

INTRODUCTION TO CLINICAL PHYSIOLOGY: A PROFESSION AT THE HEART OF HEALTHCARE

1. Overview of Clinical Physiology

Clinical Physiology is a dynamic and essential healthcare profession that integrates applied physiological sciences with clinical practice to diagnose, monitor, and manage diseases. Clinical Physiologists (also known as Physiological Scientists or Medical Physiologists) are highly trained healthcare professionals who specialize in the assessment of physiological functions across various organ systems using advanced diagnostic techniques.

This discipline bridges the gap between physiology and clinical medicine, ensuring evidence-based patient care through functional diagnostics. Clinical Physiologists work collaboratively with physicians, surgeons, and other healthcare providers to deliver accurate diagnostic evaluations, guide treatment decisions, and optimize patient outcomes.

2. Scope of Clinical Physiology

Clinical Physiology encompasses multiple subspecialties, each focusing on specific physiological systems. These include:

1. Neurophysiology (Clinical Neurophysiology)
2. Clinical Cardiac Physiology
3. Respiratory Physiology
4. Clinical Renal Physiology
5. Cardiopulmonary Physiology
6. Gastrointestinal Physiology
7. Clinical Exercise Physiology
8. Clinical Reproductive Physiology
9. Cardiovascular Perfusion
10. Critical Care Physiology
11. Audiological Physiology

Each subspecialty employs specialized diagnostic tools such as electrocardiography (ECG), spirometry, electroencephalography (EEG), nerve conduction studies, dialysis monitoring, sleep studies, and cardiopulmonary exercise testing, among others.

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3. Role of the Clinical Physiologist

Clinical Physiologists perform key functions, including:

- Conducting and interpreting diagnostic physiological tests.
- Providing expert analysis for disease detection and progression monitoring.
- Assisting in therapeutic interventions (e.g., cardiac pacing, pulmonary rehabilitation) among others.
- Engaging in research to advance diagnostic and treatment protocols.
- Educating patients, healthcare trainees, and professionals on physiological principles.

4. International Standards in Clinical Physiology Education & Practice

The West African College of Clinical Physiology Sciences (**WACCPS**) aligns its curriculum with global best practices, ensuring that graduates meet international competency benchmarks. The training emphasizes:

- Strong foundational knowledge in human physiology and pathophysiology.
- Hands-on clinical training in diagnostic techniques and patient management.
- Research and evidence-based practice to foster innovation.
- Professional ethics and patient-centered care in line with International Standards

5. The WACCPS Curriculum Framework

This curriculum is designed to produce highly skilled Clinical Physiologists capable of functioning at specialist levels across West Africa and beyond. It integrates:

- Core modules in general clinical physiology principles.
- Subspecialty training in dedicated fields (as listed above).
- Clinical rotations in accredited hospitals and laboratories.
- Continuous professional development (**CPD**) to maintain competency.

6. Conclusion

Clinical Physiology is a vital profession that enhances diagnostic precision and therapeutic efficacy in modern medicine. The **WACCPS** curriculum ensures that practitioners are equipped with cutting-edge knowledge, technical expertise, and ethical professionalism to meet both regional and global healthcare demands.

This document serves as the foundational introduction to the **WACCPS** Clinical Physiology Curriculum, which is further detailed in the subsequent subspecialty modules.

INTERNATIONAL STANDARD CURRICULUM IN CLINICAL NEUROPHYSIOLOGY

West African College of Clinical Physiology Sciences (WACCPS)

Duration: 12 Months

Target Audience: Graduates of Human Physiology and other recognized related disciplines

1. Programme Overview

1.1. Programme Title:

Professional Certification in Clinical Neurophysiology

1.2. Programme Objectives:

- To provide specialized training in the principles and practice of clinical neurophysiology.
- To develop expertise in neurodiagnostic techniques, including **EEG**, **EMG**, **NCS**, and evoked potentials.
- To promote research and evidence-based practice in neurophysiology.

1.3. Expected Learning Outcomes:

By the end of the programme, graduates will be able to:

- Perform and interpret electroencephalography (**EEG**), electromyography (**EMG**), nerve conduction studies (**NCS**), and evoked potentials (**EP**), etc.
- Diagnose and monitor neurological disorders such as epilepsy, neuromuscular diseases, and peripheral neuropathies.
- Operate and maintain neurophysiological equipment.
- Conduct research in clinical neurophysiology.

2. Programme Structure

The 12-month programme consists of:

- 8 months of didactic lectures, practical sessions, and clinical rotations
- 4 months of research and oral defense

2.1. Course Modules

Module 1: Basic Neurosciences (2 Months)

- Neuroanatomy and neurophysiology
- Cellular and molecular neuroscience
- Neurotransmitters and synaptic transmission
- Pathophysiology of neurological disorders

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Module 2: Clinical Neurophysiology Techniques (3 Months)

- Electroencephalography (EEG):
- Normal and abnormal EEG patterns
- Epilepsy monitoring and ICU EEG
- Neonatal and pediatric EEG

- Electromyography (EMG) & Nerve Conduction Studies (NCS):

- Motor and sensory nerve conduction
- Needle EMG for myopathies and neuropathies
- Neuromuscular junction disorders
- Evoked Potentials (EP):
- Visual (VEP), Auditory (BAEP), Somatosensory (SSEP)
- Intraoperative monitoring

