- Official Transcripts from all colleges/universities (International Students must have transcripts through World Education Services –WES)
- GRE Scores at least 540 (old) or 156 (new), less than 5 years old
- Personal Statement
- 3 Recommendation Letters
- Resume or Curriculum
- *ETS/WES Scores (International students only)
- TOEFL (International students only)
- Affidavit of Support and Bank Statement (International students only)

Graduation Requirements:

- Core Courses: 10
- Elective Courses: 17
- Research/Thesis: 5
- Admission to Candidacy
- Passing of the Final Oral Examination

Advisory Committee:

During the first semester of his/her study in the Master of Science program, the student and his/her Major Professor must recommend to Department Head for approval an Advisory Committee consisting of a minimum of four members including the Major Professor and the Department Head. The Advisory Committee shall also serve as the Examination Committee.

Core Courses (10 credits): Required by All Students

Course	Course Number	Credit
Biostatistics I (or biomed. stats.)	EVSC 0500	3
Biostatistics II	EVSC 0501	3
Biomedical Statistics (or biostats.)	MBIO 0660	3
Population Health	MBIO 0614	2
Seminar I	MBIO 0600 or PHSI 0600	1
Seminar II	MBIO 0601 or PHSI 0601	1
Research / Thesis	MBIO 0700 or PHSI 0700	5

Elective Courses (17 credits): Determined by Student's Major Professor

Elective courses may be any graduate level courses offered at Tuskegee University or elsewhere.

Course	Course Number	Credit
Gross Anatomy (Offered in the Fall [Small Animal]) Gross Anatomy (Offered in the Spring [Large Animal])	ANAT 301G	4
Microanatomy (Offered in the Fall and in the Spring semesters)	ANAT 302G	4
Physiology (Offered in the Fall and in the Spring semesters)	PHSI 301G	5
Pathology (Offered: Fall [General] and Spring [Systemic])	PATH 426G	4
Toxicology (Offered in the Spring)	PHSI 0546	4
Parasitology (Offered in the Fall)	PATH 425G	4
Microbiology (Offered in the Fall)	MBIO 411G	3
Immunology (Offered in the Fall)	MBIO 413G	3
Virology (Offered in the Fall)	MBIO 412G	2
Immunology / Virology Laboratory (Offered in the Fall)	MBIO 414G	1
Risk Analysis (Offered both semesters)	PATH 0669	3
Biochemistry I	IBSC 0603	4
Molecular Biology I	IBSC 0605	4

Transfer Credits:

The student's Advisory Committee may recommend transfer credits for up to 9 hours for graduate courses taken by the student at Tuskegee University as part of another graduate program or at any other institution. Transfer credits may be recommended under both core and elective categories.

Admission to Candidacy:

After completing 15 credits of course work, the student must submit a completed application for the Candidacy to the Dean of Graduate Studies.

Seminars:

A student pursuing the Master of Science degree in Veterinary Science must present two seminars. This course includes practical examples of proper conduct of research, issues with copy right violation, plagiarism, interpretation of published work among other academic requirements including discussions on basic research methods, and a review of current research topics. Oral presentations are required.

Thesis:

The final draft of the thesis/dissertation must be filed with the student's Advisory Committee at least 30 days before the date listed in the university calendar for final copies to be submitted during the semester in which the student expects to graduate. The student must present to the Dean of Graduate Programs a "Preliminary Approval Sheet" (PAS) bearing the signature of the Major Professor before the final oral examination may be scheduled and before copies of the thesis/dissertation are distributed to members of the Examining Committee.

After the "Preliminary Approval Sheet" has been signed, it should be submitted to the Dean of Graduate Programs before the final examination is scheduled and before the final draft of the thesis/dissertation is prepared for final approval. Approval of the thesis/dissertation in its final form rests with the Examining Committee.

