

**UNIVERSITY OF NIGERIA, NSUKKA****DEPARTMENT OF VETERINARY PARASITOLOGY AND ENTOMOLOGY****POSTGRADUATE PROGRAMMES IN VETERINARY PARASITOLOGY AND ENTOMOLOGY****PHILOSOPHY:**

The postgraduate programmes of the Department of Veterinary Parasitology and Entomology are designed to expose the students to advanced and specialized skills for the effective management and control of animal parasites and their diseases, which are of both economic and zoonotic importance. The main essence of the training is to meet the increasing need of specialists in various fields of Parasitology, both in the public and private sectors within Nigeria and beyond. The programme also prepares the students for high level academic and research capabilities.

**OBJECTIVES:**

The broad objective of the programme is to produce Parasitologist with advanced theoretical and sound practical knowledge of all aspects of Veterinary Parasitology and Entomology. Specifically, the programme is drawn to provide students with advanced skills in basic, molecular and clinical Parasitology and Entomology.

**SCOPE:**

The Postgraduate programme of the Department of Veterinary Parasitology and Entomology is committed to the advancement of Parasitological research in particular and biomedical research in general. A postgraduate student may specialize in either the area of Veterinary Parasitology or Veterinary Entomology. Masters Degree students shall pursue their program by coursework and research to be presented in a project report. The doctorate degree program is by comprehensive research to be embodied in a thesis. The programme includes an advanced study of the important families, species of parasites of domestic animals and poultry in West Africa in general and Nigeria in particular, including those which are of public health/zoonotic importance. Emphasis is on their occurrence and distribution, classification, diagnostic morphology, lifecycle, bionomics of free-living stages, modes of transmission, epizootiology, host-parasite relationships and factors influencing them. General principles of laboratory diagnosis, treatment, prophylaxis and control of parasitic diseases are also studied.

**ADMISSION REQUIREMENTS:****a. Master Science (M.Sc)**

- i. Candidates must possess a Doctor of Veterinary Medicine (DVM) degree from a University that is accredited/approved by the Veterinary Council of Nigeria.
- ii. Graduates of the University of Nigeria or of other recognized universities who have obtained a Bachelors degree with at least a second class honours (Upper division) with GPA not less than 3.50 on a 5-point scale or its equivalent in Agro and Biomedical related courses are qualified to apply.

**b. Doctor of Philosophy (Ph.D)**

- i. Candidates must possess a Masters degree (M.Sc) in Veterinary Parasitology or Entomology from a recognized University and must have obtained a cumulative grade point average of at least 3.5 on a 5 point scale or 3.0 on a 4 point scale in the Masters Degree program.

## AREAS OF SPECIALIZATION: M.Sc. and Ph.D

- i. Veterinary Helminthology
- ii. Veterinary Protozoology
- iii. Veterinary Entomology

## DURATION OF PROGRAMMES

### i. Master of Science (M.Sc) programme

- Full time:** A minimum of 3 Semesters  
A maximum of 5 Semesters
- Part time:** A minimum of 5 Semesters  
A maximum of 8 Semesters

### ii. Doctor of Philosophy (Ph.D)

- Full time:** A minimum of 6 Semesters  
A maximum of 10 Semesters
- Part time:** A minimum of 8 Semesters  
A maximum of 12 Semesters

## REQUIREMENTS FOR GRADUATION

### M.Sc Programme

- I) To be awarded the M.Sc. degree, a student must have taken and passed the prescribed number of compulsory and required courses selected from the approved list. These shall include the following:
- a. 3 compulsory Faculty based courses with a total credit unit load of 8.
  - b. 1 compulsory Postgraduate course PGC 601 (Research Methodology and application of ICT in Research) with a credit unit of 3.
  - c. Departmental courses as recommended for the student by the Supervisor/Department based on the student's area of specialization which must constitute a minimum of 16 units
  - d. Project Report 6 credit units
- Required Total Units 33 credit units**

- II) In all cases, M. Sc. students must write and submit to the Department a project report duly supervised by a lecturer in the Department whose qualifications are not below the Ph.D. Such a project report must be sent to an external examiner nominated by the Department and appointed by Senate for that purpose.

