

**UNIVERSITY OF NIGERIA, NSUKKA
SCHOOL OF POSTGRADUATE STUDIES**

M.Sc AND Ph.D

**PROGRAMMES FOR DEPARTMENT
OF HUMAN PHYSIOLOGY**

2018

LIST OF POSTGRADUATE SUPERVISORS IN THE DEPARTMENT OF HUMAN PHYSIOLOGY:

A. BLOOD

Prof. Bond Ugochukwu Anyaehie

B. CARDIOVASCULAR SYSTEM

Prof. Daniel C. Nwachukwu

C. RENAL PHYSIOLOGY

Prof. Daniel C. Nwachukwu

D. ENDOCRINOLOGY

1. Prof. Bond Anyaehie
2. Prof. Daniel C. Nwachukwu
3. Dr. Eghosa E. Iyare

E. REPRODUCTION

Dr Eghosa E. Iyare

F. DEVELOPMENTAL PROGRAMMING

Dr Eghosa E. Iyare

G. NEUROPHYSIOLOGY

Prof. Daniel C. Nwachukwu

UNIVERSITY OF NIGERIA, NSUKKA

M.Sc, Ph.D AND M.Sc./Ph.D PROGRAMMES OF THE DEPARTMENT OF HUMAN PHYSIOLOGY

1.1 PHILOSOPHY

To advance the frontiers of knowledge in human physiology to present it as a rejuvenated discipline, vast and varied, with full capacity to meet up with the societal needs in the fields of teaching, research, entrepreneurship and community service. To imbibe the principles of problem based learning, working from bench to bedside and encouraging collaborative research with the clinical sciences, all aimed at improving patient care.

The programme is intended to produce embryologists, and reproductive endocrinologists who are very important members of the artificial reproductive technology team. In addition we intend to produce heart-lung machine scientists who are indispensable in open heart surgery. Furthermore we shall train clinical measurement scientists for example in spirometry, electroencephalogram, electrocardiogram, and electromyogram who will work in the clinical measurement laboratories of teaching and other hospitals.

1.2 SCOPE

The programme shall run at Master's and Doctorate levels as follows:

1. Blood
2. Cardiovascular System
3. Renal Physiology
4. Endocrinology
5. Reproduction
6. Developmental Programming
7. Neurophysiology

1.3 OBJECTIVES:

The objectives of the Postgraduate programmes are:

- i) To train Physiologists that will fill the perennial scarcity of Physiology Lecturers in Medical and Allied Medical Schools across Nigeria and Africa at large.
- ii) To train Physiologists that will originate and conduct meaningful and relevant research in different areas in Physiology.
- iii) To train Physiologists that will be equipped with relevant knowledge to work in Medical and Allied Research Institutions.

1.4 EMPLOYMENT OPPORTUNITIES

Successful graduates in Human Physiology are equipped for careers in teaching in Medical Schools, working in Research institutions and Pharmaceutical industry, Emergency and Clinical Measurement Units of Teaching Hospitals and In-Vitro Fertilization Centres.

1.5 ADMISSION REQUIREMENTS: M.Sc , Ph.D and M.Sc/Ph.D

A. Masters of Science (M.Sc) Degree Programme Human Physiology:

Admission Requirements:

- i) Candidates for admission into the Master's degree programme of the Department of Human Physiology, must hold a B.Sc. degree in Human Physiology, with CGPA of a least 2.50 on a 5-point scale from a recognized University.
- ii) Medical graduates (holders of MBBS or BDS) from recognized institutions who must have passed Human Physiology at one sitting in the First MBBS/BDS Professional Examination are eligible for admission into the M.Sc. programme in Human Physiology.

Duration of study

The minimum and maximum durations for the MSc programme of the department of Human Physiology are as follows:

- Full time: A minimum of 3 semesters (18 months)
 A maximum of 5 semesters (2 years and 6 months)

- Part time: A minimum of 4 semesters (2 years)
 A maximum of 6 semesters (3 years)

B. Doctor of Philosophy (Ph.D) Degree Programme in Human Physiology

Admission Requirements:

Candidates for admission into the Ph.D programme of the Department of Human Physiology, UNEC , must hold an MSc. in Physiology from an approved University with a CGPA of a least 4.0 on a 5-point scale.

Duration of Study:

The duration for Ph.D programme in the department of Human Physiology, UNEC, are as follows:

- Full time: A minimum of 6 semesters (3 years)
 A maximum of 10 semesters (5 years)
- Part time: A minimum of 8 semesters (4 years)
 A maximum of 12 semesters (6 years)

The first two semester of either the Doctoral or the Master's shall be devoted to course work and written examinations; the remaining semesters of the Doctoral programme shall be for research, preparation of thesis and oral examination, while the remaining semester (s) of the MSc. Programme shall be used for research, preparation of project report and oral examination.

