



**BAYERO UNIVERSITY KANO**

**DEPARTMENT OF OPTOMETRY  
FACULTY OF ALLIED HEALTH  
SCIENCES  
COLLEGE OF HEALTH SCIENCES**

**Doctor of Optometry Programme  
(O.D)**

**Students' Hand Book**

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Website: [www.buk.edu.ng](http://www.buk.edu.ng)

E-mail: [hodopto@buk.edu.ng](mailto:hodopto@buk.edu.ng).

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## **PREFACE**

The Departmental handbook is a document designed to acquaint students of the department of optometry, Bayero University Kano, with the vital information needed for academic and social life on campus. It is aimed at helping the students to actualize the reason for studying in the university.

The student is encouraged to read and understand the contents of the handbook. It informs one about the academic requirements needed to graduate from the Department. It educates the individual on how to access his/her academic performance in the courses registered for the Doctor of Optometry (OD) Degree Programme.

The Handbook also contains University regulations intended to guide and regulate behavior of student in their academic pursuits. These range from: admission requirements, examination related matters, determination of performance level to the award of Doctor of Optometry degree (Unclassified). It is expected that every student of Optometry makes this handbook his/her companion for informed guidance.

**Dr. Barbie M. O. Ejukonemu**

*Head of Department*

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## HISTORY

The optometry programme was mounted by Professor Lawan, the then head of department, ophthalmology, Aminu Kano Teaching Hospital under the watch of Professor Rasheed, the then Vice Chancellor, Bayero University, Kano. This was made possible by the proposal written by Professor Uche Ikonke the current Vice Chancellor Abia State University Uturu, which he gave to the Nigerian Optometric Association (NOA) for presentation to the Management of Bayero University Kano. Dr. Ikechukwu Nwakuche, the then national president of NOA presented the proposal to the management, which kick started the process of mounting the programme. The history will not be complete without mentioning Dr. Dutse, the then Chief Medical Director, Aminu Kano Teaching Hospital and Dr. Umar Farouk, the Medical Director, Federal Medical Center (FMC), Azare, (the gateway) who met Prof. Ikonke in Birin Kebbi during an induction ceremony and requested that he should come to Bayero University, Kano (BUK) to mount the optometry programme. We want to specially thank the Vice Chancellor, Prof. Muhammad Yahuza Bello, for all his support, Prof Habib, the then Provost; Prof. Sanni Alhassan the current provost of our college, and my amiable Immediate dean, Prof. M. Y. Gwarzo. Prof. Abdul Lawan, Prof. Rasheed Abubakar, Amiable immediate past dean, Prof. M. Y. Gwarzo. Our Provost Prof. Ibrahim Adamu Yakasai and Dean Dr. Kumurya Abdullahi. We are very grateful to you all for your support. We have two hundred and seventy eight students. (278).

100 Level 60 Students

200 Level 94 Students

300 level 55 Students

400 Level 49 Students

500 Level 20 Students

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## **INTRODUCTION**

The Department of Optometry, Bayero University Kano, currently offers a six-year degree programme leading to the award of Doctor of Optometry (O.D). It was established in 2014 in the Faculty of Allied Health Sciences. The Department is poised to sustain the vision of the university - "To lead in research and education in Africa".

The programme is designed to expose students to a variety of speciality areas in optometry after which they could subsequently be admitted into the Nigerian Postgraduate College of Optometry for the award of the Fellowship of The Nigerian College of Optometrists (Fnco), to serve as consultants in the specified areas, or postgraduate programme in Clinical Optometry, the visual sciences or any programme in relevant field.

The Department is also geared towards short certificate courses targeted at studying major blinding diseases and through that, contributes to the eradication of blindness in Nigeria and worldwide.

## **PHILOSOPY**

The philosophy of the optometry programme encompasses teaching, research, development and service to mankind with dignity. The programme is positioned to harness the rapid advances in technology for the production of skilled expertise in eye care delivery systems both locally and internationally; to promote the development of the society through our enduring services. Also part of the philosophy is, to strategize on multilateral and innovative techniques on how to mitigate the common problems of blindness worldwide.

## **OBJECTIVES**

1. To train Doctors of Optometry (O.D's) who have acquired profound knowledge, expertise and ethical orientation to practice the profession of optometry in any part of our today's "global village".
2. To produce optometrists who can offer comprehensive eye care services anywhere and as enshrined in CAP 09 in the laws of the Federal Republic of Nigeria.
3. To train Doctors of Optometry (O.D) who would initiate research and apply same for further development of the profession for the benefit of mankind.
4. To provide the template of knowledge and skills for the various areas of specialisation in optometry.
5. To produce optometrists knowledgeable in the profession and other contextually-related issues such as the environment, economy, society etc.

## **RESEARCH**

There are presently several areas of dynamic and absolutely relevant researches being undertaken by the Department. Staff and students are involved in research in ocular health, community health, optometry and the visual sciences. Also, the Department is involved in interdisciplinary research endeavours. The Department is currently geared up for research into blinding diseases in contemporary Nigeria.

## **CAREER PROSPECTS**

Doctors of Optometry can practice the profession of optometry in the following areas:

- a. Teaching/lecturing.
- b. Joining the Medical Corps of the Armed Forces, the police, Immigration, Custom Services, Road Safety etc.
- c. Working in research institutes and universities.
- d. Consulting in eye clinics in both private and public organisations.
- e. Working as consultants in oil companies, ministries, parastatals, agencies, etc.
- f. Working as environmental vision consultants in workplace, sports or space agencies.
- g. Working as public health practitioners.

### **ADMISSION REQUIREMENTS**

(a) **University Matriculation Examination (UME)** Candidates seeking admission into the O.D. (Doctor of Optometry) degree programme must have a good score in the prescribed University Matriculation Examination (UME) for admission into the first year of the 6-year programme. The candidate must also have a credit pass in English, Mathematics, Physics, Chemistry, and Biology. In either case, the student must satisfy the university matriculation requirements, with credits at W A S C , GCE, or NECO, 0' Level in the relevant subjects at one sitting for each examination board category.

#### **(b) Direct Entry:**

- i. Passes in 2 of the relevant subjects at advanced level of the General Certificate of Education (GCE) or its equivalent for direct entry admission into the second year of the programme. The relevant subjects are Physics, Chemistry and Biology.
- ii. A Bachelor's Degree (BSc) in any basic sciences, medical science or health sciences from a recognised university.
- iii. Diploma certificate in Dispensing Optics or related profession from a recognised institution. Also for direct entry admission into the Department, all of the above categories of candidates must begin at 200 level. They must also



register and pass the general study courses done at 100 level.

- iv. BSc. Holders in Optometry from a recognized University into 500 Level. They must also registered and pass the general study courses and other courses not done from the University they are coming from. They must meet the department admission requirement.

## **UNIVERSITY TRANSFERS**

### **(a) Inter-University Transfers**

Below are the criteria which must be fulfilled before inter university transfers could be considered. Candidates are instructed to read these criteria carefully.

1. Any candidate seeking transfer from another university to the Department of Optometry, Bayero University Kano, must satisfy the Departmental admission requirements as stipulated in the section titled: (Admission Requirements)
2. To be qualified, the transfer student must be transferring from Medical Sciences, Health Sciences, Basic Sciences or Optometry itself.
3. The transfers must be between 100 and 200 level. For 300 level transfers, it is at the maximum at 300 level for only Optometry students. Transfers from 4 0 0 level and a b o v e are not allowed.
4. Courses not passed and courses not registered for in the former university must be retaken. Also, some courses not in the former university brochure and taken in the new university must be passed. Additionally, a cumulative grade point average (CGPA) of 3.50 must be achieved before transfer.
5. Reason for transfer must not be due to any type of misconduct.