### Ph.D. Programme

To be awarded the PhD. Degree in Veterinary Parasitology or Entomology, a PhD student must register and take the following Faculty-based courses totalling 6 credit units plus the compulsory Postgraduate School based course, Synopsis and Grant Writing (3 credit units) and a research work embodied in a thesis which has a credit unit load of 24:

<u>Course No.</u>	<u>Title</u>	<u>Units</u>
FVM 895	Ph.D Research Project Proposal Seminar	2
FVM 896	Ph.D Research Project Progress Report Seminar	2
FVM 897	Ph.D Research Project Final Seminar	2

PGC 701	Synopsis and Grant writing	3
FVM 890	Thesis	24
<b>Total -</b>		<b>33 units</b>

Every Ph.D. candidate must submit a thesis on a chosen and approved topic, supervised by a member of staff whose qualification is not below the Ph.D, and who is not lower than Senior Lecturer in rank. The Ph.D. thesis must be defended before an external examiner duly nominated for that purpose and appointed by Senate.

### LIST OF APPROVED SUPERVISORS

#### Professors

1. D. N. Onah, DVM, PhD, MCVSN, FCVSN, FIHA      Immunoparasitology/Protozoology
2. C. O. Nwosu, DVM, MSc, Ph.D, MBA, MCVSN, FCVSN      Veterinary Helminthology
3. R. C. Ezeokonkwo, DVM, MSc, PhD, MCVSN, FCVSN      Veterinary Protozoology.

#### Senior Lecturer

- Dr. Idika Kalu Idika, HND, DVM, MSc, PhD      Veterinary Helminthology & Molecular Parasitology

#### JOB OPPORTUNITIES

Career opportunities exist for individuals who graduate from the programmes of the Department in teaching and research in institutions of higher learning, research and development work in the agricultural and medical research institutes, in epidemiological, livestock research and planning units of the Federal and State Governments, Ministries of Agriculture and Health, in specialist advisory duties with medically and/or agriculturally oriented companies, as consultants to private and public sectors of the livestock industry, in the Police Force, Customs Service, Prison Service, Federal Road Safety Commission (FRSC), National Agency for Food and Drug Administration and Control (NAFDAC), Civil Defence Corps and the Armed Forces.

#### COURSES FOR MSc PROGRAMME

##### Compulsory Faculty-based Courses for the MSc programme

##### First Semester

<u>Course No.</u>	<u>Title</u>	<u>Units</u>
FVM 701	Research Methods and Scientific Writing	3

##### Second Semester

<u>Course No.</u>	<u>Title</u>	<u>Units</u>
FVM 702	Biometrics and Computer Applications	3
FVM 796	Research Project Final Seminar	2
FVM 790	Project Report	6

##### Compulsory Faculty-based Courses for the MSc programme

PGC 601	Research Methodology and application of ICT in Research	3
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##### Departmental Courses for M.Sc in Veterinary Parasitology

##### First Semester

<u>Course No.</u>	<u>Title</u>	<u>Units</u>
VPE 711	Advanced Helminthology	3

VPE 721	Advanced Protozoology	3
VPE 731	Immunity in Parasitic infections	3
VPE 741	Research Techniques in Parasitology	3

### **Second Semester**

<u>Course No.</u>	<u>Title</u>	<u>Units</u>
VPE 712	Diagnostic Parasitology	3
VPE 722	Parasite zoonoses	3
VPE 732	Wildlife Parasitology and Ecology	3
VPE 742	Emerging Problems in Parasitology	3
VPE 701	Seminar	2

### **Departmental Courses for M.Sc in Veterinary Entomology**

#### **First Semester**

<u>Course No.</u>	<u>Title</u>	<u>Units</u>
VPE 713	Parasitic Insects	3
VPE 721	Advanced Protozoology	3
VPE 723	Acarology	3
VPE 731	Immunity in Parasitic Infections	3
VPE 741	Research Techniques in Parasitology	3

#### **Second Semester**

<u>Course No.</u>	<u>Title</u>	<u>Units</u>
VPE 712	Diagnostic Parasitology	3
VPE 722	Parasite Zoonoses	3
VPE 734	Chemistry of Pesticides	3
VPE 742	Emerging Problems in Parasitology	3
VPE 701	Seminar	2

## **COURSE DESCRIPTIONS FOR THE MASTER OF SCIENCE PROGRAMME**

### **COMPULSORY FACULTY-BASED COURSES**

#### **FVM 701      Research Methods and Scientific writing      [3 units]**

Definitions, value and philosophy of research. Types of studies/research. Choice of research topics. Definition of background of study, statement of problem, research question, objectives and hypotheses. Research design, sampling, sourcing, collation and analysis of data. Presentation and interpretation of results. Technical report writing. Critique of published papers and Presentation of research findings.

