



**POSTGRADUATE DIPLOMA IN MEDICAL IMMUNOLOGY (PGD MIM)**

**INSTITUTE FOR BIOMEDICAL RESEARCH AND INNOVATION  
(IBMRI)**

**COLLEGE OF HEALTH SCIENCES**

**DOMICILED AT THE SCHOOL OF CONTINUING EDUCATION AND  
PROFESSIONAL STUDIES**

**(SCEPS)**

**UNIVERSITY OF UYO**

**(APPROVED AT 115<sup>TH</sup> SENATE ON 3<sup>RD</sup> JULY, 2019)**

# **POSTGRADUATE DIPLOMA PROGRAMME IN MEDICAL IMMUNOLOGY – PGD MIM**

## **1. INTRODUCTION**

The Institute for Biomedical Research and Innovation (IBMRI), College of Health Sciences, University of Uyo was instituted to enhance the research efforts of the University in areas that emphasize local health care needs. The IBMRI has as its mission ‘To be involved in research and training in diseases that are of interest locally and in Africa, and in developing effective drugs from local plants and substances, and other remedies’. In view of this, activities at the Institute are geared toward opening windows of opportunity for active engagement in capacity building, experience sharing in health and health related researches as well as manpower development in various fields of Biomedical and Health Sciences.

One of the key mandates of IBMRI is ‘To facilitate focused academic development in endemic and tropical diseases through sound postgraduate education and research’. Hence, the proposed PGD in Medical Immunology to be domiciled in the Institute will pave way for training and capacity development of various health professionals in South-south region of Nigeria and beyond. Knowledge gained will allow for expansion and upgrading of the PGD MIM programme to advanced level of postgraduate studies thereby deepening researches into various tropical diseases in Nigeria.

## **2. PHILOSOPHY**

The postgraduate Diploma Programme in Medical Immunology (PGD MIM) is designed to meet the knowledge demand and ultimately manpower improvement in Medical Immunology. It is intended to deepen the knowledge of graduates in basic and clinical immunology, including diagnostic technologies and research methodologies. The programme will contribute in broadening the knowledge required by medical professionals and interested graduates of life sciences to enhance and advance their skills in the practice of medicine, medical laboratory science and other related professions. It will go a long way in meeting the manpower needs and aspirations particularly in the Universities and University Teaching Hospitals, Biotechnology, Medical Sciences and Research Institutes.

## **3. VISION**

To produce knowledgeable and skilled graduates in the area of Medical Immunology, highly recognized in Medicine, Allied Health Sciences, Clinical Diagnostic Centers and Research Institutes.

#### **4. MISSION**

To provide quality education, practical training and research in the field of Medical Immunology that will meet global standard.

#### **5. OBJECTIVES**

- i. To provide the students with advanced training in Basic and Clinical Immunology, including diagnostic technologies and research.
- ii. To expand the knowledge of practicing Medical Personnel and other Health workers and research scientists including Medical Consultants, Medical officers, Nursing officers, Medical Laboratory Scientists, Pharmacists and other Allied Health workers in the field of Medical Immunology.
- iii. To improve the production of high level manpower needs in the field of Immunology for the sustainable development.

#### **6. ADMISSION REQUIREMENTS**

- i. Candidates for the **PGD MIM** programme shall include holders of MBBS/MDS degrees in Medicine/Dentistry, Bachelor degrees in Nursing, Medical Laboratory Sciences, Pharmacy and other degree holders in Health related sciences. They shall be required to meet the University of Uyo minimum ordinary level academic qualifications as contained in the University Tertiary Matriculation Examination (UTME) and Joint Admission and Matriculation Board (JAMB) brochure. Candidates must have a minimum of 5 credit passes in Physics, Chemistry, Biology, Mathematics and English Language obtained at not more than two sittings at O' level Senior Certificate Examination (SSCE), National Certificate of Education (NECO) or General Certificate of Education (GCE) or its equivalent. Candidates with a minimum of third class degree in relevant field from University of Uyo or any other recognized Universities are eligible for admission.
- ii. All candidates for the PGD MIM programme shall be required to satisfy a selection process.