## **(b) Intra-University Transfer**

Students of this category are usually bonafide students of Bayero University Kano seeking to transfer to Optometry. These students must satisfy the requirements as stated in the category of students for inter-university transfer. Additionally, for both categories (a) and (b) above, there must be a letter of release from the Head of Department and the Dean, and for inter-university transfer, from the Registrar.

## **PROGRAMME STRUCTURE**

The Department of Optometry, Bayero University Kano runs

a six-year unclassified Doctor of Optometry degree programme. The programme is geared towards preparing Doctors of Optometry for the numerous areas of specialisations in the profession of optometry, which are:

1. Public Health Optometry
2. Ocular Health Optometry
3. Primary Care Optometry
4. Low vision and Rehabilitative Optometry
5. Vision Therapy/Orthoptics.
6. Paediatric Optometry
7. Cornea and Contact Lens Optometry

In the first two years, students in the programme take courses in the Basic Health Sciences which will prepare them for the core optometry courses in subsequent stages of their professional training.

In the following three years, they concentrate on courses in the various speciality areas of Optometry including research

Methodologies. In the fourth, fifth and sixth year, students are involved in clinical rotation training and articulated community service /outreach programmes.

The final year prepares the students for professional practice and postgraduate training. Lectures, laboratory practicals and are taught by

the core staff and adjunct lecturers both locally and internationally.

## **LEARNING OUTCOMES**

Regime of subject knowledge:

It is expected as well, that at the end of Doctor of Optometry programme that each students must be proficient in:

- i. Prescription of both diagnostic and major therapeutic ophthalmic drugs.
- n. Effective use of refractive Phoropters, Retinoscope, Ophthalmoscope; Slitlamp Bio-microscope, Tonometer, Visual field equipment, Pachymeter, A-scan, B-scan, Optical Coherence Tomographer (OCT), Biometer, Trial Lenses, Prisms, and other modern equipment.
- iii. Ophthalmic Dispensing
- iv. Making diagnosis and treating ocular conditions accordingly.
- v. Community/Public Ocular Health Services.
- vi. Functioning effectively as an Optometrist in a multi disciplinary eye care team whether in a hospital, a clinic and an industrial or any other setting.

## **THE ACADEMIC CALENDAR AND THE SEMESTER SYSTEM OF THE DEPARTMENT**

The University operates a two-semester (first and second semesters) academic year. A semester lasts about eighteen (18) weeks, out of which fifteen (15) weeks are devoted to lectures, practical, clinical rotation and tutorials, etc.

## **REGULATIONS GOVERNING THE AWARD OF O.D. DEGREE:**

To qualify for the O.D. (Doctor of Optometry) degree, a student must pass all courses including GST courses. It is important to note that all courses are core courses.

## **INTERNSHIP**

On completion, graduates must undergo a one-year internship training

before registering with the Optometrists and Dispensing Opticians Registration Board of Nigeria. Completion of the internship programme is the pre-qualification for NYSC where applicable.

### **THE COURSE CREDIT SYSTEM**

The courses are structured on credit unit system. One(1) credit unit is equivalent to one hour lecture per week for 15 (fifteen) weeks or three hours of practicals per week for 15 (fifteen weeks). A tutorial is equivalent to a lecture period.

### **COURSE CODING INDEX (Subject Areas)**

Each course code used in the Department is made up of three letters indicating the subject area and a four-digit number. The four-digit number indicates the following: Level of the course, weight of the course, credit of the course, semester of the course.

#### **First digit:**

This represents the level of the course, i.e.1for level 100, 2 for Level 200, 3 for level 300, e.tc.

#### **Second digit:**

This indicates the weight of the course as shown in the following tables.

**Third digit:** Indicates the semester so as to give the course a specific identification. Odd numbers are for first semester whereas even numbers are for second semester.

## **SUMMARY OF THE DOCTOR OF OPTOMETRY PROGRAMME:**

- i. Maximum credits registerable per session - 50 credits
- ii. The pass mark for all levels - 50%
- iii. Carry-over courses must be registered first  
Carry-over courses between 100 and 200 levels must be cleared before a student gets to 400 level.
- iv. Guidelines to prerequisites must be adhered to according to the instructions of the course advisers.
- v. All students registering for 500 level courses must have passed all 100 –400 level courses.
- vi. All clinical courses at 400 and 500 levels must be passed before starting 600 level clinicals.
- vii. All courses are core courses including 100 level courses, GST courses and must be passed before graduation.
- viii. Before entering the final year, the student must not have more than 10 credit load of carry-overs.

### **SUBJECT CODE**

SUBJECT	CODE
BIOLOGY	BIO
PHYSICS	PHY
CHEMISTRY	CHEM
MATHEMATICS	MTH
ANATOMY	ANT
BIOCHEMISTRY	BCH
PHYSIOLOGY	PYS
COMPUTER SCIENCE	CSC
MICROBIOLOGY	MCB
OPTOMETRY	OPT

## **DURATION AND PROGRAMMES STRUCTURE**

The Department of Optometry, Bayero University, Kano runs an unclassified Doctor of Optometry degree programme. Duration of training is minimum of six (6) academic years (12 semesters) and maximum period of eight (8) years (16 semesters) for UME admission and minimum period of five (5) years (10 semesters) and maximum period of seven (7) years (14 semesters) for direct entry candidates. The assessment of performance of each of the courses will comprise of continuous assessment of 30% and an essay and /or practical examination of 70%.

## **COURSE REGISTRATION**

Every student obtains a class card for all the courses in a particular semester. The class card is to be submitted to the respective course/class adviser for signing within the second week of the semester and subsequently returned to the students. The class cards are presented at lectures to record attendance. Only students with duly- signed class cards and who have recorded at least seventy-five percent (75%) attendance to lectures are eligible for the semester examination in the course. Maximum course credits to be registered per session are 48 units. Carry-over courses must be registered first.

There is a lecture register. Students sign this each time they attend lectures and the lecturer counter signs before leaving the class.

This can be used in place of class card.

## **PRE -REQUISITES**

### **400 LEVEL**

- a. All students registering for 400 level courses must have passed all 100 level and 200 level courses; and must not be carrying over courses in 300 level which total units cannot be accommodated in 400 level.
- b. Any failure repeats 300 level.
- c. Second failure withdraws the students from the programme

### **500 LEVEL**

- a. All students registering for 500 level courses must have passed all 300 level and 400 level courses.
- b. Any failure repeats 400 level.
- c. Second failure withdraws from the programme.

### **600 LEVEL**

- a. All students registering for 600 level courses must have passed all 500 level course.

### **PREGNANCY**

Female students are not permitted to carry pregnancy in the clinical classes of 500 and 600 levels. Any such student will be required to withdraw at the end of the first semester of the pregnancy and to resume studies after delivery. This is to forestall any eventuality that could arise with pregnancies due to the added academic stress in the clinical years. The period lost is not counted against the student with respect to over-stay in the training programme.

### **GRADING SYSTEM**

70% and above	-A
60% to 69%	-B
50% to 59%	-C
49% and below	-F

### **CLINICAL ROTATION AND THE USE OF LOG BOOK**

The optometry student is required to rotate from one department of the hospital to the other as follows:

1. Medical Records Department (MRD)
2. Accident and Emergency Department (A&E)
3. General Out-Patient Department (GOPD)
4. Medical Laboratory Sciences Services
5. Radiology Department
6. Ophthalmology Department
7. Pediatrics Department
8. Low Vision Rehabilitation Services
9. University Eye Centre

## **CONFIDENTIALITY**

Student must not identify patients by their names. Each case should be recorded as the patient's initials.