List of Core Courses	
EVSC 0500	BIostatistics I. CR. 3. Statistical methods in scientific research. An introductory course in statistics dealing with the application of various methods of analyzing research data to include sampling, randomization, the normal distribution, "t" test, linear regression, correlation, Chi-Square, and analysis of variance of random design. Laboratory assignments require the use of pocket calculators and the University's time share computer.
EVSC 0501	BIostatistics II. CR. 3. The application of advanced statistical methods in analyzing biological data to include analysis of two-way experiments, factorial experiments, covariance analysis, least-square analysis with unequal subclass numbers and curvilinear regression. Laboratory assignments require the use of the University time share computer and departmental microcomputers. Prerequisites: EVSC 0500 or Permission of Instructor
MBIO 0660	BIOMEDICAL STATS. CR. 3. The conceptual and theoretical bases of biomedical research designs are examined. Appropriate statistical methods, which correspond to and are consistent with the biomedical research design, will be studied. These include both parametric and nonparametric methods. Descriptive statistics, probability distributions, comparative statistics (t test, ANOVA) and causal analysis (chi square, regression and other multivariate techniques) will be covered with emphasis on inferential aspects of statistics and on the interpretation of results which would be rational and meaningful in biomedicine.
MBIO 0614	POPULATION HEALTH. CR. 2. This course introduces graduate students to the theory, methods, and body of knowledge of epidemiology, using an integrated approach. It covers the full range of disease occurrence, including genetic and environmental causes for both infectious and noninfectious diseases and their interactions, as well as zoonoses. It discusses the core epidemiologic functions, including public health surveillance, outbreak investigation, epidemiologic study designs, and evaluation of treatment regimens and screening tests and their efficacies. Designed therefore for students in all fields of public health, its primary objective is to teach the basic principles and applications of epidemiology.
MBIO 0600	SEMINAR I - MICROBIOLOGY. CR. 1. This course includes practical examples of proper conduct of research, issues with copy right violation, plagiarism, interpretation of published work among other academic requirements including discussions on basic research methods, and a review of current research topics. Oral presentations are and/or reports are required.
MBIO 0601	SEMINAR II -MICROBIOLOGY. CR. 1. This course includes practical examples of

	proper conduct of research, issues with copy right violation, plagiarism, interpretation of published work among other academic requirements including discussions on basic research methods, and a review of current research topics. Oral presentations are and/or reports are required.
PHSI 0600	SEMINAR I - BIOMEDICAL SCIENCES. CR. 1. This is a seminar course. The student is required to present a seminar to talk about his / her research work or a project chosen by the advisor. This course teaches the techniques to prepare and present a seminar in public.
MBIO 0601	SEMINAR II – MICROBIOLOGY. CR. 1. This is a seminar course. The student is required to present a seminar to talk about his / her research work. This course teaches the techniques to prepare and present a professional seminar in public.
PHSI 0601	SEMINAR II - BIOMEDICAL SCIENCES. CR. 1. This is a seminar course. The student is required to present a seminar to talk about his / her research work. This course teaches the techniques to prepare and present a professional seminar in public.
MBIO 0700	RESEARCH IN PATHOBIOLOGY/THESIS. CR. 5. This course deals with specific research thesis projects under the supervision of the graduate student’s major professor. Master’s student is expected to enroll in a total of 6 credit hours, conduct research and defend it.
PHSI 0700	RESEARCH IN BIOMEDICAL SCIENCES/THESIS. CR. 5 This is a required course designed to give time for the student to write their thesis work in the format required by the graduate school.
List of Elective Courses	
ANAT 301G	GROSS ANATOMY. CR. 4. This course deals with a topographic and systemic anatomic view of the canine, feline species, and the domestic bird. Emphasis is placed on the dissection of the dog & cat cadavers. Prosections, plastinated specimens, videos and slides are utilized as instructional aids
ANAT 302G	MICROANATOMY. CR. 4. The course includes (2 lectures one hour each and 2 labs two hours each) studies of cells, tissues, and organs at the light and electron microscopic levels, with emphasis on structural-functional relationships and clinical applications. The lab component includes identification of cells, tissues and organs using web-based digital images.
PHSI 301G	PHYSIOLOGY. CR. 5. Introduction to general physiology which includes fluids, electrolytes, transport of substances across cell membranes, action potentials, signal transduction and intermediary metabolism; physiology respiratory and digestive systems.
PATH 426G	PATHOLOGY. CR. 4. This course deals with basic and fundamental disease processes referable to and affecting the body as a whole. Emphasis is placed on the base knowledge and applied skills needed for logical reasoning when solving problems related to clinical medicine and surgery. Predisposing factors, etiologic agents, pathogenesis, and lesions are included in the discussions. Prerequisites: ANAT 0302 and ANAT 0310
PHSI 0546	TOXICOLOGY. CR. 4. This course deals with basic clinical and diagnostic aspects of toxic agents of Veterinary medical importance including pesticides, metals, poisonous plants, mycotoxins, zootoxins, drugs, feed additives, industrial and commercial toxicants, household products, and water pollutants. Emphasis is placed on the sources, physical and chemical properties, absorption, distribution, mechanisms of action, biotransformation, and excretion of toxic agents. Also, the emphasis is placed on approaches to investigate and treat intoxications, and to understand the biochemical and pathophysiological processes through which the organsystems react to toxicants. Prerequisite: PHSI 0442
PATH 425G	PARASITOLOGY. CR. 4. This course deals with the classification, morphology, life history, mode of transmission, pathogenicity, control, and diseases caused by parasites of