#### **FVM 702      Biometrics and Computer Applications      [3 units]**

Definitions and value of biometry in scientific research. Variability and normal distribution. Probability, binomial and Poisson distributions. Populations and sampling. Testing differences between means. Student's t test. Chi Square. Correlation and Regression analysis. Analysis of variance. Other relevant statistics. Basics of computer appreciation. Software packages relevant to scientific and veterinary medical research and their use. Presentation of scientific reports

#### **FVM 796      Research Project Final Seminar      [2 units]**

Final seminar on M.Sc research project highlighting background of the study, statement of problem, objectives of the study, methods used in carrying out the study and analysis of the data generated, results, discussion of the results and recommendations arising from the findings of the study.

**FVM 790 Research Project****[6 units]**

Research project in the student's area of study, leading to a Project Report that shall be examined by an External Examiner.

**DEPARTMENTAL COURSES****VPE 711 Advanced Veterinary Helminthology****[3 units]**

Studies of systematics, distribution and diagnostic morphology of helminth parasites of veterinary and medical importance. The bionomics of free-living stages of helminths and factors influencing transmission of infection. The dynamics of parasite populations in the host and external environments and relationship with disease causation, mechanism of pathogenicity, principles of treatment, prophylaxis and control. Heterologous and homologous parasite interactions (concurrent infections). The immunological and genetic aspects of host parasite relationship

**VPE 712 Diagnostic Parasitology****[3 units]**

Special study of laboratory techniques for handling parasitological materials to aid clinical diagnosis of parasitic infections. Qualitative and quantitative analysis of parasitological materials, including histological preparation of tissues for the examination and diagnosis of protozoan, helminth and arthropod diseases and infections. *In vivo* maintenance of parasites for diagnosis and research purposes, faecal culture methods for cultivation and identification of nematode larvae, post mortem worm counting techniques in the diagnosis and investigation of helminth, arthropod and protozoan diseases and infections.

**VPE 713 Parasitic Insects****[3 units]**

Insects of veterinary and medical importance. Biology and ecology of winged and wingless insects of veterinary and medical importance. Sampling and trapping methods; biological and chemical control of insects; insect behaviour analysis of arthropod environment; population dynamics; regulation and mensuration; theory of natural control

**VPE 721 Advanced Protozoology****[3 units]**

Studies of the systematic distribution, diagnostic morphology and biology of protozoa of veterinary and medical importance; mechanisms of pathogenicity and principles of treatment, prophylaxis and control. Transmission and factors influencing transmission of infections. Role of vectors in transmission and pathogenicity of infection. Host-parasite relationships – immunological and genetic aspects, vaccinations, parasite-parasite interactions in the host.

**VPE 722 Parasite Zoonoses****[3 units]**

A detailed study of the prevalence, incidence and distribution of parasites of zoonotic importance. Factors influencing their maintenance in nature and spread in animal and human populations with emphasis on socio-cultural habits, host nutrition, genotype and immunological responses; parasite species and strains. Various mechanisms contributing to their spread in humans. Diagnosis, principles and strategies for prophylaxis and control.

**VPE 723 Acarology****[3 units]**

Parasitic acarines of veterinary and medical importance. Biology and distribution of parasitic ticks; genesis and epidemiology of tick-borne diseases; bionomics and principles involved in the control of ticks of veterinary and medical importance. Pest control programmes.

**VPE 731 Immunity to Parasitic Infections****[3 units]**

The study of the basis of immunity; processes of immune recognition; antigen-antibody reaction; the complement systems; antibody mediated immune response; cell mediated immunity; immunopathology;

immunity to parasitic infections; immunological tests. These are discussed within the concept of protozoan, helminth and arthropod infections.

**VPE 732 Wildlife Parasitology and Ecology [3 units]**

Biology and economic importance of parasites of captive (zoo) animals, game animals and laboratory animals. Wildlife and game animals as reservoirs of parasites of veterinary and medical importance. Parasites of fish and shrimps. Control of these parasites.