## **MEDICAL RECORDS (400 Level)**

### Patient's Records

- > Obtain Patient's Card
- > Learn about the confidentiality of the Patient
- > Use Modern ways of storing Patient's records
- > Ease of Accessing Patient's Records
- > Use proper way of keeping Patient's records
- > Beware of the legal implications of keeping Patients records

## **MEDICAL LABORATORY SERVICES (500 Level)**

1. Find out tests done in the laboratory.
2. Know the tests and their indications.
  - Full or Complete Blood Count (FBC or CBC)
  - Malaria Parasite (MP)
  - Erythrocyte Sedimentation Rate (ESR)
  - Blood Film for Microfilaria.
  - Eye Swab MCS
  - Chlamydia
  - Syphilis (VDRL, TPHA)
  - Urinalysis
  - Blood Sugar (Fasting, Random, 2 hour post prandial)
  - HIV Screening
  - Lipid Profile (LP)
  - Blood Clotting Test-PT, INR
  - Bleeding and Clotting Time
  - Renal Function Test (RFT)
  - Liver Function Test (LFT) HBV, HCV
  - Thyroid Function Test (TFT)
3. Specimen Collection Documentation
4. Interpretation of Results and Normal range:



- Blood Glucose
- Real Function Tests
- PCV Children, 3 Months, Adult Male, Adult Female
- Lipid Profile (Fasting)
- Liver Function Tests --
- Infectious Diseases
- Blood Clotting Test
- Thyroid Function Test

5. Indications;

- Anaemia
- Leukemia
- Retinopathy
  - Cotton Wool Spot
  - Retinal Hemorrhage
  - Stye Blepharitis
  - Microfilaria Worms
  - Granulomatous Anteritis, uveitis or vitritis
  - Retinal Micro-Aneurysms
  - Neovascularization
  - Retinal Cottonwool/Spots (without/DMI/HBP) Lipemia Retinalis
  - Amaurosis Fugax
  - Hollenhorst Plagues
  - Retinal Vascular Occlusions
  - Xanthelasma
  - Corneal Arcus in younger patients
  - Unexplained Bleeding
  - Recurrent Subconjunctival or Pre-retinal Hemorrhages
  - Dot – and – Fleck Retinopathy

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- Congenital Cataracts
- Anterior or Posterior Lenticonus
- Diabetic Retinopathy
- Hypertension Severe
- Jaundice Choroidal
- Melanoma

Wilson Diseases

Proptosis

Extra Ocular Muscle Restrictions

Lid Retraction

Compressive Optic Neuropathy

Dry Eye

6. Relationship between Laboratory and different units/departments in the Hospital.

### **ACCIDENT AND EMERGENCY DEPARTMENT (600 Level)**

Learn what is Urgency

Learn what is Emergency

Know the Emergency number to call (Emergency Medical Service EMS)

Learn the legal concepts

Duty to Act

Standard of care

Negligence

Abandonment

Confidentiality

Record keeping what is Good Samaritan law?

How do you check for consciousness?

How do you check for unconsciousness?

How do you provide care to the unconscious Patient?

Monitor

Breathing B

Airway A

Circulation C

What is Rescue Breathing?

**What is CPR?**

**What is Defibrillation?**

### **GENERAL OUT-PATIENT DEPARTMENT (GOPD) (600 level)**

Proper location of GOPD

Clerking of patient

Age

Gender: Male/Female **Marital Status Occupation Address**  
**Religion**

Next of Kin

Patients Complaints

History-Allergies

Family History

Past Medical History Past

Ocular History External

Eye Examination Vital

signs:

B.P. Pulse

Temperature

Respiration

Treatment and Plan (TAP)

Treatment Given

To Come Again (TCA)

Screening

Use information from Screening to direct patient on where to get attention

Recommend Laboratory Tests

Take and Collect Samples and Specimens

Direct patient to pharmacy

Patient goes from here

Patient placed on observation for not more than 24 hours

## **OPHTHALMOLOGY DEPARTMENT (400 Level)**

1. Observe and participate in:
  - a. Comprehensive vision and eye health examination
    - Blurred vision - VA, Refraction, Examination of the anterior Segment.
    - Eye discomfort
  - b. Tests for:
    - Glaucoma-IOP, CVF, Confrontational VF assessment
    - Cataracts - Aetropathogenesis, Classification, Symptoms / Sign, Pre-optic assessment; Post Optic refraction.
    - Macular Degeneration - to observe and understand the

- principles.
- c. Ocular effects of many general health disorders -Diabetes•  
HTN, SCDXT  
High Blood Pressure
- d. Ocular Effects of Medications
- e. Eye Diseases
- f. Observe Acute Presentation  
Ocular Foreign Body (FB)  
Ocular Trauma  
Ocular diplopia  
Ocular redness  
Ocular pain  
Ocular transient vision loss  
Ocular persistent vision loss  
Flashes and floaters
- g. Foreign body removal
- h. Pressure patching
- i. Staining agents
- j. Dilating drops/
- k. Basic pre-operative preparation
- l. Sterilization
- m. Minor ophthalmic procedure
- n. Steps in scrubbing, gowning and gloving
- o. Introduction to ocular Anaesthesia
- p. Techniques in ocular Anaesthesia Minor ophthalmic  
procedure/indication
- q. Eye dressing/Padding  
Eye irrigation
- r. Foreign Body Removal  
Bandaging
- s. Swab

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## **PEDIATRIC DEPARTMENT (600 Level)**

Observe and participate in;

- a. Comprehensive vision care to children: Birth to 3 years  
3 years to five years  
5 years to 11 years of age  
Nearsightedness  
Farsightedness  
Astigmatism  
Lazy eye  
Crossed-eyes  
Learning –related vision  
Eye diseases.
- b. Children with special needs:  
Child with physical challenges up to the age of 18  
Children with behavioural challenges up to the age of 18  
Children with difficulty sitting still  
Children with difficulty controlling neck muscles  
Children with difficulty communication verbally

Team work with occupational, physical, and speech therapists in addition to early intervention programs to meet the treatment needs of these children.

### **c. Infants**

**vision:**

- Visual needs of children from birth to 4 years  
Specialized testing techniques  
To diagnose  
To treat  
To prevent vision problems before the serious
- d. Learning disabilities;

Team work of optometrists and psychologists using;

- Optometric educational testing procedures  
Psychological educational testing procedures  
To help patients, families, teachers find the specific services a child needs to manage a learning disability  
Working close with schools and day care centres to co-ordinate patients treatment

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## **LOW VISION REHABILITATION SERVICES (500 Level)**

Training patient in the use of latest, most effective optical, electronic and/or computer based magnification systems  
Prescription of magnifying eye glasses and microscopes that assist reading

Filters to reduce glare and increase contrast

Electronic systems such as portable, hand-held magnifiers that enlarge print for reading and writing.

Telescopes for viewing long distances

Sunwear and lighting recommendations to maximize function

Biopic lenses for driving classroom work, presentations, music etc.

Advocacy, education, accommodation, referrals to appropriate resources within and outside. Identifying the blinding diseases especially retinal degenerative disease.