Module 3: Clinical Applications (3 Months)

- Epilepsy and seizure disorders
- Peripheral neuropathies (diabetic, inflammatory, compressive)
- Myopathies and motor neuron diseases (ALS, myasthenia gravis)
- Autonomic nervous system testing
- Sleep studies and polysomnography basics

Module 4: Research & Dissertation (4 Months)

- Research methodology in neurophysiology
- Data collection and statistical analysis
- Writing and defense

3. Teaching and Assessment Methods

3.1. Teaching Methods:

- Lectures, seminars, and case discussions
- Hands-on training with EEG, EMG, NCS, and EP equipment
- Clinical rotations in neurology and neurophysiology labs
- Research supervision

3.2. Assessment Methods:

- Written Examinations (MCQs, Short & Long Essays)
- Practical Examinations (EEG/EMG interpretation, electrode placement)
- Clinical Case Presentations
- Research & Oral Defense

4. Entry Requirements

- Bachelor's degree in Human Physiology, or recognized health related fields
- Registration with a relevant professional body (where applicable)
- Passing an entrance examination/interview

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5. Professional Certification

Successful candidates will be awarded:

Professional Certification in Clinical Neurophysiology by **WACCPS**

6. Accreditation and Quality Assurance

- The curriculum aligns with International Education Accreditation Council (**IEAC**)

7. Professional Career Prospects

Graduates can work as:

- Clinical Neurophysiologists in hospitals, clinics and diagnostic centers
- Neurodiagnostic Technologists
- Researchers/Academics in neuroscience and physiology
- Coordinator in Neurology and Rehabilitation Medicine

Conclusion

This curriculum ensures that graduates acquire globally competitive skills in clinical neurophysiology, addressing neurological healthcare needs in West Africa and beyond.

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INTERNATIONAL STANDARD CURRICULUM IN CLINICAL CARDIAC PHYSIOLOGY

West African College of Clinical Physiology Sciences (**WACCPS**)

Duration: 12 Months

Target Audience: Graduates of Human Physiology and other recognized related health disciplines

1. Programme Overview

1.1. Programme Title:

Professional Certification in Clinical Cardiac Physiology

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1.2. Programme Objectives:

- To provide advanced training in cardiovascular physiology and diagnostic techniques.
- To develop expertise in non-invasive and assist in invasive cardiac investigations.
- To promote research and evidence-based practice in cardiac physiology.

1.3. Expected Learning Outcomes:

By the end of the programme, graduates will be able to:

- Perform and interpret electrocardiography (**ECG**), echocardiography, stress testing, Holter monitoring, and assist in cardiac catheterization.
- Assist in pacemaker implantation and electrophysiology studies.
- Understand hemodynamic monitoring in critical care settings.
- Conduct research in cardiovascular diagnostics and treatment.

2. Programme Structure

The 12-month programme consists of:

- 8 months of didactic lectures, practical sessions, and clinical rotations
- 4 months of research and oral defense

2.1. Course Modules

Module 1: Cardiovascular Physiology & Pathophysiology (2 Months)

- Cardiac anatomy and electrophysiology
- Hemodynamics and circulatory control
- Pathophysiology of cardiovascular diseases (**CVDs**)
- Pharmacology of cardiovascular drugs

Module 2: Non-Invasive Cardiac Diagnostics (3 Months)

- Electrocardiography (**ECG**):
- Normal and abnormal **ECG** patterns
- Arrhythmias, ischemia, and infarction interpretation
- Echocardiography (Basic & Doppler):
- **2D**, M-mode, and Doppler techniques
- Assessment of valvular diseases, cardiomyopathies, and congenital defects
- Stress Testing & Ambulatory Monitoring:
- Exercise and pharmacological stress tests
- Holter monitoring and event recorders

Module 3: Invasive & Advanced Cardiac Procedures (3 Months)

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- Cardiac Catheterization & Angiography:
- Coronary angiography basics
- Hemodynamic measurements (pressure, oxygen saturation)
- Pacemaker & Electrophysiology Studies (**EPS**):
- Pacemaker programming and troubleshooting
- Basics of ablation therapy for arrhythmias
- Critical Care Cardiac Monitoring:
- Hemodynamic monitoring in **ICU** (Swan-Ganz, arterial lines)

Module 4: Research & Dissertation (4 Months)

- Research methodology in cardiac physiology
- Data collection and statistical analysis
- Writing and defending a dissertation

3. Teaching and Assessment Methods

3.1. Teaching Methods:

- Lectures, seminars, and case-based discussions
- Hands-on training with **ECG**, echocardiography, and catheterization lab equipment
- Clinical rotations in cardiology departments and
- Research supervision

3.2. Assessment Methods:

- Written Examinations (**MCQs**, Short & Long Essays)
- Practical Examinations (**ECG** interpretation, echocardiography basics, catheter lab procedures)
- Clinical Case Presentations
- Research & Oral Defense

4. Entry Requirements

- Bachelor's degree in Human Physiology, or recognized health related fields
- Registration with a relevant professional organization (where applicable)
- Passing an entrance examination/interview

5. Certification

Successful candidates will be awarded:

Professional Certification in Clinical Cardiac Physiology by **WACCPS**

6. Accreditation and Quality Assurance

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- The curriculum aligns with International Education Accreditation Council (**IEAC**).