#### **7. DURATION OF PROGRAMME**

The postgraduate Diploma in Medical Immunology (PGD MIM) shall be run on **part time** basis for a minimum of three (3) semesters and maximum of five (5) semesters. Extension beyond the duration is subject to approval by the University Senate.

#### **8. REGISTRATION**

To retain studentship, candidates shall be required to register for **PGD MIM** programme every semester.

## 9. REQUIREMENTS FOR GRADUATION

- i. To qualify for a PG Diploma certificate in Medical Immunology, a candidate must register and pass all the prescribed courses with a minimum grade of C (50%) in 44 credit hours including research project and seminars.
- ii. Candidates who fail to take examinations or fail any course will have to repeat the course at the next available opportunity.
- iii. Candidates shall satisfy all the requirements of the School of Postgraduate Studies.

## 9. COURSE STRUCTURE

<b>1<sup>st</sup> Semester</b>	<b>Course Code</b>	<b>Course Title</b>	<b>Credit Hour</b>
1 <sup>st</sup> Year	MIM 511	Introduction to Medical Immunology - I	3
	MIM 512	Infection, Cancer and Immune Response	3
	MIM 513	Epidemiology and Public Health	3
	MIM 514	Immunodeficiency, Immunotherapy and Infection Control	3
	MIM 515	Immunological and Molecular Techniques - I	3
		<b>Total</b>	<b>15</b>

<b>2<sup>nd</sup> Semester</b>	<b>Course Code</b>	<b>Course Title</b>	<b>Credit Hour</b>
1 <sup>st</sup> Year	MIM 521	Autoimmunity and Hypersensitivity Reactions	3
	MIM 522	Immunohaematology and Transplantation Immunology	3
	MIM 523	Microbial Genetics and Genomics	3
	MIM 524	Review Seminar in Medical Immunology - I	1
	MIM 525	Immunological and Molecular Techniques – II	3
	MIM 526	Immunology of Pregnancy	2
		<b>Total</b>	<b>15</b>

<b>1<sup>st</sup> Semester</b>	<b>Course Code</b>	<b>Course Title</b>	<b>Credit Hour</b>
2 <sup>nd</sup> Year	MIM 531	Vaccinology	3
	MIM 532	Research Methodology for Health Sciences	2
	MIM 533	Review Seminar in Medical Immunology - II	1
	MIM 534	Research Project	6
		<b>Total</b>	<b>14</b>

**Note:** All the listed courses are compulsory and to be taken in the respective semesters.

## **10. DESCRIPTION OF COURSES AND CONTENT**

### **MIM 511 INTRODUCTION TO MEDICAL IMMUNOLOGY 3CH**

Quantification of immunoglobulins. Major histocompatibility complex. Lymphocyte populations and sub-populations. Anatomy of the immune system. Structure and function of bone marrow and thymus. Function of major histocompatibility complex. Structure and function of T cell receptors. T cell ontogeny and function. Cytokines. Phagocytes. B cell ontogeny and function. Complement pathways. Inflammation. Mast cells, basophils, NK cells and eosinophils. Tolerance and immunoregulation.

### **MIM 512 INFECTION, CANCER AND IMMUNE RESPONSE 3CH**

Haematological Malignancies, Tumor Immunology. Current immunological knowledge as applied to diagnosis, disease assessment and therapeutic management of the cancer patient. Tumours of the immune system and other body tissues. Mechanisms of host defence against infection by bacteria, viruses and protozoa. Clinical syndromes arising from microbial infections. Role of microbial spread, local and systemic reactions of tissue damage, toxic shock, hypersensitivity mechanisms, microbial immune evasion, and systemic and mucosal immunity.

### **MIM 513 EPIDEMIOLOGY AND PUBLIC HEALTH 3CH**

Basic principles and practice of epidemiology. Epidemiology of selected endemic diseases. Epidemiology of selected immunological disorders. Public health implications in molecular epidemiology; use of molecular epidemiology as screening techniques. Biomarkers and disease susceptibility. Zoonoses and types. Nosocomial infections. Application of statistical methods to epidemiology, Etc.