Macular degeneration

Stargardt disease

Retinitis pigmentosa

Usher syndrome

Leber congenital amaurosis

Cone rod dystrophy

Retinoschisis

Best disease

Bardet-biedl syndrome

## **RADIOLOGY DEPARTMENT (500 Level)**

### **Radiological anatomy of the orbit**

1. Plain x - ray films - procedure and interpretation of imaging techniques

### **Indications**

- Intraocular foreign body identification
  - Intra-orbital foreign body identification
2. Electroretinogram (ERG) - Procedure and interpretation of imaging techniques

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## Indications

- Foreign body that has penetrated the vitreous
- Vitreous prolapse
- Vitreous hemorrhage
- 3. B - Scans - Procedure and interpretation of imaging techniques
  - B - ultrasound biomicroscopy
  - B - ultrasonography

## Indications

- Complement the CT scan in identifying the location and nature of the foreign body
- To determine whether the retina is attached or whether there is blood in the vitreous
- 4. CT - Scans of the orbit - Procedure and interpretation of imaging techniques CT of the orbital with:
  - i. Axial/view
  - ii. Coronal view Indications
    - Less effective to identify wood foreign body
    - Effective to identify metallic objects
    - In cases of suspected orbital haemorrhage
- If diagnosis is uncertain or surgery is considered
- 5. MRI -procedure and interpretation of imaging techniques

## Indicates

Provides the best resolution of the soft tissues

## Note

The use of an MRI can result in the redevelopment of the foreign body

## Contraindications

In the presence of magnetic and metallic foreign bodies and individuals with cochlear implants, intracranial aneurysm clips, cardiac pace makers and defibrillators, Orbit signs to look for include

- Proptosis
- Subconjunctival haemorrhage
- Afferent pupillary defect
- Motility restriction
- Lop due to orbital congestion
- Choroidal folds

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Central retinal pulsation  
Globe displacement

ESR - Westergren erythrocyte sedimentation rate (47mm/hour)

CRP-C-Reactive protein (2.5mg/dL)

VDRL

FTA-ABS

ANA

ACE

Antiphospholipid antibodies

Clothing factors

## **PROJECT FORMAT:**

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Certification

Dedication

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Abstract

## **CHAPTER ONE**

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1.2 Statement of problem/research questions

1.3 Aim and objectives of study

1.4 Research hypotheses

1.5 Justification of study

1.6 Scope of study

## **CHAPTER TWO**

Review of related literature (This should contain subheadings as may be desirable)



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## **CHAPTER THREE**

Materials and Methods (This should also contain sub-headings).

## **CHAPTER FOUR**

Results, Analysis and Interpretation of Data

## **CHAPTER FIVE**

Discussion, Conclusion and Recommendations (This chapter contains the project's contribution to knowledge).

## **REFERENCE (APA STYLE)**

## **APPENDIX**

## **INTERNSHIP PROGRAMME**

In pursuance of the law establishing the profession of optometry, graduates are statutorily required to undergo compulsory one-year continuous internship training under the supervision of a registered and licensed optometrist from the Optometrists and Dispensing Opticians Registration Board of Nigeria (ODORBN) at approved internship centres (hospitals, research institutes, private clinics and other institutions). Full registration, which is accompanied by issuance of licence to practise as an Optometrist is granted after successful completion of the internship programme. It is after this internship programme that those within the allowable age bracket proceed to the National Youth Service Corps (NYSC) programme.

Please note:

- (1) Graduands should collect logbooks, for the one-year internship programme.
- (2) The Board should be informed on commencement of Internship (by forwarding the letter of appointment). During the internship training, interns are expected to go round all the departments/units in the approved training institution. A practising optometrist is expected to supervise the intern in every department/unit. He/she should be rotated and the logbook countersigned by the Optometrist before the intern moves to other department/unit. This is compulsory in order for the Board to ensure participation in the internship programme. An intern is

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said to have successfully completed the internship programme by having his/her logbook countersigned not only by the Heads of the various department/units but also the Head of the approved institution. After completion of internship, is submitted to the Council and permanent licence is issued for the National Youth Service Corps.

**COURSE OUTLINE - 100 LEVEL**

<b>COURSE CODE</b>	<b>TITLE</b>	<b>LEVEL</b>	<b>CREDIT</b>	<b>SEMESTER</b>
BIO1201	General Biology I	1	2	1
BIO1203	General Biology II	1	2	1
CHM1231	Inorganic Chemistry	1	2	1
CHM1241	Organic Chemistry	1	2	1
PHY1210	Mechanics	1	2	1
PHY1230	Behaviour of Matter	1	2	1
PHY1170	Physics Practicals I	1	1	1
MTH1301	Elementary Mathematics I	1	3	1
GSP1201	Use of English	1	2	1
BIO1202	General Biology II	1	2	2
BIO1204	General Biology IV	1	2	2
CHM1251	Physical Chemistry	1	2	2
CHM1261	Practical Chemistry	1	2	2
PHY1220	Electricity And Magnetism	1	2	2
PHY1180	Physics Practicals II	1	1	2
MTH1303	Elementary Mathematics III	1	3	2
GSP1202	Use of Library, Study Skills & ICTS	1	2	2

## COURSE OUTLINE - 200 LEVEL

COURSE CODE	TITLE	LEVEL	CREDIT	SEMESTER
PYS2102	Blood and Body Fluids	2	1	1
ANA2142	Histology I	2	1	1
ANA2123	Embryology I	2	1	1
OPT2215	Behavioural Science for Healthcare Professionals	2	2	1
PSY2223	Gastro-Intestinal Physiology I	2	2	1
OPT2211	Introduction/History of Optometry	2	2	1
OPT2121	General Principles and Cell Physiology	2	1	1
GSP2206	Peace and Conflict Resolution	2	2	1
GSP2201	Use of English	2	2	1
CSC2201	Introduction to Computer Science 2	2	2	1
BCH2211	General Biochemistry 1	2	2	1
ANA 2311	General Anatomy I (Musculoskeletal System, Upper & Lower Limbs)	2	3	1
ANA2124	Embryology II			
PYS 2242	Neurophysiology I	2	2	1

BCH2107	Practical Biochemistry	2	1	2
ANA2143	Histology II	2	1	2
OPT2321	Physical Optics	2	3	2
MCB 2201	General Microbiology	2	3	2
PSY2225	Endocrine Physiology I	2	2	2

### COURSE OUTLINE - 200 LEVEL

Course Code	Title	Level	Credit	Semester
PSY2232	Endocrinology II	2	2	2
PSY2222	Gastrointestinal Tract II	2	2	2
PSY2212	Cardiovascular System I	2	2	2
GSP2205	Logic and Philosophy	2	2	2
GSP2204	Foundation of Nigeria Culture, Government and Economy	2	2	2
GSP2202	Use of Library, study skills & ICTs	2	2	2
COM2201	Biostatistics	2	2	2
BCH2214	General Biochemistry II	2	2	2
GSP2206	Peace Studies and Conflict	2	2	2
ANA2362	Gross Anatomy II (Thorax, Abdomen, Pelvis & Perineum)	2	3	2

## COURSE OUTLINE - 300 LEVEL

COURSE CODE	TITLE	LEVEL	CREDIT	SEMESTER
OPT 3317	Ocular Anatomy I	3	3	1
OPT3213	Neuroanatomy	3	2	1
OPT3201	Neurophysiology	3	2	1
EEP3204	Enterpreneurship	2	3	1
OPT3413	Physiological Optics I	3	4	1
OPT3212	Head And Neck Anatomy	3	2	1
OPT3310	Behavioural Sciences For Health Professionals	3	3	1
OPT3311	General Pathology	3	3	1
OPT331	Ocular Biochemistry	3	3	1
OPT3222	Geometric Optics	3	2	2
OPT3305	Ocular Physiology	3	3	2
OPT3327	Ocular AnatomyII	3	3	2
OPT3321	General Pharmacology	3	3	2
OPT3421	General Optometry	3	4	2
OPT3424	Physiological Optics II	3	4	2
OPT3422	Ocular Pathology 1	3	4	2
EEP 320	Entrepreneurship and Innovation	3	2	2

