UNIVERSITY OF NIGERIA, NSUKKA

DEPARTMENT OF VETERINARY PHYSIOLOGY AND PHARMACOLOGY

POSTGRADUATE PROGRAMMES IN VETERINARY BIOCHEMISTRY, PHARMACOLOGY AND PHYSIOLOGY

PHILOSOPHY:

The Master of Science (M. Sc.) and Doctor of Philosophy (Ph.D.) degree programmes of the Department of Veterinary Physiology and Pharmacology are designed to train experts needed to work in various sectors of the livestock industry or engage in research and teaching of pre-clinical subjects in veterinary schools and animal health departments of tertiary institutions. The programmes are aimed at improving the supply of specialized manpower in the areas of Veterinary Biochemistry, Veterinary Pharmacology, Veterinary Physiology and Veterinary Toxicology.

OBJECTIVES:

The main objective of the programme is to make students understand the structure and biological function of various organs and cellular systems, and pharmacological mechanisms related to therapy, and drug toxicology in vertebrate animals. The programme is designed to provide students with necessary skills in:

1. Conducting research in Veterinary Biochemistry, Pharmacology, Toxicology and Physiology;
2. Solving scientific problems which have application to the health of animals and humans;
3. Taking up the leadership role in biomedical research.

SCOPE:

The programmes expose students to an advanced knowledge of the principles and mechanisms of cellular metabolism, systemic functions, drug therapy and toxicities in domestic animals, and their applications in animal health and production. Furthermore, the programmes offer a wide range of research fields as determined by the interests of the candidate and the supervisory team. These include problems in physiological, biochemical, cardiovascular, central nervous system and molecular aspects of veterinary pharmacology, clinical pharmacology, ethnopharmacology in Veterinary Pharmacology option; environmental toxicology, phytotoxicology and toxicology in Veterinary Toxicology option; respiratory, endocrine, reproductive, cardiovascular, environmental, rumen physiology and bio-engineering , nutritional, neurophysiology & advanced cytology in Veterinary Physiology option; and problems in molecular, advanced nutritional, pharmacological, enzymology and metabolic pathways in the Veterinary Biochemistry option. Other techniques available are spectrophotometric assays, cell culture methods, high

performance liquid chromatography (HPLC), rumen physiological methods, smooth and skeletal muscle recordings.

ADMISSION REQUIREMENTS:

a. M.Sc Programme

The following are eligible to apply for Master's degree admission:

Graduates of the University of Nigeria or of other recognized universities who have obtained the degree of Doctor of Veterinary Medicine (DVM) or its equivalent.

b. Ph.D Programme

The candidate for the Ph.D programme must possess a good Master's degree in the subject of interest (i.e. Veterinary Biochemistry, Pharmacology, Toxicology and Physiology) from a recognized university, with a minimum CGPA of 3.0/4.0 or 3.5/5.0 or 60% and a Project score not lower than 60% (B).

AREAS OF SPECIALIZATION: M.Sc AND Ph.D

i. Veterinary Biochemistry
ii. Veterinary Pharmacology
iii. Veterinary Toxicology
iv. Veterinary Physiology

DURATION OF PROGRAMMES

M.Sc

Full-Time: A minimum of 3 Semesters
A maximum of 5 Semesters

Part-Time: A minimum of 5 Semesters
A maximum of 8 Semesters

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

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, a total of 33 units as follows:

Faculty-based courses	8 units
One compulsory postgraduate course	3 units
Departmental courses	16 units
Project report	6 units
Total	**33 units**

Ph.D Programme

All Ph.D students must register and pass all the required courses as prescribed in the Ph.D course list below, a total of 33 units as follows:

Core Courses	6 units
Synopsis and Grant Writing	3 units
Thesis	24 units
Total	**33 units**

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 supervisor must have approval of the University Senate.

The Ph.D thesis must be defended before an external examiner duly nominated for the purpose and appointed by Senate.