**MIM 514 IMMUNODEFICIENCY, IMMUNOTHERAPY AND INFECTION CONTROL 3CH**

Review of current knowledge and growing points in the understanding of genetic (primary) and acquired (secondary) forms of immunodeficiency and the clinical disorders that can develop in association with infancy, childhood and adult life. Pathways of haemopoiesis and immune/accessory-cell maturation. Genetic immunodeficiencies. 'Risk sites' for forms of secondary immunodeficiency. Acquired Immune Deficiency (AIDS). Case presentations to illustrate clinical features of immunodeficiency disorders. Immune Complex Diseases. Laboratory practical demonstrations to show how an individual with a suspected immunodeficiency disorder is investigated. Current concepts in Immunotherapy and infection control

**MIM 515 IMMUNOLOGICAL AND MOLECULAR TECHNIQUES – I 3CH**

Chromatography and electrophoresis. Immunodiffusion. Preparation of microbial antigens and antisera. Serological techniques – agglutination, precipitation, flocculation, complement fixation, Enzyme-linked Immunoabsorbent Assay (ELISA). Radioimmunoassay. Polymerase - Chain Reaction (PCR). Hybridization techniques. Flow cytometry. Microarray Technology. Cloning and Recombinant Technology. Basic concepts of molecular biology techniques: Restriction endonucleases; restriction fragment length polymorphisms; satellites; variable number tandem repeats; sequencing; Etc.

**MIM 521 AUTOIMMUNITY AND HYPERSENSITIVITY REACTIONS 3CH**

Autoimmune reactions and disorders. Spectrum of extrinsic allergic diseases attributable to local and systemic hypersensitivity reactions of the sensitised host to non-replicating antigens of plants, animals, insects, fungal spores, occupational chemicals, anaesthetic and diagnostic chemical agents. Immunopharmacology, immunopathogenesis and clinical features of allergic diseases of the respiratory tract, skin, eye and gastrointestinal tract. Systemic reactions of acute anaphylaxis. Cellular mechanisms and immunopharmacology. Anti-allergic drug treatment and patient management.

**MIM 522 IMMUNOHAEMATOLOGY AND TRANSPLANTATION IMMUNOLOGY 3CH**

A comprehensive survey of the present state of knowledge in the field of immunology, solid organ and stem-cell transplantation, blood transfusion science and pregnancy. Blood transfusion reactions. Blood group typing. Structure and functions of the major histocompatibility gene locus and its protein products in mechanisms of graft rejection and induction of transplantation immunity. Immunological and molecular biological techniques in tissue typing. Comparison of latest results of allotransplantation and xenotransplantation procedures.

**MIM 523 MICROBIAL GENETICS AND GENOMICS 3CH**

A survey of the current status of microbial genetics including discussion of methods and findings in the area of mutagenesis, induction, isolation and biochemical characterization of mutants. Adaptation, transformation, transduction, conversion and conjugation. General and specialized methods and techniques in microbial genetics. Experiments with virulent phages, temperate phages and lysogenic bacteria. Fungal and other lower eukaryotic genetics.

**MIM 524      REVIEW SEMINAR IN MEDICAL IMMUNOLOGY – I                      1CH**

Students will be required to prepare and present specialization-based review seminar papers on special topics in immunology for evaluation. Student will be expected to work under the guidance of his/her supervisor.

**MIM 525      IMMUNOLOGICAL AND MOLECULAR TECHNIQUES – II                      3CH**

Separation and concentration techniques. Preservation by extreme cold. Specialized microscopy darkground, phase – contrast, fluorescent and electron microscopy. Special staining techniques. Polyclonal and monoclonal antibody production and use. Vaccine production and testing, separation and extraction of cellular components from microbial cell walls, membrane. Subtyping of isolates. Techniques in animal experiments handling.