## COURSE OUTLINE - 400 LEVEL

COURSE CODE	TITLE	LEVEL	CREDIT	SEMESTER
OPT431	Optometric Computer Appreciation	4	3	1
OPT4415	Ophthalmic Optics	4	4	1
OPT4315	Binocular Vision And Fusion	4	3	1
OPT4212	General Optometry 1	4	2	1
OPT4310	Diagnostic Optometry 1	4	3	1
OPT4316	Community Eye Health or (Epidemiology/Public Health)	4	3	1
OPT4413	Ocular Pathology	4	4	1
EEP 4201	Venture Creation and Growth	4	2	1
OPT432	Biostatistics	4	3	2
OPT434	Ophthalmology Clinical posting	4	3	2
OPT4326	Anomalies Of Binocular Vision (Both Motor And Sensory)	4	3	2
OPT 4322	Ocular Pharmacology I	4	3	2
OPT4426	Clinical Optics 1	4	4	2
OPT4421	Diagnostic Optometry II	4	4	2
OPT4522	Diagnostic Optometry III	4	5	2

## COURSE OUTLINE - 500 LEVEL

COURSE CODE	TITLE	LEVEL	CREDIT	SEMESTER
OPT531	Radiological clinical posting	5	3	1
OPT533	Optometry Managed Care	5	3	1
OPT5317	Clinical Optics II	5	3	1
OPT5413	Clinical Procedures and Practice	5	4	1
OPT5316	Visual Analysis	5	3	1
OPT5311	Contact Lens Practice I	5	3	1
OPT5318	Environmental and Preventive Optometry	5	3	1
OPT5319	Orthoptics and Vision Therapy	5	3	1
OPT5414	Ocular Pathology III	5	4	1
OPT5422	Ocular pharmacology, therapeutics and toxicology	5	4	1
OPT544	Community Eye care	5	4	2
OPT5424	Clinic Procedure and Practice II	5	4	2
OPT5327	Visual Analysis II	5	3	2
OPT5325	Low Vision/Ocular Prosthesis	5	3	2
OPT5320	Ocular Emergencies	5	3	2
OPT5329	Research	5	3	2



OPT534	Medical laboratory posting	5	3	2
OPT532	Applied Microbiology	5	3	2
OPT522	Sports vision	5	2	2

## COURSE OUTLINE – 600 LEVEL

Course Code	Title	Level	Credit	Semester
OPT6315	Primary Eye Care Clinic (Long Vacation)	6	0	Long Vacation
OPT6117	Community Eye Health II	6	1	1
OPT6010	Thesis	6	0	Long Vacation
OPT6311	Paediatric Optometry	6	3	1
OPT6417	Pre and Post Surgical Co-Management	6	4	1
OPT6038	Primary Eye Care Clinic I	6	0	1
OPT6312	Contact Lens Practice II	6	3	1
OPT631	Accident & Emergencies	6	3	1
OPT621	Professionalism in Health care Practice	6	2	1
OPT6326	Primary Eye Care Clinic II	6	3	2
OPT6121	Geriatric Optometry	6	1	2
OPT6621	Thesis	6	6	2
OPT6229	Hospital Practice	6	2	2
OPT6321	Visual Psychology and Psychopathology	6	3	2
OPT6341	Practice Management, Ethics and Jurisprudence	6	3	2
OPT632	Behavioural Optometry	6	3	2

OPT633	Advocacy in Optometry	6	3	3
OPT634	Pre & Post-Surgical Co- Management	6	3	4

## **COURSE DESCRIPTION**

### **COURSE DESCRIPTION**

#### **BIO 1201: GENERAL BIOLOGY**

##### **DESCRIPTION:**

Morphology and life cycles of plants and animals, a general study of plant and animal groups from algae/fungi to chordates. Structural and functional study of plants and animal (cells, tissues, organs and systems). Elements of biological chemistry inorganic and micro molecules relevant to life – enzymes and cellular metabolism. Taxonomic, physiologic and developmental studies of plants and animals. Reproduction, genetic-hereditary substances, mechanism of nuclear division and stem formation; evaluation, natural selection and evolution as a continuous process, study of the environment from the ecological viewpoint.

#### **BIO 1202: GENERAL BIOLOGY II (ZOOLOGY II)**

##### **DESCRIPTION:**

A generalised survey of the animal kingdom based mainly on study of similarities and differences in their external features with examples from the platyhelminths, annelids, anthropoids, fishes, amphibians, reptiles, birds and mammals

#### **BIO 1203: GENERAL BIOLOGY III (BOTANY I)**

##### **DESCRIPTION:**

Plant cell structure and organisation: Functions of plant cell organelles, diversities, characteristics and classification of plants; plant reproduction; heredity and evolution; elements of ecology and types of habitat.

### **BIO 1204: GENERAL BIOLOGY III (BOTANY I)**

#### **DESCRIPTION:**

A generalised survey of plant kingdom based mainly on study of similarities and differences in their external features with examples from viruses, bacteria, protozoa, algae, fungi, bryophytes, pteridophytes, gymnosperms and angiosperms

### **CHEM 1230: INORGANIC CHEMISTRY**

#### **DESCRIPTION:**

Principles of atomic structures, isotopes, empirical and molecular formulae, electronic configuration, periodicity, and building up of the periodic table; Hybridisation and shapes of simple molecules; extraction of metals; comparative chemistry of Group 1A and 1V elements; preparation, properties, structures and applications of some selected compounds. Introduction of transition metal chemistry and nuclear chemistry.

### **CHEM 1240: ORGANIC CHEMISTRY**

#### **DESCRIPTION:**

Historical survey of the developmental and importance of organic compounds, homologous series, covalent bonds and hybridization to reflect the tetravalency of carbon in organic compounds, electronic theory in organic chemistry, Qualitative and quantitative organic chemistry, determination of empirical and molecular formula, simple techniques of writing structural formulae. Isolation and purification of organic compounds; saturated hydrocarbons, structural isomerism; properties and reactions of alkanes and cycloalkanes, mention of their chemistry and uses in petroleum; unsaturated hydrocarbons; alkenes, cycloalkenes, alkynes, cycloalkynes; cis-trans isomerism; simple electrophilic addition reaction; polymerization.

## **CHEM 1250: PHYSICAL CHEMISTRY**

### **DESCRIPTION:**

Principles of atomic structures, isotopes, empirical and molecular formulae, nuclear structures, atomic fission and nuclear energy, the electronic structure and arrangement of electron in atoms; electronic configuration of 1st and 2nd rows of elements; properties of gases; equation of state, kinetic and molecular theory of gases and heat capacities of a gas; equilibrium and thermodynamics; thermo chemistry, enthalpy of reaction, bond energies, thermodynamics cycle, Hess' law, Born Haber Cycle, the meaning of  $K_a$ ,  $K_p$  and  $K_c$ , Le Chanteliers principles, PH, ionic equilibrium, buffers indicators, solubility products, common ion effect, redox reaction, electrode potentials, electrolytes and electrolysis, kinetics; the position of equilibrium and the rate at which it is attained; factors affecting the rate of reactions, introduction of activation and catalysis.

## **CHEM 1270: PRACTICAL CHEMISTRY**

### **DESCRIPTION:**

Laboratory instruction and experimental products shall be conducted for candidates from the following subject area; Physical: determination of heats reaction, effect of solutes on boiling points of solvents, partition coefficient; determination of molecular mass by Dumas and Victor Meyer methods, Measurements of rate of equation and activation energy; other experiments based on the scope of lectures and as approved by the Department.

Organic: Safety precaution instructions, classification of organic compounds by their solubility in common solvents; Quality analysis for common elements in organic compounds; identification and classification of acids and bases functional groups; identification of the following: neutral functional groups, alcohols, aldehydes, ketones, esters, anhydrides and others; Acetylation of aniline as an example of preparation of solid aniline derivative; an electrophilic addition reaction

Inorganic: Qualitative and quantitative analysis; molarity, concentration and percentage purity.

## **PHY 1210: MECHANICS**

### **DESCRIPTION:**

Space and time, mass frames of reference, units and dimension, kinematics, fundamental laws of mechanics, statics and dynamics; Galilean invariance, Universal gravitation; Work and energy; Rotational dynamics; angular moments conservation laws.