7. Career Prospects

Graduates can work as:

- Clinical Cardiac Physiologists/Scientists in hospitals, clinics and diagnostic centers
- Echocardiography/ECG Specialists
- Cardiac Catheterization Lab Technologists
- Researchers/Academics* in cardiovascular sciences

Conclusion:

This curriculum ensures that graduates acquire globally competitive skills in clinical cardiac physiology, addressing cardiovascular healthcare needs in West Africa and beyond.

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INTERNATIONAL STANDARD CURRICULUM IN CLINICAL RESPIRATORY PHYSIOLOGY

West African College of Clinical Physiology Sciences (**WACCPS**)

Duration: 12 Months

Target Audience: Graduates of Human Physiology and other recognized health related disciplines

1. Programme Overview

1.1. Programme Title:

Professional Certification in Clinical Respiratory Physiology

1.2. Programme Objectives:

- To provide specialized training in respiratory physiology and diagnostic techniques.
- To develop expertise in pulmonary function testing, sleep studies, and critical care respiratory monitoring.
- To promote research and evidence-based practice in respiratory physiology.

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1.3. Expected Learning Outcomes:

By the end of the programme, graduates will be able to:

- Perform and interpret spirometry, lung volume measurements, diffusion capacity tests, arterial blood gas (ABG) analysis, and cardiopulmonary exercise testing (**CPET**).
- Conduct sleep studies (polysomnography) and manage sleep-disordered breathing.
- Assist in mechanical ventilation and critical care respiratory management.
- Conduct research in respiratory diagnostics and therapeutics.

2. Programme Structure

The 12-month programme consists of:

- 8 months of didactic lectures, practical sessions, and clinical rotations
- 4 months of research and oral defense

2.1. Course Modules

Module 1: Respiratory Physiology & Pathophysiology (2 Months)

- Anatomy and mechanics of the respiratory system
- Gas exchange and transport
- Control of breathing and acid-base balance
- Pathophysiology of respiratory diseases (**COPD**, asthma, restrictive lung diseases, sleep apnea)

Module 2: Pulmonary Function Testing (3 Months)

- Spirometry and Bronchodilator Response Testing
- Techniques, interpretation, and quality control
- Lung Volumes and Diffusion Capacity (**DLCO**)
- Body plethysmography, nitrogen washout, and helium dilution methods
- Arterial Blood Gas (**ABG**) Analysis
- Sampling techniques, interpretation, and clinical correlations
- Cardiopulmonary Exercise Testing (**CPET**)
- Indications, protocols, and interpretation

Module 3: Sleep Studies & Critical Care Respiratory Physiology (3 Months)

- Polysomnography (**PSG**) & Sleep Disorders
- Setup, monitoring, and interpretation of sleep studies
- Management of obstructive sleep apnea (**OSA**) and other sleep-related breathing disorders
- Mechanical Ventilation & Critical Care Monitoring
- Modes of ventilation, weaning protocols, and troubleshooting
- Respiratory monitoring in **ICU** (ventilator graphics, waveforms)

Module 4: Research & oral defense (4 Months)

- Research methodology in respiratory physiology
- Data collection and statistical analysis
- Writing and defense

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3. Teaching and Assessment Methods

3.1. Teaching Methods:

- Lectures, seminars, and case-based discussions
- Hands-on training with pulmonary function equipment, ABG analyzers, and polysomnography devices
- Clinical rotations in pulmonology departments, sleep labs, and ICUs
- Research supervision

3.2. Assessment Methods:

- Written Examinations (MCQs, Short & Long Essays)
- Practical Examinations (Spirometry interpretation, ABG analysis, ventilator management)
- Clinical Case Presentations
- Research Dissertation & Oral Defense

4. Entry Requirements

- Bachelor's degree in Human Physiology or recognized health related fields
- Registration with a relevant professional body (where applicable)
- Passing an entrance examination/interview (if required)

5. Certification

Successful candidates will be awarded:

Professional Certification in Clinical Respiratory Physiology by **WACCPS**

6. Accreditation and Quality Assurance

- The curriculum aligns with International Education Accreditation Council (**IEAC**).

7. Professional Career Prospects

Graduates can work as:

- Respiratory Physiologists/Scientists in hospitals, clinics and diagnostic centers
- Pulmonary Function Technologists
- Sleep Technologists
- Critical Care Respiratory Specialists
- Researchers/Academics in respiratory sciences

Conclusion

This curriculum ensures that graduates acquire globally competitive skills in clinical respiratory physiology, addressing pulmonary healthcare needs in West Africa and beyond.