LIST OF APPROVED SUPERVISORS

Professors

1. S.M. Anika D.V.M., Dr. Med.Vet (Giessen), M.S., Ph.D. (Cornell), FCVSN	Environmental Toxicology Chemotherapy of Tropical Diseases and, phytopharmacology
2. I.U. Asuzu DVM, M.Sc, Ph.D; FCVSN	Phytopharmacology, Toxicology and Chemotherapy

3. C.N. Uchendu DVM, M.Sc, M.Phil, Ph.D	Endocrinology and Reproductive Physiology
4. I.I. Madubunyi B.Sc (Ibadan), M.Sc (Nig), Ph.D (Munich)	Pharmaceutical Biochemistry, Veterinary Biochemistry and Pharmaceutical biology
5. A.O. Anaga DVM, M.Sc, Ph.D	Ethnopharmacology, Chemotherapy and Toxicology
6. S.C. Udem DVM, M.Sc, Ph.D	Veterinary Biochemistry and Ethnopharmacological Biochemistry
7. I.R. Obidike DVM, M.Sc, Ph.D	Environmental Physiology and Reproductive Physiology

Reader

1. L.O. Aka DVM, M.Sc, Ph.D	Ruminant Physiology and Bioengineering, Environmental Physiology

Lecturer I

1. I. G. Eke; DVM, M.Sc, Ph.D	Veterinary Pharmacology
2. P. E. Abah; DVM, M.Sc, Ph.D	Veterinary Biochemistry
3. R. I. Odo; DVM, M.Sc, Ph.D	Veterinary Physiology

JOB OPPORTUNITIES:

Career opportunities exist for successful M. Sc. and Ph.D. students in livestock divisions of both the Federal and State ministries of Agriculture and Natural resources; in teaching and research institutes; self-employment as private veterinary practitioners and consultants to public and private sector of the livestock industry; in institutions involved in animal production and health services and research such as the National Animal Production and Research institute (NAPRI) in Zaria, National Veterinary Research Institute (NVRI) in Vom; and in the Police; Customs and Excise Department and in the Armed Forces.

Compulsory Faculty-based Courses for the MSc programme.

First Semester

Course No.	***Title***	***Units***
FVM 701	Research Methods and Scientific Writing	3

Second Semester

Course No.	***Title***	***Units***
FVM 702	Biometrics and Computer Applications	3
FVM 796	Research Project Final Seminar	2
FVM 790	Research Project	6
	Total -	**14 units**

Compulsory Postgraduate School course for MSc

Course No.	*Title*	*Units*
PGC 601	Research Methodology and application of ICT in Research	3

Departmental Courses for M.Sc in Veterinary Biochemistry

First Semester

Course No.	***Title***	***Units***
VPP 711	Clinical Veterinary Biochemistry	2
VPP 713	Advanced Veterinary Biochemistry	2
VPP 715	Pharmacological Biochemistry	2
VPP 717	Research Techniques in Veterinary Biochemistry	2

Second Semester

Course No.	***Title***	***Units***
VPP 712	Veterinary Molecular Biochemistry	2
VPP 714	Veterinary Nutritional Biochemistry	2
VPP 716	Enzymology and Metabolic Pathways	2
VPP 718	Special Problems in Veterinary Biochemistry	2

Departmental Courses for M.Sc in Veterinary Physiology

First Semester

Course No.	***Title***	***Units***
VPP 721	Research Techniques in Veterinary Physiology	2
VPP 723	Radioisotope and Radiation Physiology	2
VPP 725	Environmental Physiology	2
VPP 727	Avian Physiology	2
VPP 729	Endocrinology & Reproductive Physiology	3
VPP 761	Cell Physiology	2

Second Semester

Course No.	***Title***	***Units***
VPP 722	Physiology of Excitable Tissues	2
VPP 724	Haematology and Cardiovascular Physiology	2
VPP 726	Monogastric Physiology	2
VPP 728	Ruminant Physiology	2
VPP 760	Renal Physiology	2
VPP 762	Neurophysiology	2

Departmental Courses for M.Sc in Veterinary Pharamcology

First Semester

Course No.	***Title***	***Units***
VPP 731	Research Techniques in Veterinary Pharmacology	2
VPP 733	Biological Membranes and Molecular Transport	2
VPP 735	Advanced Pharmacokinetics and Pharmacodynamics	3
VPP 737	Comparative Biochemical Pharmacology	2
VPP 739	Veterinary Ethnopharmacology	2

VPP 751	Advanced Renal Pharmacology & Fluid/Electrolyte Therapy	2
VPP 753	Comparative Neuropharmacology	2

Second Semester

Course No.	***Title***	***Units***
VPP 732	Clinical Gastrointestinal Pharmacology	2
VPP 734	Veterinary Molecular Pharmacology	2
VPP 736	Advanced Chemotherapy	2
VPP 738	Advanced Clinical Pharmacology	2
VPP 752	Advanced Endocrine & Reproductive Pharmacology	2

Departmental Courses for M.Sc in Veterinary Toxicology

First Semester

Course No.	***Title***	***Units***
VPP 741	Research Techniques in Veterinary Toxicology	2
VPP 743	Phytotoxicology	2
VPP 745	Toxicology	2

Second Semester

Course No.	***Title***	***Units***
VPP 742	Environmental Toxicology	2
VPP 744	Advanced Diagnostic Toxicology	2
VPP 746	Forensic Toxicology	2

Doctor of Philosophy (Ph.D) Degree Programme

All PhD students must register and take the following faculty-based courses totaling 30 credit units plus the Postgraduate School based course, Synopsis and Grant Writing (3 credit units).