## **PHY1220: ELECTRICITY AND MAGNETISM**

### **DESCRIPTION:**

Electrostatics: Conductors and currents; Dielectrics, magnetic fields and induction; Maxwell's equations; Electromagnetic oscillation and waves and their application.

## **PHY1230: BEHAVIOUR MATTER**

### **DESCRIPTION:**

Molecular treatment of properties of matter, elasticity: Hooks' law, Young's shear and bulk model: Hyderstacles, streamlines, Bernoulli and continuity equation. Turbulence, Reynolds number, Viscosity: Laminar flow, Poiseuille's equation: Surface tension; adhesion, cohesion, capillarity, drops and bubbles; Temperature; the eroth law of thermodynamics; heat; gas; laws of thermodynamics; kinetic theory of gases, Application.

## **PHY 1170/1180: PHYSICS PRACTICAL**

### **III DESCRIPTION:**

This introductory course emphasizes quantitative measurements. The treatment of measurement errors, and graphical analysis. A variety of experimental techniques will be employed. The experiments include studies of matter of the oscilloscope, mechanical systems, electrical and mechanical resonant systems, viscosity, etc, covered in the above physics course.

## **MTH 1301 ELEMENTARY MATHEMATICS I (Algebra and Trigonometry)**

### **DESCRIPTION:**

Elementary set theory: subsets, unions, intersections, complements, venn diagrams, real numbers, integers, Rational and irrational numbers, real sequences and series, Theory of quadratic equation, binomial theorem, circular measure, trigonometric functions of angles of any magnitude, trigonometric formulae.

### **MTH1303: ELEMENTARY MATHEMATICS II (Calculus)**

#### **DESCRIPTION:**

Function of a real variable, graphs, limits and idea of continuity. The derivative, as limit of rate of change; integration as an inverse of differentiation; method of integration, definite integrals; Applications areas, and volumes.

### **200 LEVEL COURSES**

#### **ANA2311: MUSCLOSKELETAL SYSTEM, UPPER AND LOWER LIMBS**

##### **DESCRIPTION:**

The pectoral girdle and associated joints (Sternoclavicular, acromioclavicular) Muscles acting on the shoulder joint, The axilla and Brachia plexus, The anatomy of the breast, blood supply. Venous drainage and lymph drainage, Flexor and Extensor compartment of the arm, the elbow joint, and the muscles acting on it. The flexor and extensor compartments of the fore-arm, wrist joints, and muscles acting on it. The anatomy of the hand, the blood supply and anastomosis of the upper limb (around scapula, humerus, elbow and hand). dermatomes of the upper limb, posture and locomotion in man, the low limb introduction. Lymphatic and venous drainage, blood supply of lower limb. The thigh posterior compartment clinical aspects. Drainage of limbs. The high anterior medial posterior compartment, popliteal fossa: the hip joining, etc. Leg anterior, lateral and posterior compartment; Dorsum of foot, knee joint and muscles acting on it. Inversion and Eversion. Ankle joint, muscles acting on it. dermatomes of the lower limb

#### **ANA 2301:IDSTOLOGYIBASIC EMBRYOLOGY ( 3 UNITS) DESCRIPTION:**

Basic Tissues: types, classification and functions/characteristics of the following tissues types (i.e. the four basic tissues): Epithelial tissue; connective tissues; muscular tissue; nervous tissue.

##### **Systems Histology**

Gastro-intestinal tract and the associated glands; lymphatic and cardiovascular system; sense e.g. skin, eye, nose, brain, spinal cord, tongue and ear, reproductive system (testis and ovary).

##### **Basic Embryology**

Germ cells, gametogenesis, menstrual cycles, endometrium, bilemar germ disc; main events of embryo period (3rd to 9th month).

Lecture Plan: (2 hours of lecture/week; 1 unit of lab/week)

Week 1/3 Tissue types, classification and functions of the four basic tissues: epithelial tissues, connective tissues, muscular tissues and nervous tissues.

Week 4 Gastro - intestinal tract and the associated glands

Week 5 Lymphatic, cardiovascular system

Week 6/8 Sense, organs-eye, nose, brain, spinal cord, tongue and ear

Week 9 Reproductive system-tissues and ovary

Week 10/11 Germ cells, gametogenesis, menstrual cycle, endometrium, bilemar, germ disc

Week 12 Main events of embryo period (3rd and 8th week)

Week 13 Main events of foetal period (3rd and 9th month)

Week 14 Revision

## **ANA2243: HISTOLOGY**

### **DESCRIPTION**

Method of Histology and Cytology. Direct observation of living tissues and cells. Examination of killed tissues: differential centrifugation. Histochemical methods: principle of microscopic analysis X-ray Diffraction. The cell nucleus, Cytoplasm, cell membrane, chemical composition of protoplasm, macromolecules, etc. cell division-mitosis, Meiosis, factors affecting cell division, Epithelium-

Classification, Structural Features, Specialisation, function blood – formed elements of blood, blood cell formation, destruction of blood cells. The bone marrow, etc, connective Tissue proper Extracellular components, cellular element chemistry, function, classification, histological features histogenesis and hisphysiology, etc.

The bone classification, chemistry development, etc. Muscular tissue types of muscle, chemistry, molecular basis of muscular contraction, histogenesis and regeneration of muscular tissues. The nervous structure, types, distribution. Peripheral nerve ending, neuroglia, synapse and the relationship of nervous development of **nerves, etc.**

### **ANA 2123: EMBRYOLOGY**

#### **DESCRIPTION**

Oogenesis and ovulation mitotic changes in oocytes, formation and function of zonapellucida, follicular reaction and reproduction, growth, preovulatory menstruation ovulation free of follicle post ovulation atresia, spermatogenesis and the spermatozoon, testis before and at puberty somniferous epithelium. The spermatozoa, spermatogenic cycles and seasons – puberty, oestroys and menstruation cycles, ovulation, pseudo pregnancy and pregnancy. Delay of reproduction, fertilisation egg and sperm transport. Capacitation, acrosome reaction and sperm penetration, immediate response to sperm penetration, pronuclear development and syngamy, error of fertilisation. Fertilisation in vitro pre embryonic cell differentiation, fetal membrane, implantation and formation of placenta at birth.

### **ANA 2143: HISTOLOGY II**

#### **DESCRIPTION:**

Blood vascular system, fine structure of capillary wall, arteries, veins, the heart, histogenesis of blood vessels and heart, impulse conducting system, lymphatic systems vessels, organs lymph nodes, function, histogenesis and regeneration, the thymus - histological organization, function, involution thymus, mammary gland, resting and active function-endocrine system, reproductive system (Male & Female) urinary systems GIT.

### **ANA 2124 EMBRYOLOGY II**

#### **DESCRIPTION:**

Embryogenesis – differentiation of embryonic area formation of primary axial structure, differentiation of the intra embryonic mesoderm, Germ layer and derivation, embryo, the limbs, outline of development of the Nervous system, early development of the Alimentary canal, the face, separation of the nose and the mouth, Differentiation of mid-gut and hind gut, blood vascular system: Development of blood corpuscles, formation of primitive blood vessels, etc. Coelom and Diaphragm, congenital malfunctions.



## **ANA 2362: THORAX & ABDOMEN, PELVIC & PERINEUM DESCRIPTION:**

Shape framework of the thorax, surface anatomy, the lungs, apertures of the thorax, respiratory movement, superficial structure (the muscles), intercostal arteries and veins, internal thoracic artery, mediastinum (superior and inferior), middle, anterior and posterior, lateral parts and pleural root of the lungs, lobes of the lungs, intrapulmonary structure, the trachea, sternocostal surface of the heart, surface anatomy of the heart chambers of the heart, structure of the heart, myocardium and conducting system, the aorta, esophagus, Thoracic duct, sterna joints, sternocostal joints, interchondral joints, Costochondral joints, costovertebral joints, joints and ligaments of the vertebral column, anterior and posterior Abdominal walls, peritoneum, Anatomy of male and female reproductive system, superficial/deep perineal pouches.