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INTERNATIONAL STANDARD CURRICULUM IN CLINICAL RENAL PHYSIOLOGY

West African College of Clinical Physiology Sciences (WACCPS)

Duration: 12 Months

Target Audience: Graduates of Human Physiology and related disciplines

1. Programme Overview

1.1. Programme Title:

Professional Certification in Clinical Renal Physiology

1.2. Programme Objectives:

- To provide advanced training in renal physiology and pathophysiology
- To develop expertise in renal function assessment and dialysis technologies
- To promote research in nephrology/renal physiology and renal replacement therapies

1.3. Expected Learning Outcomes:

Graduates will be able to:

- Perform and interpret renal function tests (clearance studies, urinalysis)
- Operate hemodialysis and peritoneal dialysis systems
- Monitor patients with acute/chronic kidney disease
- Conduct research in renal physiology and therapeutics

2. Programme Structure

8 months coursework + 4 months research

2.1. Core Modules

Module 1: Renal Physiology & Pathophysiology (2 Months)

- Renal anatomy and microcirculation
- Glomerular filtration and tubular function
- Acid-base and electrolyte balance
- Pathogenesis of, **CKD**, glomerulonephritis **AKI**

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Module 2: Renal Diagnostic Techniques (3 Months)

- Urinalysis and biomarkers
- Clearance measurements (**GFR, RPF**)
- Renal functional imaging (Ultrasound)
- Renal biopsy assistance and interpretation

Module 3: Introduction to Renal Replacement Therapies (3 Months)

- Hemodialysis (principles, vascular access, complications)
- Peritoneal dialysis (**CAPD, APD**)
- Continuous renal replacement therapies (**CRRT**)
- Transplantation immunology basics

Module 4: Research & oral defense (4 Months)

- Research design in nephrology
- Data analysis and scientific writing
- Defense

3. Teaching Methodology

- Didactic lectures
- Laboratory practicals (urinalysis, dialysis simulations)
- Clinical rotations in nephrology/dialysis units
- Case-based learning

4. Assessment

- Written exams
- Practical assessments
- Research

5. Entry Requirements

- BSc in Human Physiology or recognized health related disciplines
- Professional registration (where applicable)

6. Certification

Award: Professional Certification in Clinical Renal Physiology

7. Professional Career Pathways

- Renal physiologist in hospitals
- Dialysis technologist
- Nephrology researcher

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- Renal transplant coordinator
-

8. Accreditation and Quality Assurance

- The curriculum aligns with International Education Accreditation Council (**IEAC**),

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This program addresses the critical shortage of renal specialists in West Africa while meeting global best practices.

INTERNATIONAL STANDARD CURRICULUM IN CARDIOPULMONARY PHYSIOLOGY

West African College of Clinical Physiology Sciences (**WACCPS**)

Duration: 12 Months

Target Audience: Graduates of Human Physiology and recognized health related disciplines

1. Programme Overview

1.1. Programme Title:

Professional Certification in Cardiopulmonary Physiology

1.2. Programme Objectives:

- To integrate knowledge of cardiovascular and respiratory physiology
- To develop expertise in diagnostic and therapeutic cardiopulmonary technologies
- To enhance clinical management of cardiopulmonary disorders
- To promote research in cardiopulmonary sciences

1.3. Expected Learning Outcomes:

Graduates will be able to:

- Perform and interpret cardiopulmonary function tests
- Operate critical care monitoring systems

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- Manage patients with cardiopulmonary comorbidities
- Conduct evidence-based research

2. Programme Structure

8 months coursework + 4 months clinical/research

2.1. Core Modules

Module 1: Integrated Cardiopulmonary Physiology (2 Months)

- Cardiopulmonary coupling mechanisms
- Oxygen transport and utilization
- Pathophysiology of:
 - COPD-heart disease interactions
 - Pulmonary hypertension
 - Cardiopulmonary failure

Module 2: Diagnostic Technologies (3 Months)

- Cardiopulmonary exercise testing (CPET)
- Pulmonary function tests with cardiac correlates
- Echocardiography for pulmonary hypertension assessment
- Arterial blood gas and hemodynamic monitoring

Module 3: Critical Care Management (3 Months)

- Mechanical ventilation strategies for cardiac patients
- ECMO principles and monitoring
- Hemodynamic support in respiratory failure
- Weaning protocols for complex cases

Module 4: Clinical Research (4 Months)

- Design of cardiopulmonary studies
- Analysis of integrated physiological data
- Dissertation on cardiopulmonary interactions

3. Teaching Methodology

- Simulation-based learning (CPET, ventilator management)
- Rotations in:
 - Pulmonary function labs
 - Cardiac catheterization units
 - ICU/CCU settings
 - Case discussions of complex comorbidities

4. Assessment

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- Combined cardiopulmonary case analyses
- Practical competency assessments
- Research and defense

5. Professional Career Pathways

- Cardiopulmonary diagnostic specialist
- Cardiopulmonary Physiologist
- Critical care physiologist
- Researcher in cardiopulmonary diseases
- Rehabilitation program developer

6. Accreditation and Quality Assurance

The curriculum aligns with International Education Accreditation Council (IEAC).

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This program addresses the growing burden of cardiopulmonary diseases in West Africa through an integrated physiological approach.