Course No.	***Title***	***Units***
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
	Total -	**33 units**

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. 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. Students 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.

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.

Departmental Courses

Veterinary Biochemistry

VPP 711 Clinical Veterinary Biochemistry [2 units]

Composition of plasma of domestic animals in health and disease, Plasma Proteins, Homeostasis, Serum enzymes in health and disease, Immunoglobulins, Haemoglobulins, Haemoglobulin Chemistry and Respiratory function, Polymorphism. Lymph and Cerebrospinal fluid. Regulation of acid base balance in health and disease.

VPP 712 Veterinary Molecular Biochemistry [2 units]

Bacterial and viral chromosomes, bacterial plasmid, replication, transcription, transcription and transport of Prokaryotic genomes. Regulation of protein biosynthesis. Transposons as mobile genetic elements. Eukaryotic chromosomes and ultrastructural organization. DNA synthesis in eukaryotes and RNA polymerase. Biochemical aspect of cell division, cell cloning and cell fusion. Genetic engineering and its social implication. Biochemistry of growth and differentiation of eukaryotes. Molecular evolution and genetic code.

VPP 713 Advanced Veterinary Biochemistry [2 units]

Enzymes and their properties; the roles of enzymes and hormones in metabolic regulation. Biochemical oxidation and electron transport; changes in metabolic processes in ruminants and non-ruminants, inborn errors in metabolism.

VPP 714 Veterinary Nutritional Biochemistry [2 units]

Dietary essentiality of carbohydrates and lipids. Concepts, quality and biological value of proteins. Physiological function and biochemical mechanism of action of vitamins and inorganic nutrients. Metabolic interaction of nutrients. Proximate composition of food stuff, estimation of fibre, toxin additives, vitamins, trace elements and amino acids. Biochemical assessment of malnutrition adaptive responses to under nutrition, fibre in nutrition, protein energy malnutrition. Deficiency of zinc, selenium and some vitamins.

VPP 715 Pharmacological Biochemistry [2 units]

Modern biochemical techniques in pharmacology, Principles of biochemical pharmacology. Detoxication of toxicants. Storage and excretion of toxin compounds. Parasitism and metabolic response to infections, immunization, drug and selective toxicity. Microbial drug resistance.

VPP 716 Enzymology and Metabolic Pathways [2 units]

Classification and nomenclature of enzymes. Extraction and purification of enzymes. Specificity of enzyme action. Kinetics of single substrate enzymes catalyzed reactions. Enzyme inhibitions. Kinetics of multi-substrate enzyme catalysis reaction. Investigation of active site structure. Application of enzyme technology. Immobilized enzymes and enzyme utilization in industries. Ligand binding. Kinetics of multi-binding sites. Structure and mechanism of selected enzymes. Integration and regulation of metabolism, oxidative and photo-phosphorylation. Membrane carbohydrate and surface specificity.

VPP 717 Research Techniques in Veterinary Biochemistry [2 units]

Experimental design for problems in Veterinary biochemistry - separation techniques – chromatography (thin layer, column, high performance lipid chromatography, gas lipid chromatography etc.), separation of proteins; techniques used in gene and gene mapping.

VPP 718 Special Problems in Veterinary Biochemistry [2 units]

The student will be required carry out a study of a special problem or topic not in regular offered courses and which is not part of his/her dissertation research.

VETERINARY PHYSIOLOGY

VPP 721 Research Techniques in Veterinary Physiology [2 units]

Experimental design in veterinary physiology, management of laboratory animals; in vivo and in vitro approaches for various physiological studies. Modern instrumentation for measuring tissue responses and metabolic products.

VPP 722 Physiology of Excitable Tissues [2 units]

Autonomic nervous system, distribution and control. Excitable tissues, cardiac, smooth and skeletal muscles. Mechanism of muscle contraction. Excitation contraction coupling process. Receptors and receptor types.