## **ANA 2362: GROSS ANATOMY II (3 UNITS)**

### **DESCRIPTION:**

Gross anatomy and osteology of the Head and Neck region. Dissection and examination of the different parts of the head and neck regions. General circulation, drainage of the head and the neck.

The sense organs:

Lecture Plan: (2 hours of lecture/week: 1 unit of lab/week).

Week 1/4 Gross Anatomy and osteology of the head and neck region

Week 5/7 General circulation, drainage of the head and neck region.

Week 8/12 The sense organs

Week 13/14 Revision

## **MCB 2301 PRACTICAL GENERAL MICROBIOLOGY (2 UNIT) DESCRIPTION:**

This course is a two units laboratory practical course that runs at the same time with MCB 2301. During the period of this course, students will be taught basic staining and identification techniques in microbiology. They will also be taught the cultural and biochemical methods of characterizing microbes as well as how to perform simple microbial counts.

## **MCB 2301 GENERAL MICROBIOLOGY (3 UNITS)**

### **DESCRIPTION:**

This course will examine the historical development and scope of microbiology. Fundamental structure and functions of the microbial cell would be examined. General characteristics of microorganisms, growth and reproduction, sterilisation and disinfection: prokaryotes and eucaryotes and Protista will be examined.

### **Course Outline**

- Week 1: Detailed introduction to microbiology: characteristics of living things; differences between plants and animals. Lower Protista.
- Week 2: Definition and scope of microbiology; pioneer works of Lweuwenhoek, Pasteur, etc. theories of spontaneous generation and abiogenesis, germ theory of disease. Koch's postulation; the origin of viruses.
- Week 3: Morphology and structure of bacteria, cytology of the bacterial cell. Forms and arrangements of structural components.
- Week 4: Growth and reproduction: definition of growth. Patterns of growth, measurement of microbial growth.
- Week 5: Sterilisation and disinfection; control of microbes through the use of physical and chemical agents; modes of action of microbiocidal and microbiostatic agents. Aseptic techniques in microbiology.
- Week 6: Taxonomy, nomenclature in bacteriology; classification and identification of bacteria, cultural and biochemical characteristics of bacteria.
- Week 7: Metabolism, variation and genetics. Nutritional requirements of bacteria; energy metabolism and energy carrier molecules. Basic genetic constitutions of prokaryotes. Genetic transfer in bacteria.
- Week 8: Microbes and diseases; types of infection, virulence and mechanisms of pathogenesis natural and artificial immunity.

Antibodies and antigens. Types of antigen• antibody reactions.

Week 9: viruses, rickettsia, chlamydia, moulds and yeasts, morphology and pathogenesis.

Week10: Water and sewage microbiology, water-borne diseases, indicators of water pollution.

Week 11: Purification of water for drinking, sewage treatment.

Week 12: Food microbiology: factors influencing the kinds of microorganisms in food. Food qinfection and good poisoning.

Week 13: Food borne diseases. Bacteriological examination of food. Food hygiene and preservation.

Week 14: Industrial microbiology: classes of microbes, industrial importance. Industrial uses of micro-organisms. Yeasts and fermentation

### **BCH2211: GENERAL BIOCHEMISTRY**

#### **DESCRIPTION:**

Chemistry of biomolecules: Acid - base and PH, buffers chemistry of amino acids, carbohydrates, lipids and nucleic acids, structure and function of proteins.

### **BCH 2214: GENERAL BIOCHEMISTRY II**

#### **DESCRIPTION:**

Metabolism and inborn errors of metabolism, metabolism of carbohydrates, lipids, amino acids and proteins, replication, transcription and translation of nucleic acids.

### **BCH 2214: INTRODUCTORY BIOCHEMISTRY II (3 UNITS)**

#### **Lecture Topics**

Week 1: Metabolism and its function. Metabolic pathway. Definition of mode of action, characteristics. Regulation and nomenclature.

- Week 2: Simple enzyme kinetic. Definition of kinetic terms and graphical representation of enzymes kinetics. Carbohydrate metabolism.
- Week 3: Cellular metabolism of sugar: glycolysis, alcohol and acid fermentation. Peptones monophosphate shunt.
- Week 4: Tricarboxylic acid cycle; glyoxylate cycle; mitochondrial oxidative phosphorylation and electron transport.
- Week 5: Glycogenesis, glycogenosis, glyconeogenesis. Disease state related to carbohydrate metabolism.
- Week 6: Lipid metabolism, digestion and absorption of fats. Fatty acids etabolis, 3-oxidation, w-oxidation, ketone bodies and ketosis. Comparism of energy yield in carbohydrate and fatty acid synthesis
- Week 7: Synthesis of steroids and terpenoids.
- Week 8: Digestion of proteins and their absorption, catabolism of amino acids.
- Week 9: Nitrogen balance and urea cycle.
- Week 10: Nucleic acid metabolism. Dynamics of DNA and RNA in the cell synthesis. Breakdown as well as the functions of DNA and RNA.
- Week 11: The biochemical action of peptides and steroid hormones respiration in highetj animals. Oxygen transport.
- Week 12: Photosynthesis: introduction: light reaction, dark reaction and importance of photosynthesis reaction.

### **PYS2101: GENERAL PRINCIPLES AND CELL PHYSIOLOGY DESCRIPTION:**

A brief overview of different fields of physiology and their interrelationship with other fields of science, physiology as a study of life, uniqueness of human physiology - success of human species as a result of the uniqueness, physiology of adaptation, physiology

and homeostasis, regulation of body function, control system of the body: negative feedback mechanism, positive feedback mechanism, Adaptive feedback mechanism, Anatomicity of the body, cell

organelles forms and functions, transport across the cell membrane, active and passive transport.

## **PYS2242 NEUROPHYSIOLOGY**

### **DESCRIPTION:**

Excitation, action potential, Development of resting membranes potential, action potential in skeletal, cardiac and smooth muscles, characteristics of excitable tissues, propagation of action potential in different types of nerve cell. Types of nerve fibre, potential in different types of nerve, salutatory and neighbourhood conductions, synaptic transmission of impulses at a synaptic junction, applied physiology, neuromuscular junction, transmission of impulses at neuromuscular junctions, applied physiology, neuromuscular transmission; morphology of a neuromuscular junction transmission of impulses at neuromuscular junction, applied physiology: myasthenia gravis, muscles; morphology of cardiac, smooth and skeletal muscles, molecular basis of muscle contraction: structure and function of contractile proteins, structure and function of regulatory proteins, mechanism of muscle contraction, excitation and coupling in muscles contraction. Applied physiology of muscle contraction, autonomic Nervous system (ANS) and homeostasis physiology and pharmacology of ANS, basic physiology of ANS, applied physiology of ANS, physiologic anatomy of respiration tract, pulmonary capacities and volume, pulmonary ventilation, gaseous exchange and gas transport, oxyheamoglobin, hemoglobin structure and function, oxyheamoglobin curve and factors affecting respiration and homeostasis role of respiration in acid – base balance, control and regulation of respiration Nervous and chemical controls, respiration insufficiency:-hypoxia, abnormalities of respiration and specific peculiarities of respiratory disease.

## **PYS2102: BLOOD AND BODY FLUID**

### **DESCRIPTION:**

Blood and blood vessels: arteries, arterioles, vein veinules, capillaries, interstitial fluid (IF) and vessels through which they flow. Lymph and lymph vessels, cerebrospinal fluids and their vessels.