INTERNATIONAL STANDARD CURRICULUM IN CLINICAL GASTROINTESTINAL PHYSIOLOGY

West African College of Clinical Physiology Sciences (WACCPS)

Duration: 12 Months

Target Audience: Graduates of Human Physiology and recognized health related disciplines

1. Programme Overview

1.1. Programme Title:

Professional Certification in Clinical Gastrointestinal Physiology

1.2. Programme Objectives:

- To provide comprehensive training in GI physiology and pathophysiology
- To develop expertise in diagnostic and functional GI testing
- To enhance clinical management of digestive disorders
- To promote research in neurogastroenterology and motility

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1.3. Expected Learning Outcomes:

Graduates will be able to:

- Perform and interpret specialized GI function tests
- Operate high-resolution manometry and pH-impedance systems
- Conduct clinically relevant GI research

2. Programme Structure

8 months coursework + 4 months clinical/research

2.1. Core Modules

Module 1: GI Physiology & Pathophysiology (2 Months)

1. Digestive system anatomy and neural control
2. Motility patterns from esophagus to colon
3. Secretory functions and nutrient absorption
4. Pathogenesis of:
 - Functional dyspepsia/IBS
 - GERD and Barrett's esophagus
 - Motility disorders (achalasia, gastroparesis)

Module 2: Diagnostic Techniques (3 Months)

1. Esophageal Function Testing:
 - High-resolution manometry
 - 24-hour pH-impedance monitoring
2. Anorectal Physiology:
 - Anorectal manometry
 - Balloon expulsion testing
3. Breath Tests:
 - H. pylori, lactose intolerance, SIBO

Module 3: Introduction to Therapeutic Interventions (3 Months)

1. Biofeedback therapy for pelvic floor disorders
2. Dietary management of functional GI disorders
3. Emerging technologies:
 - EndoFLIP for esophageal assessment
 - Wireless motility capsules

Module 4: Clinical Research (4 Months)

- Design of GI physiology studies

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- Analysis of motility data
- Research and Defense on GI functional disorders

3. Teaching Methodology

1. Hands-on training with manometry systems
2. Clinical rotations in:
 - GI motility labs
 - Endoscopy units
 - Nutrition clinics
3. Simulation of complex clinical cases

4. Assessment

- Interpretation of motility tracings
- Clinical case management
- Research

5. Professional Career Pathways

- GI physiologist in hospitals
- Motility lab specialist
- Researcher in neurogastroenterology

6. Accreditation and Quality Assurance

The curriculum aligns with International Education Accreditation Council (IEAC),

Approved by WACCPS

This program addresses the critical need for specialized GI physiology services in West Africa.

INTERNATIONAL STANDARD CURRICULUM IN CLINICAL EXERCISE PHYSIOLOGY

West African College of Clinical Physiology Sciences (WACCPS)

Duration: 12 Months

Target Audience: Graduates of Human Physiology and recognized health related disciplines

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1.1. Programme Title:

Professional Certification in Clinical Exercise Physiology (**PGDCEP**)

1.2. Programme Objectives:

- To provide advanced training in exercise physiology for clinical populations
- To develop expertise in exercise testing and prescription for chronic diseases
- To enhance rehabilitation strategies for cardiopulmonary and metabolic conditions
- To promote evidence-based exercise interventions in healthcare

1.3. Expected Learning Outcomes:

Graduates will be able to:

- Conduct and interpret clinical exercise tests
- Design individualized exercise prescriptions
- Manage exercise programs for special populations
- Implement research in clinical exercise science

2. Programme Structure

8 months coursework + 4 months clinical practicum/research

2.1. Core Modules

Module 1: Foundations of Clinical Exercise Physiology (2 Months)

- Exercise physiology in health and disease
- Pathophysiology of chronic diseases (**CVD**, diabetes, **COPD**)
- Exercise immunology and endocrinology
- Pharmaco-exercise interactions

Module 2: Clinical Exercise Testing (3 Months)

1. Cardiopulmonary Exercise Testing (**CPET**):
 - VO_2 max, anaerobic threshold, ventilatory efficiency
 - Interpretation for heart failure, pulmonary diseases
2. Electrocardiographic Stress Testing:
 - Protocol selection, monitoring, risk stratification
- Musculoskeletal Functional Testing:
3. Strength, flexibility, balance assessments

Module 3: Exercise Prescription & Rehabilitation (3 Months)

1. Disease-Specific Interventions:
 - Cardiac rehabilitation protocols
 - Pulmonary exercise training

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- Metabolic disease management
- 2. Special Populations:
 - Elderly, pregnant women, cancer survivors
- 3. Emerging Technologies.

Module 4: Clinical Practicum & Research (4 Months)

- Supervised clinical rotations
- Research project in exercise interventions
- Community health program development

3. Teaching Methodology

1. Laboratory sessions with metabolic carts and ECG systems
2. Case-based learning for chronic disease management
3. Clinical rotations in:
 - Cardiac rehab centers
 - Pulmonary clinics
 - Diabetes management units
4. Simulation of emergency scenarios during exercise

4. Assessment

- Practical competency evaluations
- Case study presentations
- Research

5. Career Pathways

- Clinical exercise physiologist in hospitals
- Cardiac/pulmonary rehabilitation specialist
- Corporate wellness consultant
- Researcher in exercise medicine

6. Accreditation and Quality Assurance

The curriculum aligns with International Education Accreditation Council (IEAC),

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This program addresses West Africa's growing chronic disease burden through evidence-based exercise interventions.

The curriculum balances international standards with local healthcare needs, preparing graduates for both clinical practice and research roles in this emerging field.