**MIM 526      IMMUNOLOGY OF PREGNANCY    2CH**

Historical perspective of Immunology of pregnancy. Immunology of Pregnancy - The Maternal Contribution: The Cytokine Response to Pregnancy, The innate and adaptive immune response to pregnancy, Chemokines and Selective Decidual Leukocyte Recruitment. Immunology of pregnancy - the Fetal contribution: Sites of Fetal Contact with Maternal Cells, Regulated Expression of Immunomodulatory Molecules by Trophoblast Cells. The immunological origins of pregnancy disorders: Placental responses to infection, Deficiency in Treg cells.

**MIM 531      VACCINOLOGY    3CH**

Vaccines: socio-economical, ethical and political aspects. Initiation to vaccine clinical development and production. Types of Vaccines. Vaccine administration. Vaccine-preventable diseases. Global vaccination strategies and surveillance. Immunological and epidemiological basis of vaccination. Immunization/Acquired Immunity: Active, Passive, Natural, Artificial vaccination New strategies for the characterization of protecting antigens. Preclinical and clinical trials: basic principles. Evaluation of vaccine field efficacy. Major infectious diseases: epidemiology, physiopathology, composition and vaccines under development. Impact of vaccines on the control of infectious diseases: success and failure.

**MIM 532      RESEARCH METHODOLOGY FOR HEALTH SCIENCES    2CH**

Types of biomedical/epidemiological research design, methodology, preparation and presentation of data. Basic Statistical Methods and application; Data Collection and Data Quality; Sample/Subjects Selection in Health Research; Research Ethics; Data Processing and Analysis;

Planning and Writing Research Proposal; Dissemination of Research Findings and Promotion of Utilization of Results; Grantmanship; Etc.

**MIM 533      REVIEW SEMINAR IN MEDICAL IMMUNOLOGY – II                          1CH**

Students will be required to prepare and present specialization-based review seminar papers on special topics in immunology for evaluation. A student will be expected to work under the guidance of his/her supervisor

**MIM 534      RESEARCH PROJECT    6CH**

Students will be expected to conduct research in selected topics of interest in Medical Immunology under the supervision of an academic staff. The student will undertake extensive literature review on the topic, perform experiments and produce report.

Students will be required to produce a scientific paper in the usual journal format on the topic under investigation with emphasis on the research work.

**11. LABORATORY SPACE AND FACILITIES**

The Institute has a standard laboratory space equipped with state of the art equipment for research and training of students.

**12. LIBRARY FACILITY**

The university medical and main library have current text books, journals and other reference materials required for the training of students in the programme. There are internet facilities in the Institute provided by the University ICT department.

**13. LIST OF ACADEMIC STAFF**



S/N	Name	Qualification	Rank	Status	Area of Specialization
1.	Prof. Anietie E. Moses	B.Sc., M.Sc., MHPM, Ph.D, FWAPCMLS, Cert. Immunol.	Professor	Full Time	Medical & Public Health Microbiology/ Microbial Immunology
2.	Dr. Ifeanyi A. Onwuezobe	MBBCh, M.Sc, MPH, FMCPATH.	Snr Lect.	Full Time	Clinical Microbiology/ Infectious Diseases
3.	Dr. Inyang A. Atting	B.Sc, MCH, Ph.D	Assoc. Prof.	Full Time	Medical Parasitology/ Env.&Public Health
4.	Dr. Itemobong Ekaidem	B.Sc, MPH, PhD, AMLSCN	Snr Lect.	Full Time	Chemical Pathology/ Immunochemistry
5.	Dr. Emmanuel C. Inyangetoh	MBBCh, , FMROG	Assoc. Prof.	Full Time	Obstetrics and Gynaecology
6.	Dr. Anthony Uwah	MBBCh, M.Sc, PhD	Lecturer 1	Full Time	Chemical Pathology/ Immunochemistry
7.	Dr. Anyiekere Ekanem	MBBCh, FWACP, MPH	Snr. Lect.	Full Time	Epidemiology and Public Health
8.	Dr. Timothy Ekwere	MBBCh, FMCPATH, M.Sc	Snr. Lect.	Full Time	Haematology/Transfusion Science