C. Master of Science (M.Sc)/Doctor of Philosophy (Ph.D) Programme in Human Physiology

Admission Requirements:

Candidates with relevant and recognised Fellowship degree shall be considered for admission the Holders of a First Class Honours degree in Human Physiology may be admitted into the Master's/doctoral degree programme of the Department of Human Physiology.

Candidates admitted into the Master's/Doctoral degree programme of the Department of Human Physiology will only be allowed to proceed with the Ph.D programme on completion of the MSc coursework if the candidate attains a CGPA of 4.0 and above in the MSc. coursework.

Duration of Study:

For Master of Science (M.Sc.):

- Full time: A minimum of 2 semesters (1 Year)
 A maximum of 4 semesters (2 years)

For Doctor of Philosophy (Ph.D.):

- A minimum of 6 semesters (3 years)
- A maximum of 8 semesters (4 years)
- Part time: A minimum of 8 semesters (4 years)
 A maximum of 10 semesters (5 years)

NOTE:All candidates for admission into the Postgraduate programme must satisfy the general university entry requirements i.e. they must have credits in 'o' level WAEC/NECO in relevant science subjects including English and Mathematics.

1.6 NUMBERING OF STRESS AREAS

Research methodology and Research seminars	-	0
General Physiology and Blood	-	1
Cardiovascular System and Respiration	-	2
Renal Physiology and GIT	-	3
Endocrinology and Reproduction	-	4
Neurophysiology	-	5
Project Report/Thesis	-	9

M.SC SPECIALIZATION

All candidates must register all the courses listed below and in addition undertake research projects (6 units) in their areas of specialty/interest.

2.0 POST GRADUATE PROGRAMME COURSE OUTLINE

2.1 MSc Programme

Course Codes	Title	Units
<i>First Semester</i>		
PYS 701:	General Physiology	2
PYS 711	Excitable Tissues	2
PYS 721:	Body fluids and blood	2
PYS 731:	Cardiovascular Physiology	3
PYS 741:	Respiratory Physiology	2
PYS 751:	Renal Physiology	2
PYS 761:	Autonomic Nervous System	2
<i>Second Semester</i>		
PYS 772	Gastrointestinal Physiology	3
PGC 601/PYS 782	Research Methodology & Application of ICT in Research	3

PYS 792:	Endocrinology	2
PYS 802	Reproduction	2
PYS 812:	Sensory Physiology	2
PYS 822:	Motor Systems	3
PYS 832:	Integrative functions of the Central Nervous System	2
PYS 842:	Laboratory Techniques in Physiology	3
<i>Third Semester</i>		
PYS 851:	Seminars/Research methodology	3
PYS 891:	Research project	6

COURSE CONTENTS

PYS 701: General Physiology (2 Units)

Cell Structure and functions of its organelles. Cell cycle and its regulation. Transport across cell membrane. Other transport processes. Homeostasis and control systems.

PYS 711 Excitable Tissues (2 Units)

Structure and functions of a nerve. Membrane potentials. Synaptic and junctional transmission. Structure and functions of different types of muscles and theories on mechanism of muscle contraction. Muscle twitch and summation of twitches. Muscle performance and fatigue.

PYS 721: Body Fluids and Blood (2 Units)

Body fluid compartments and their measurement. Regulation of body fluid volumes Physiological variation in body fluid volumes. Blood: Normal

Haematological values and their regulation. Physiological regulation in Haematological values. Techniques for measuring Haematological values. Haemoglobin genotypes (normal and abnormal) determination and clinical importance. Blood viscosity, theory of blood flow (Poiseuille equation), erythrocyte deformability and its clinical importance. Plasma proteins and their importance. Leucocyte physiology and immunity.

PYS 731: Cardiovascular Physiology (3 Units)

Electrical activities of the heart and ECG. Mechanical properties of the heart. Hemodynamics of circulation, regional circulation, regulation of arterial blood Pressure and cardiovascular responses in normal and disease states. Haemorrhage and shock.

PYS 741 Respiratory Physiology (2 Units)

Mechanics of respiration, pulmonary ventilation, lung volumes and capacities. Gas laws and spirometry, diffusion of gases through the respiratory membrane, transport of oxygen and carbon dioxide, control of respiration. Exercise physiology, high altitude and deep sea diving.

PYS 751 Renal Physiology (2 Units)

Physiologic anatomy of the functional unit of the kidney (nephron). Glomerular ultra filtration, tubular reabsorption and secretion. Process of micturition, renal regulation of acid-base balance. Renal disease, diuretics and their method of action and renal function tests.

PYS 761: Autonomic Nervous System (2 Units)

Organization of ANS, adrenergic transmission, Cholinergic transmission, concept of dual innervations of organs. Control of ANS by hypothalamus.