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INTERNATIONAL STANDARD CURRICULUM IN CLINICAL REPRODUCTIVE PHYSIOLOGY

West African College of Clinical Physiology Sciences (**WACCPS**)

Duration: 12 Months

Target Audience: Graduates of Human Physiology and recognized health related disciplines

1. Programme Overview

1.1 Programme Title:

Professional Certification in Clinical Reproductive Physiology

1.2 Programme Objectives:

- To provide advanced training in human reproductive physiology and pathophysiology
- To develop expertise in assisted reproductive technologies (ART) and fertility diagnostics
- To enhance clinical monitoring of infertility and reproductive disorders
- To promote research in reproductive health and endocrinology

1.3 Expected Learning Outcomes:

Graduates will be able to:

- Perform and interpret fertility diagnostic tests (semen analysis, hormonal assays, ovulation tracking)
- Assist in in vitro fertilization (IVF) and intrauterine insemination (IUI) procedures
- Monitor cases of male and female infertility
- Conduct research in reproductive physiology and ART

2. Programme Structure

8 months of coursework + 4 months of clinical practicum/research

2.1 Core Modules

Module 1: Reproductive Physiology & Endocrinology (2 Months)

- Male and female reproductive anatomy and physiology

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- Hormonal regulation of the reproductive axis
- Menstrual cycle dynamics and ovulation
- Pathophysiology of infertility (PCOS, endometriosis, azoospermia)

Module 2: Fertility Diagnostics & Laboratory Techniques (3 Months)

1. Semen Analysis & Sperm Function Tests
 - **WHO** standards for semen analysis
 - Sperm **DNA** fragmentation testing
2. Hormonal Profiling & Ovarian Reserve Testing
 - **FSH, AMH, LH**, and progesterone assays
 - Transvaginal ultrasound for follicular tracking
3. Advanced Imaging in Reproductive Health
 - Hysterosalpingography (**HSG**)
 - Pelvic ultrasound for uterine abnormalities

Module 3: Assisted Reproductive Technologies (ART) (3 Months)

1. In Vitro Fertilization (**IVF**) & Embryology Basics
 - Oocyte retrieval, sperm preparation, and embryo culture
 - Cryopreservation techniques (vitrification)
2. Intrauterine Insemination (**IUI**) Procedures
 - Semen processing and timing of insemination
3. Ethical & Legal Aspects of ART
 - Consent, documentation, and regulatory compliance

Module 4: Clinical Practicum & Research (4 Months)

- Hands-on training in fertility clinics and ART labs
- Research project on reproductive health trends in West Africa
- Oral defense

3. Teaching Methodology

- Didactic Lectures
- Hands-on Laboratory Training
- Clinical Rotations
- Research Supervision

4. Assessment Methods

1. Written Examinations
2. Practical Competency Evaluations
 - Semen analysis accuracy
 - Hormonal assay interpretation
 - **IVF** lab techniques
3. Research Dissertation

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5. Unique Programme Features

1. Tropical Reproductive Health Focus:

- Impact of infectious diseases (e.g., PID from STIs) on fertility
- Cultural and socioeconomic factors in fertility treatment

2. Low-Cost ART Adaptations:

- Simplified **IVF** protocols for resource-limited settings

6. Career Pathways

Graduates can work as:

- Fertility Laboratory Specialists/ Embryologists in hospitals and **IVF** clinics
- Reproductive Diagnostic Lab Scientists
- Andrology & Embryology Technologists
- Researchers in Reproductive Medicine

7. Accreditation & Certification

Aligned with: International Education Accreditation Council (**IEAC**)

This curriculum addresses West Africa's growing need for trained reproductive physiologists, combining global ART standards with region-specific fertility challenges.

Approved by:

West African College of Clinical Physiology Sciences (**WACCPS**)

INTERNATIONAL STANDARD CURRICULUM IN CARDIOVASCULAR PERFUSION SCIENCE

West African College of Clinical Physiology Sciences (**WACCPS**)

Duration: 12 Months

Target Candidates: BSc Human Physiology and recognized health related disciplines

1. PROGRAMME IDENTIFICATION

1.1 Award Title: Professional Certification in Cardiovascular Perfusion Science

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1.2 Programme Type:

- Intensive clinical training with simulation

2. CURRICULAR STRUCTURE

Phase 1: Foundational Theory (Months 1-3)

Module 1.1 - Perfusion Sciences Core

- History of cardiopulmonary bypass
- Fluid/gas dynamics in extracorporeal circuits

Module 1.2 - Cardiovascular Pathophysiology

- Cardiac surgical disease spectrum
- Coagulation cascade and heparin management

Phase 2: Clinical Perfusion Technology (Months 4-9)

Module 2.1 - Equipment Mastery

- Heart-lung machines (Stockert, Sorin)
- ECMO systems and mobile perfusion units

Module 2.2 - Procedural Competencies

- Circuit priming and de-airing techniques
- Blood conservation strategies
- Intra-aortic balloon pump management

Phase 3: Advanced Applications (Months 10-12)

Module 3.1 - Specialized Perfusion

- Pediatric perfusion protocols
- Deep hypothermic circulatory arrest

Module 3.2 - Crisis Management

- Massive air embolism protocols
- Circuit failure emergency drills

3. CLINICAL COMPETENCY MATRIX

Skill	Minimum Cases	Assessment Method
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CABG Perfusion Direct Observation

Valve Case Management Simulation Testing

ECMO Initiation Checklist Evaluation

5. CERTIFICATION REQUIREMENTS

- Supervised clinical cases
- 3 emergency scenario certifications
- Final oral/practical examination

6. Accreditation and Quality Assurance

The curriculum aligns with International Education Accreditation Council (IEAC),

Approved by: **WACCPS**

This intensive programme produces perfusionists capable of:

- ✓ Independent operation of cardiopulmonary bypass
- ✓ Management of ECMO systems
- ✓ Participation in transplant teams

The curriculum balances WHO patient safety benchmarks with regional healthcare realities.