	importance in animals. Emphasis is placed on the identification of parasites and the diagnosis of parasitic diseases.
MBIO 411G	MICROBIOLOGY. CR. 3. This course covers the basic properties of viruses in relation to their roles as disease-causing agents. Emphasis will be on a systematic review of virus families that cause diseases in domestic animals.
MBIO 413G	IMMUNOLOGY. CR. 3. This course deals with the structure, function, and kinetics of immune responses in relation to infectious, neoplastic, allergic, immunodeficiency, and autoimmune diseases. Initially the students will be exposed to basic and fundamental aspects of the immune system. Prerequisite: MBIO 0411
MBIO 414G	IMMUNOLOGY/VIROLOGY LAB. CR. 1. This laboratory course covers general laboratory for the didactic lectures of Virology (MBIO 412) and Immunology (MBIO 413). Participants will have the opportunity to gain general understanding of principals and objectives of diagnostic methods in Virology and Immunology, collection, packaging and transport of specimens, immunological disorders including tests for autoimmune, hypersensitivity, and immunodeficiency conditions.
MBIO 412G	VIROLOGY. CR. 2. This course deals with the basic concepts and principles of viruses and viral infections. Emphasis is placed on viral agents basic, clinical and practical importance. Prerequisite: MBIO 0411
PATH 0669	RISK ANALYSIS. CR. 3. This course will present an integrated approach to risk analysis composed of risk assessment, risk management and risk communication. It will rely upon a detailed analytic understanding of the epidemiology of a population under study and expertise in mathematical/statistical and computer modeling methods. The course will emphasize both stochastic (probabilistic) and deterministic modelling undergirded by sound epidemiologic concepts of population dynamics. Rigorous examination of transmission pathways of risk agents and multiple determinants that affect these interactions will be evaluated and quantified mathematically and statistically with emphasis on probability distributions. Both qualitative and quantitative risk analysis methods will be examined. Quantitative risk analysis (QRA) including probabilistic methods with emphasis on scenario analysis (scenario trees or risk pathway analysis), decision trees, fault tolerant analysis, consequence analysis, cost benefit analysis, optimization methods and a variety of statistical methods will be explored. Monte Carlo simulation, @RISK, Microsoft Excel and other risk analysis and modeling software as well as statistical/mathematical programs will be used.
IBSC 0603	BIOCHEMISTRY I. CR. 4. IBS course development-mol.cell-organism-development-system-ecological-environmental biosciences (lecture/laboratory-emphases on model systems) under-girded by chemistry that bear on the aforementioned (biochemistry). Biochemical Topics: Context-Living Systems, Protein Structure and Function, Enzymes and Co-Enzymes, Metabolism
IBSC 0605	MOLECULAR BIOLOGY I. CR. 4. This is a graduate-level, integratively-taught course that explores the origin, modification and interactive properties of living organisms, focusing on nucleic acids. This course is team taught, with different faculty teaching, based on their areas of expertise.