**VPE 734 Chemistry of Pesticides [3 units]**

Chemical composition and reaction of pesticides, their physiological effect on animal tissues and environmental implications of pesticide usage.

**VPE 741 Research Techniques in Parasitology [3 units]**

The collection, fixation, preservation and examination of parasite specimens by use of suitable staining and mounting techniques, post-mortem collection of parasitological materials from different animals. Micrometry and photo-micrometry, preparation of museum specimens of parasites and parasitized tissues and organs. Some haematological and immunological techniques in Parasitology research. *In vitro* maintenance and culture of parasites, parasite antigen preparation and analysis, techniques for laboratory and field evaluation of anthelmintics; and antiprotozoal efficacy and resistance. Techniques and purposes of the scientific method in entomology with emphasis on problem selection, design of experiments, collection, evaluation and presentation of data.

**VPE 742 Emerging Problems in Parasitology [3 units]**

General discussions on general parasitological problems including those associated with climate change and emerging and re-emerging parasitic diseases.

**COMPULSORY POSTGRADUATE COURSE**

**PGC 601: Research Methodology and application of ICT in Research [3 units]**

In-depth research work aimed at acquiring full knowledge and presentations in scholarly writing of the concepts, issues, trends in the definition and development of the study area from African and Western perspectives. Major steps in research: selection of problem, literature, literature review, Design, Data collection, analysis and interpretation, Conclusions. Study of various research designs, Historical, Case studies, Surveys, Descriptive, cross sectional, Experimental etc. Analysis, surveys and synthesis of conceptual and philosophical foundations of different disciplines. Identification of research problems and development of research questions and or hypotheses. Detailed treatment of methods of collecting relevant research data and the format for presenting research results (from designing the table of contents to referencing, bibliography and appendix). Data analysis and result presentation in different disciplines using appropriate analytical tools. Methods of project/dissertation writing. Application of appropriate advanced ICT tools relevant in every discipline for data gathering, analysis and result presentation. Essentials of spreadsheets, internet technology, and internet search engines. All registered Masters Degree students must attend a solution-based interactive workshop to be organized by the School of Postgraduate Studies for a practical demonstration and application of the knowledge acquired from the course, conducted by selected experts.

**COURSE DESCRIPTIONS FOR THE DOCTOR OF PHILOSOPHY PROGRAMME**

**FVM 895 Ph.D Research Project Proposal Seminar [2 units]**

Seminar on proposed Ph.D research project highlighting background of the study, review of literature on current state of knowledge of the area of research, statement of problem, objectives of the study, proposed methodology and expected output/significance of the study.

**FVM 896 Ph.D Research Project Progress Report Seminar [2 units]**

Progress report seminar on the Ph.D research project highlighting background of the study, statement of problem, objectives of the study, methods used so far in the study, results generated, challenges encountered, changes if any in the design of the study and general discussion of the future prospects of the study.

**FVM 897      Ph.D Research Project Final Seminar      [2 units]**

Final seminar on the Ph.D research project highlighting background of the study, statement of problem, objectives of the study, methods used in carrying out the study and analysis of the data generated, results, discussion of the results and recommendations arising from the findings of the study.

**PGC 701:      Synopsis and grant writing      [3 units]**

Identification of types and nature of grant writing; mining of grants application calls on the internet. Determining appropriate strategy for each grant application. Study of various grant application structures and contents and writing of concept notes, detailed project description, budgeting and budget defense. Study of sample grant writings in various forms and writing of mock research and other grants. Identification of University of Nigeria synopsis structure requirements (Introduction, Methodology and Results). Determining the content of each sub-unit of the synopsis. Steps in writing of synopsis from the dissertation/Thesis document. Structural and language issues. Common errors in synopsis writing and strategies for avoiding them. The roles of the student and the supervisor in the production of a synopsis. Writing of mock synopsis. All registered Ph.D students must attend a solution based interactive workshop to be organized by the school of Postgraduate Studies for a practical demonstration and application of the knowledge acquired from the course, conducted by selected experts.

**FVM 890      Thesis      [24 units]**

Doctor of Philosophy research project in the student's area of study, under the guidance of an approved supervisor. The study must be original and the topic comprehensively researched. The output should contribute significantly to the existing body of knowledge in the area of study. The write-up (thesis) shall be examined by an External Examiner.