INTERNATIONAL STANDARD CURRICULUM IN CRITICAL CARE PHYSIOLOGY

West African College of Clinical Physiology Sciences (**WACCPS**)

Duration: 12 Months

Target Audience: Graduates of Human Physiology and recognized health related health sciences

1. Programme Overview

1.1 **Programme Title:** Professional Certification in Critical Care Physiology

1.2 **Programme Objectives:**

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- To develop expertise in monitoring and supporting failing organ systems
- To train specialists in advanced life support technologies
- To enhance physiological monitoring in critical care settings
- To promote evidence-based critical care practice

1.3 Expected Competencies:

Graduates will be able to:

- Operate and interpret data from critical care monitoring systems
- Manage mechanical ventilation and hemodynamic support
- Conduct specialized critical care diagnostics
- Assist in the Implementation of organ support strategies

2. Programme Structure

9 months intensive training + 3 months clinical immersion

2.1 Core Modules

Module 1: Foundations of Critical Care (Months 1-2)

- Systems physiology in critical illness
- Pathophysiology of shock states
- Multiple organ dysfunction syndrome
- Pharmacology in critical care

Module 2: Monitoring Technologies (Months 3-5)

1. Hemodynamic Monitoring:
 - Arterial lines, **CVP**, pulmonary artery catheters
 - Pulse contour analysis
2. Respiratory Monitoring:
 - Ventilator waveform analysis
 - **EIT** (Electrical Impedance Tomography) basics
3. Neurological Monitoring:
 - **ICP** monitoring
 - Cerebral oximetry

Module 3: Introduction to Intervention Strategies (Months 6-8)

- Mechanical ventilation management
- Renal replacement therapies
- ECMO principles and monitoring
- Nutritional support in critical illness

Module 4: Clinical Immersion (Months 9-12)

- ICU rotations (medical, surgical, cardiac)
- Emergency response training

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- Quality improvement project

3. Teaching Methodology

- Daily simulation drills
- Bedside teaching rounds
- Multidisciplinary case conferences
- Journal clubs

4. Assessment Framework

1. Technical Skills:

- Ventilator management competency
- Hemodynamic crisis simulations

2. Clinical Decision Making:

- Complex case analyses

3. Research Component:

- Clinical audit project

5. Professional Career Pathways

- ICU physiologist
- Critical care specialist
- Emergency response team member
- Hospital acute care coordinator

Accreditation:

International Education Accreditation Council (IEAC)

Approved by: **WACCPS**

This program addresses West Africa's critical shortage of trained intensive care professionals while incorporating global best practices with local relevance.

INTERNATIONAL STANDARD CURRICULUM IN CLINICAL AUDIOLOGICAL PHYSIOLOGY

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West African College of Clinical Physiology Sciences (WACCPS)

Duration: 12 Months

Target Audience: Graduates of Human Physiology and recognized health related disciplines

1. Programme Overview

1.1 Programme Title:

Professional Certification in Clinical Audiological Physiology

1.2 Programme Objectives:

- To provide specialized training in auditory physiology and diagnostic audiology
- To develop expertise in hearing assessment and rehabilitation technologies
- To enhance clinical management of hearing disorders
- To promote research in auditory sciences

1.3 Expected Learning Outcomes:

Graduates will be able to:

- Conduct comprehensive audiological evaluations
- Interpret audiograms and tympanometry results
- Assist in hearing aid fitting and aural rehabilitation
- Perform newborn hearing screenings
- Manage cases of noise-induced hearing loss

2. Programme Structure

8 months coursework + 4 months clinical practicum

2.1 Core Modules

Module 1: Auditory Physiology & Pathophysiology (2 Months)

- Anatomy & physiology of the auditory system
- Psychoacoustics and sound perception
- Pathologies of hearing (conductive, sensorineural, mixed losses)
- Genetic and noise-induced hearing disorders

Module 2: Diagnostic Audiology (3 Months)

- Pure Tone Audiometry (Air/Bone Conduction)
- Impedance Audiometry (Tympanometry, Acoustic Reflexes)*
- Otoacoustic Emissions (OAEs) Testing
- Auditory Brainstem Response (ABR) Basics

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- Vestibular Assessment (Videonystagmography Intro)

Module 3: Rehabilitation Technologies (3 Months)

- Hearing aid selection and fitting
- Cochlear implant candidacy assessment
- Aural rehabilitation strategies
- Assistive listening devices

Module 4: Clinical Practicum & Research (4 Months)

- Supervised clinical hours
- Community hearing screening projects
- Research and Defense

3. Teaching Methodology

- Laboratory Sessions
- Hands-on equipment training
- Case simulation exercises
- Clinical Rotations
- **ENT** clinics
- Hearing aid centers
- School screening programs
- Research Component