#### 14. LIST OF LABORATORY STAFF

S/N	NAME	QUALIFICATION	DESIGNATION	STATUS
1.				
2.	Mr. Joseph U. Idiong, Jr.	B.Sc, NIST (Physiology)	Technologist I	Full Time
3.	Ubong Ekerenam Etang	BSc, MSc., PhD - in view	Research Scientist	Full Time
4.	Mrs. Nseobong Godwin Akpan	BSC, MSc., PhD - in view	Medical Lab. Scientist I	Full Time
5.	Mr. Dodoru Tuemi Robinson	BMLS, MSc - in view	Medical Lab. Scientist I	Full Time
6.	Mrs. Ukeme Ekwere Okono-Inyang	BSC, NIST	Technologist II	Full Time

#### 15. LIST OF ADMINISTRATIVE AND TECHNICAL STAFF

S/N	NAME	QUALIFICATION	DESIGNATION	STATUS
1.	Mr. Usoro Ignatius Joseph	B.Sc., M.Sc. Soc./ Anthro. (Industrial Sociology), Dip. (Personnel Mgt.)	Principal Executive Officer	Full Time

2.	Mrs. Etop Okon Uweh	RSA (I-III), Cert. (Secr. & comp. Application)	Principal Data Processing Officer	Full Time
3.	Mr. Ubong Sylvester Ifot	NTC/NABTEB, Trade Test (I-III)	Principal Technical Assistant	Full Time
4.	Mr. David Michael	Trade test I, II, III	Driver	Full Time
5.			Office Assistant	Full Time

### 15. LIST OF EQUIPMENT/TEACHING AID AT THE INSTITUTE

S/N	ITEM	QTY
1.	Sysmex Cyflow cube 6 interfaced with a Deskjet Hp1010 printer	1
2.	Thermo Scientific 96 well real-time thermal cycler (real – time PCR system) interfaced with a monitor and key board	1
3.	Applied Biosystems™ 7500 -RT Fast thermal cycler	1
3.	Thermo scientific gel system (chamber & power pack) for heavy duty gel electrophoresis	1
4.	Hotplate Magnetic stirrer with magnet	1
5.	Enzyme Linked Immunoassay (ELISA) Micro-plate washer	1
6.	ELISA Micro-plate Reader	2
6.	Bench Centrifuge with fixed angle rotor	2
7.	Fluorescent Stereo-Microscope with Ultra-thin light transmission based with camera	1
8.	Olympus Binocular Microscope CX model 21	1
9.	De-ioniser (wall type) Eleostat B114/A with cartridges	1
10.	Water distiller	1
11.	Shandon (Manual) Rotary Micro-tome	1
12.	Leica TP1020 Automatic Tissue Processor	1
13.	Paraffin Wax Dispenser	1
14.	Documentation UVP Gel Imager, with camera accessory	1
15.	Chrono-log whole blood Aggregometer	1
16.	Mini-CRUMA Biological Safety cabinet	1
17.	Mini Hot plate	1
18.	Tissue Capture Pen	1
19.	Refrigerators (Giant size- Newclime -1 & medium size-LG-1)	2
20.	Laptop computers (Hp model)	2
21.	Power Generating Set (Firemann model 3990)	1
22.	Adjustable automatic Micropipettes (100ul, 1000ul and 5ul)	4
23.	Assorted plain bottles	100
24.	Thermometers	2
25.	Hp Desktop computer (Monitor and CPU units)	1

26.	3-in-1 Laser printers (colored and black)	2
27.	Voltage stabilizer, 2000W, 1000W, 5000W	4
28.	UPS -2000W	2
29.	Bunsen burner	10
30.	Biobase NSF list Biosafety cabinet 4ft – Class 2	2
31.	Fisherbrand™ Microplate Vortex Mixers, with microplate head	1
32.	High Speed Microcentrifuge, 13,300rpm	2
33.	IKA Vortex 2	1
34.	Micropipete Ohaus 0.5-10ul, 10-100, 100-1000ul	3 each
35.	IKA mini G centrifuge	1
36.	Horizontal shaker	1
37.	Shaker incubator	1
38.	Ultra low freezer, -80°C	1
39.	Refrigerators	4
40.	Chest freezers	3
41.	UV-Vis Spectrophotometer	1
42.	Microwave oven	1
43.	Heating block	3