PYS 772 Gastrointestinal Tract (3 Units)

Structure of GIT. Motility and secretions of the GIT and their regulation. Digestion and absorption. GI hormones and regulation of food intake.

PGC 601/PYS 782 Research Methodology & 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 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 on 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.

PYS 792 Endocrinology (2 Units)

General principles of endocrinology, Mechanism of hormonal action, pituitary gland and its control by hypothalamus. Anterior and posterior pituitary hormones. Pineal gland-anatomy and development, neural and endocrine communications and pineal pathology. Thyroid and parathyroid glands. Adrenal

gland (medulla and cortex). Endocrine functions of the pancreas, placenta, testes and ovary.

PYS 802 Reproduction (2 Units):

Physiological aspect of testicular function. Method for diagnosis of hypogonadism, cryptorchidism, male infertility, male contraception. Ovarian morphology, hypothalamic-pituitary-Ovarian-genital axis. Ovarian tumours, ovarian dysfunction and treatment, menstrual cycle, female contraception.

PYS 812 Sensory Physiology (2 Units)

Organization of the sensory systems. Sensory receptors and their properties. Experimental methods in sensory physiology. Vision-light and colour, physiology of retina, visual acuity and pathway, colour vision. Auditory system – Nature of sound and noise, structure of the ear, auditory pathways and higher centers. Physiology of smell and taste – olfactory system: olfactory receptors, threshold and adaptation. Theories of smell. Taste: Receptors, threshold, taste pathway and theories of taste.

PYS 822 Motor Systems

Central Organization of the CNS. Spinal Cord, cutaneous, deep and visceral sensation. Motor function of the brain; pyramidal system, extra pyramidal system and cerebellum, reticular activating system; sleep and wakefulness. Electrical activity of the brain (EEG),.

PYS 832 Integrative Functions of the CNS (2 Units)

Limbic system, learning, memory and speech.

PYS 842 Laboratory Techniques in Physiology (3 Units)

Introduction to laboratory techniques. Basic design of experimental physiology. Systemic Physiology practicals.

PYS 851 Seminars (3 Units)

Written and power point presentation of current issues in physiology. Presentation of proposal and results for masters' project.

PYS 891: Research Project (6 Units)

Write-up of independent research on topic approved by the supervisor and the departmental postgraduate committee that will be orally defended before a panel of examiners that will include an approved external examiner.

3.0 Ph.D DEGREE PROGRAMME

i. Course Content

- a) The Ph.D degree in Human Physiology shall be undertaken through prescribed courses listed below which shall be taken in the first year of the programme.
- b) Doctorate or Ph.D programme should primarily be by research work, presentation of seminars, including research proposal and a final seminar after completion of research. A Ph.D thesis of 12 credit units must be defended before a panel of examiners including an external examiner.

3.1 Courses

Course Codes

First Semester

PYS 901	Special Topic for Literature Review (General Area)	3
PYS 911	Special Topic for Literature Review (General Area)	3
PGC 701/PYS 921	Synopsis and Grant Writing	3

Second Semester

PYS 932	Special Topic for Literature Review (Candidate's Area of Interest)	3
PYS 942	Special Topic for Literature Review (Candidate's Area of Interest)	3
PYS 952	Research Proposal	3
PYS 962	Research Results	3
PYS 992	Thesis Defense	12

3.2 Course Description

PYS 901 Special Topics for Literature Review I (General Area) (3 Units)

First in the series of literature reviews in any area of Physiology outside the candidate's area of interest.

PYS 911 Special Topics for Literature Review II (General Area) (3 Units)

Second in the series of literature reviews in any area of Physiology outside the candidate's area of interest.

PGC 701/PYS 921 Synopsis and Grant Writing (3 Units)

Identification of types and nature of grant and 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 and 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 knowledge acquired from the course, conducted by selected experts.

PYS 932 Special Topics for Literature Review III (Candidate's Area) (3 Units)

First in the series of literature reviews in the candidate's area of interest.

PYS 942 Special Topics for Literature Review IV (Candidate's Area) (3 Units)

Second in the series of literature reviews in the candidate's area of interest.

PYS 952 Research Proposal (3 Units)

PYS 962 Research Results (3 Units)

Power point presentation of the results of the research that will include: topic, introduction, justification/statement of problem, aim and objectives, methodology, results, discussion, conclusion and summary of findings.

PYS 992 Thesis Defense (12 Units)

Oral defense of the comprehensive write-up of the candidate's independent research (on a topic approved by the supervisor, the departmental and Faculty postgraduate committees and the post graduate school) before a panel of examiners that will include an approved external examiner.

ii. Requirements for Graduation

To be awarded the degree of Doctor of Philosophy in Human Physiology, a candidate must have fulfilled the conditions set by the University and successfully defended his/her thesis and other prescribed requirements.