VPP 723 Radioisotope and Radiation Physiology [2 units]

Radiation and radionuclides. Radiation dose, physical Radiation protection. Direct and indirect action of Irradiation. Principles of radioimmunoassay. Radioisotopes in medicine and their physiological effects.

VPP 724 Haematology and Cardiovascular Physiology [2 units]

Blood and cellular elements. Blood groups, homeostasis and blood buffers in animals. Electrical and mechanical activity of the heart including cardiac cycle, cardiac output determinations and controls. Blood pressure regulation, regional circulation and cardiovascular homeostasis in physiological state.

VPP 725 Environmental Physiology [2 units]

Skin structure and its physiology, poilklothernism and homeothermism. Physiological and biochemical process in hibernation. Body temperature and regulation. Physiological responses to heat and cold. Acclimatization and adaptive phenomenon. Pathophysiology of fever, hyperthermia and hypothermia. Climatic changes on the physiology of domestic animals.

VPP 726 Monogastric Physiology [2 units]

Basic anatomy of the gastrointestinal tract of the monogastric animals. Digestion and absorption of carbohydrates, proteins and fats in monastics. Nutrition and metabolism in monogastric animals.

VPP 727 Avian Physiology [2 units]

Respiration in birds, anatomy and functions of the lungs and air sac, avian digestion. Regulation of food intake and avian reproduction.

VPP 728 Ruminant Physiology [2 units]

Review of the anatomy of digestive system of the ruminant animals. Patho-physiology of the ruminant digestive tract, traumatic reticulitis, tympany and torsion. Nutrition and metabolism of ruminants.

VPP 729 Endocrinology & Reproductive Physiology [3 units]

Central control of reproduction, reproductive endocrinology, reproductive cycles, folliculogenesis, spermatogenesis, prostate physiology, gamete physiology, gamete transport, coitus, fertilization, sex determination and differentiation, embryonic development, implantation, placentation, pregnancy, maternal recognition of pregnancy, parturition. Prenatal foetal physiology and adaptation for survival in the periparturient period. Post-partum physiology, uterine involution and resumption of cyclicity. Biotechnology in mammalian reproduction.

VPP 760 Renal Physiology [2 units]

Basic concepts of renal physiology. Glomerular filtration, reabsorption and secretion. Transport systems across the tubules, functions of renal tubule and mechanism concentration, reabsorption and excretion. Measurement of renal function and clearance.

VPP 761 Cell Physiology [2 units]

Advance study of the function of organized cellular and subcellular systems

VPP 762 Neurophysiology [2 units]

Sensory systems and sensory pathways, thalamus, sensory cortex, special senses. Motor system, motor unit, spinal motor system, muscles spindle and motor pathways. Reflexes, basal ganglia,

cerebellum. Brain stem. Anatomy and functional subdivision of cortex, cortical lesion. Reticular activating system, electroencephalogram, sleep, learning and memory, limbic system.

VETERINARY PHARMACOLOGY

VPP 731 Research Techniques in Veterinary Pharmacology [2 units]

Experimental designs for problems in veterinary pharmacology, management of laboratory animals. *In vivo* and *in vitro* approaches for various pharmacological effects. Isolated tissue and whole animal experimental procedures. Modern instrumentation for measuring tissue responses and other pharmacological effects. Ligand binding and radioactivity. Radioimmunoassay techniques. Generation of data and data analyses.

VPP 732 Clinical Gastrointestinal Pharmacology [2 units]

Review of pharmacology of drugs affecting the gastro-intestinal system including purgatives, anti-diarrheal, emetics and antiemetic, sialics and anti-sialics, protective, and ruminant digestive pharmacology.

VPP 733 Biological Membranes and Molecular Transport [2 units]

Review of cells and cell membranes, transport of drugs across membranes, ionization of drug and other factors affecting drug movement in the body. Methods of drug movement across cell membranes. Principles of drug absorption, distribution, biotransformation and excretion.

VPP 734 Veterinary Molecular Pharmacology [2 units]

Foundations of molecular pharmacology. The chemical basis of drug action; Molecular biology and animal genetic diseases. Receptor based strategies for the development of new pharmaceuticals. Gene transfer and gene therapy in animals. Gene mapping and molecular diagnosis. Genomes of protozoan parasites. Recombinant of DNA technology in the diagnosis of African livestock diseases. Transfecting genes

VPP 735 Advanced Pharmacokinetics and Pharmacodynamics [3 units]

Principles of pharmacokinetics, pharmacokinetic models, calculations of kinetic parameters and observations in normal and diseases states. Mechanisms of drugs action and quantification. Dose response relationships. Drug receptors and spare receptors, etc.