4. Assessment Methods

- Practical Competency Evaluations
- Audiogram interpretation
- Hearing aid fitting accuracy
- Written Examinations
- Research Project

5. Professional Career Pathways

- Clinical Audiological Physiologist
- Hearing Conservation Specialist
- Pediatric Audiometry Specialist
- Research Audiologist

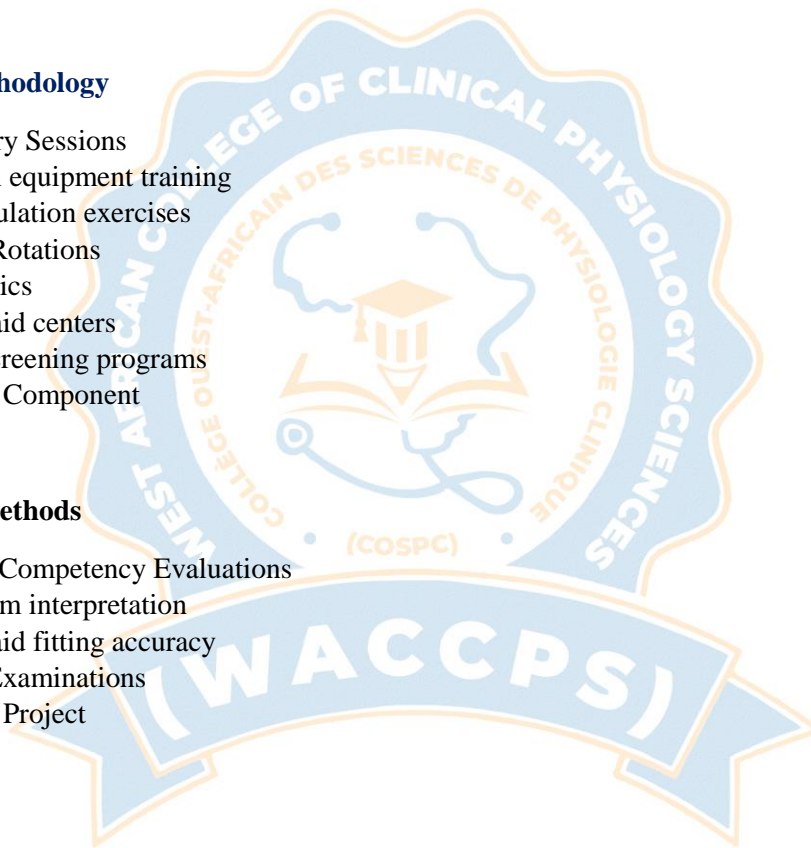
7. Accreditation Standards

- Aligned with:

International Education Accreditation Council (**IEAC**)

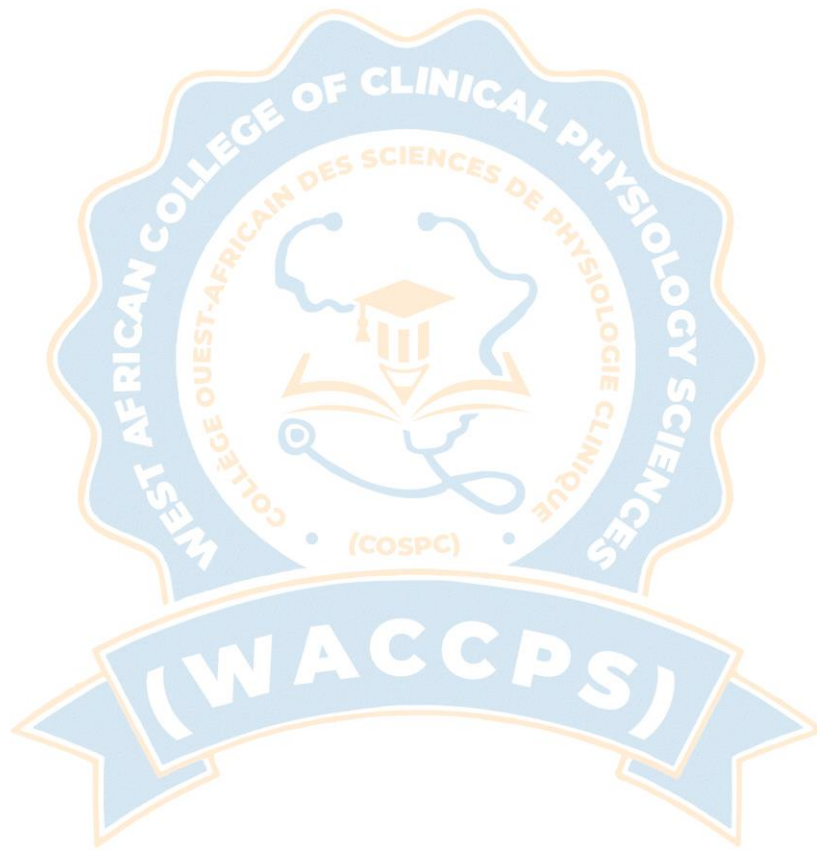
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Approved by: WACCPs

This programme addresses WHO's call for improved hearing healthcare workforce capacity in developing nations while incorporating cutting-edge audiological practices.



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