VPP 736 Advanced Chemotherapy [2 units]

Principles of chemotherapy. Drug reaction, interaction and toxicology. Drug resistance. Chemotherapeutic agents: antiprotozoals, anthelmintics, antibiotics, antivirals, antifungals, and anti-neoplastics. Feed additives and growth promoters.

VPP 737 Comparative Biochemical Pharmacology [2 units]

Modern techniques used to understand biochemical bases of pharmacological actions of drugs in domestic animals. Biochemical lesions induced by diseases and toxic chemicals and the bases of specific remedial therapy overcoming such lesions.

VPP 738 Advanced Clinical Pharmacology [2 units]

Current trends, innovations in clinical pharmacology that is relevant to postgraduate studies. Principles of pharmacy, compounding and prescription writing. Drug interactions and incompatibility, therapeutic strategies and choice of drugs. Monitoring of therapeutic responses. Drug legislation in Nigeria.

VPP 739 Veterinary Ethnopharmacology [2 units]

Indigenous plants used for the treatment of conditions in domestic animals. A review of principles of traditional practices in the treatment of animal diseases. Extraction techniques, modern separation techniques. Bioassay-guided procedure for identifying active fractions. Pharmacological testings used in vivo and in vitro models. Determination of mechanism of action. Acute and chronic toxicity tests. Determination of effective and toxic doses. Physical identification methods for isolated compounds e.g. UV, IR, NMR, GLC, MS, HPLC etc. Drug development and clinical trials.

VPP 751 Advanced Renal Pharmacology & Fluid Electrolyte Therapy [2 units]

Review of renal physiology. Pharmacology and toxicity of drugs affecting the kidney and renal excretion. Principles of fluid and electrolyte therapy. Uses of various types of fluids in the

management of diseases. Fluid therapy in anaesthesia, dehydration, toxicity etc. Estimation of degrees of dehydration and the calculation of fluid volumes.

VPP 752 Advanced Endocrine and Reproductive Pharmacology [2 units]

Pharmacology of drugs affecting the endocrine and reproductive systems. Antithyroid drugs and inhibitors, ACTH and synthetic analogues, inhibitors of corticosteroids biosynthesis. Reproduction hormones and their antagonists. Drugs affecting uterine motility and fertility.

VPP 753 Comparative Neuropharmacology [2 units]

Brief review of the physiology of automatic and central nervous systems. Pharmacology of the autonomic nervous system and neuromuscular junction. Theories of anaesthesia; general and local anesthetic agents, central nervous system stimulants, hypnotics, sedatives and tranquillizers.

VETERINARY TOXICOLOGY

VPP 741 Research Techniques in Veterinary Toxicology [2 units]

Experimental design for problems in toxicology. In vitro and in vivo approaches for various toxicological studies. Modern instrumentation used in toxicological studies like spectrophotometry, chromatographic techniques, spectrofluorimetry, subcellular fractionation, gel electrophoresis.

VPP 742 Environmental Toxicology [2 units]

Natural and environmental toxicants; air pollution, water pollution, food contamination. Pesticides and Herbicides toxicity and management. Radiation toxicity. Effects on body systems, heavy metals intoxication and Managements. Climatic change and global warming

VPP 743 Phytotoxicology [2 units]

Factors influencing poisoning in animals by plants. Various plants implicated in cases of poisoning of animals in Nigeria, their toxicity, toxic principle, pathology, and management.

VPP 744 Advanced Diagnostic Toxicology [2 units]

Clinical and laboratory procedures employed in the Diagnosis of poisons. Emphasis will be on observed signs, sample collection, types and quantity of samples to be collected, storage of samples, post-mortem findings, and histopathological examination of tissues and chemical analysis for presence to poisons.

VPP 745 Toxicology [2 units]

Animal toxins/venoms such snake venoms, bee/wasp toxins; poisonous fishes, toads etc. will be studied. Anti-toxins and other agents employed in the management of such toxicities will also be undertaken.

VPP 746 Forensic Toxicology [2 units]

Principles of investigative toxicology. Mechanistic and forensic approach to the study of toxicology. The use of advanced physical and chemical techniques and electron microscopy in toxicology.

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.