## **PYS 2211 CARDIOVASCULAR/RESPIRATORY SYSTEM DESCRIPTION:**

Systemic or greater circulation, pulmonary or lesser circulation, the heart, chamber, capacity, heart walls: atrioventricular and semilunar, cardiac cycle and phases: systolic (contraction) diastolic (relaxation), mechanism of valve functioning, physiologic properties of cardiac muscle. The basis of heart automaticity:

(a) Sinoatrial node (pacemaker)

(b) Atrioventricular node

(c) The bundle of His, Purkinje fibers, experiment heart block, fibrillation, refractory period of cardiac muscle: extra systole external manifestations of cardiac activity: apex beat, heart sounds, bioelectrical activity of the heart and its recordings: standard leads (ECG), chest leads, control cardiac activity, nervous control, reflex control, intracardiac reflex responses, reflex effects of the pericardium, reflex effects of the coronary pulmonary, atria and ventricular vessels, effects of vascular reflexogenic ones. reflex effects of the visceral receptors. effect of the cerebral cortex on cardiac activity; humoral control of cardiac activity, effects of electrolytes: K<sup>+</sup> and Ca<sup>2+</sup> ions, effects of neurotransmitters, effects of hormones: Thyroxine, insulin, Gonadal hormones, Adrenaline and noradrenaline. Heart rate balance, Adaptation to abnormal environments, metabolic rate and temperature regulation.

## **PYS 2221: GASTROINTESTINAL TRACT I DESCRIPTION:**

Introduction to GIT: functions of GIT, methods of studying the functions and structure of the GIT layers, Neural innervation of the stomach. Mixing and propulsion of food in the stomach. Regulation of and humoral control autonomic innervation of the GIT Sympathetic and parasympathetic Gastro-intestinal reflexes, Functional types of movements in the GIT: propulsion and mixing. Humoral control of GIT Motility. Oral cavity: Masticulation, Salivary glands Function of the salivary glands, salivary reflexes. Inhibition of salivary secretion. Physio-anatomical consideration of the stomach: functions of the stomach. Mixing and propulsion of food in the stomach. Regulation of gastric motility. Gastric secretion: composition. properties and functions of gastric juice. Effects of nutrients patterns on gastric secretion. Regulation of gastric secretion. Stomach (gastric) emptying, vomiting, Duodenum: composition, properties and function of pancreatic juice. Effects and

factors which modify its nervous influences, humoral factors, biological rhythms, sex age and posture indices of Cardiac activity. Stroke (systolic volume cardiac output, heartwork, venous return).

Physiologic anatomy of the lungs, lung volumes, breathing, gas exchange, avoid base of nutrient composition on pancreatic secretion. Functions of the liver, composition, properties and functions of bile ejection. Regulation of production of products and secretion of bile by liver. Mechanism of gall bladder emptying. Gall stones. Intestinal glands-villi and microvilli. Types of intestinal digestion, uniqueness of intestinal secretions of enzymes, small intestine motility. Genic, neural, hormonal and intestine reflexes. Intestine-intestinal and intestinal inhibitory reflexes; gastro•intestinal reflex.

## **PYS 2222: GASTROINTESTINAL TRACT II DESCRIPTION:**

Large intestine and rectum, colonic motility, defecation. Control of colonic and rectal motility-myogenic and neural control. Physiology of absorption, Mechanism of absorption. Absorption in mouth, stomach, small and large intestine (Note: absorption of CHO, protein, fats water, Na<sup>+</sup>, K<sup>+</sup>, HC03, etc) location and function of the alimentary center; sensation of satiation, hunger and thirst, appetite. Physiology of Gastrointestinal disorders: Appendicitis, Diarrhea, constipation, cancerous tumors, eating disorders, peptic ulcer, jaundice.

The kidneys, functions of the kidneys, excretion of metabolic wastes, products and foreign chemicals, regulation of water and electrolyte balances. Regulation of body fluids, osmolality and electrolyte concentrations. Regulation of acid base balances: regulation of arterial blood pressure, secretion metabolism and excretion of hormones. Glycogenesis functional unit of kidney, Nephron. Regional differences in nephron structure: cortical and juxtamedullary nephrons. Physiology of urine formation: mechanism of urine concentration counter current mechanism: current multiplier system. Quantity, composition and properties of urine. Glomerular filtration. Tubular reabsorption and secretion, renal clearance. Functions of the renal tubules: determinants of glomerular filtration rate: glomerular capillary filtration coefficient (kf) Bowman's capsule, Hydrostatic pressure. Glomerular capillary, colloid osmotic pressure. Organic solutes that are reabsorbed: glucose, amino acids, organic acids. Peptides and proteins, urea. Inorganic ions that are secreted: Renal handling of H<sup>+</sup> ions.

Inorganic ions that are reabsorbed and secreted,  $K^+$ ,  $Na^+$ . Renal handling of  $Na^+$  and water, renal handling of  $Fe$ , vitamins carbohydrates, proteins, lipids. Real failure-proteinuria. Loss of concentrating and diluting ability. Acidosis, abnormal  $Na$  metabolism, control of glomerular filtration: Activation of the sympathicus. Hormonal and Autacoid control of renal circulation, Angiotensin II. Endothelial derived Nitric Oxide, prostaglandins and bradykinin: Auto regulation of GFR.

### **OPT 2211 HISTORY OF OPTOMETRY (1 UNIT)**

#### **DESCRIPTION:**

This course deals with the historical development of optometry as a profession. Its includes the developments and personalities involved, from the ancients times (days of Hammurabi); the middle centuries, the renaissance period; the seventeenth century, the golden age of optics up to the present period.

#### **Lecture Plan: (1 hour of lecture/week).**

Week 1/2            The

### **OPT 2321: DESCRIPTION:**

#### **PHYSICAL OPTICS (2 UNITS)**

The student taking this course is expected to have taken up the preceding courses in physics. Relevant in this course are: transverse wave or transverse motion of light. Theories of light: Sir Isaac Newton, Christian Huygens' principle. Elemental units of light. The six phenomena of light media. The spectrum, photometry: Luminous/Intensity-illumination, brightness, Lambert flux, solid angle, meter candle, foot candle, lumen, Lambert. The inverse square law, the cosine law of illumination, photometer principle, law of intensity, illumination by line source. Point of light passing through an aperture. Shadow formation.

#### **Lecture Plan: (2 hours of lecture 1 week).**

Week 1            Transverse wave or transverse motion of light. Theories of light: Sir Isaac Newton, Christian Huygens, Thomas young and Freznel, James Clark Maxwell, Max plank,



Einstein

Week 2/4 Elementary units of light. The phenomena of light. The spectrum

Week 5/6 Photometer: Luminous intensity, illumination brightness, luminous flux, solid angle, metre candle, foot candle, lumen lambert

Week 7/8 The inverse square law, the cosine law of illumination

Week 9/10 Photometer principle

Week 11 Illumination by line source

Week 12/13 Point source of light passing through an aperture

Week 14 Shadow formation

## **FIRST SEMESTER COURSE DESCRIPTION**

### **OPT 3213: NEUROANATOMY (3 UNITS)**

#### **DESCRIPTION:**

Gross anatomy of the central nervous system - the brain and spinal cord, Cranial nerves-general course and distribution. Pathways of nerves in the central nervous systems-major descending and ascending tracts. (2 hours of lecture/week; 1 units of lab/week).

### **OPT 3318: GENERAL AND GROSS ANATOMY 1 (3 UNITS)**

#### **DESCRIPTION:**

This will cover terminologies and general principles of Human anatomy, gross anatomy of the upper limb, thorax, abdomen/pelvis and lower limb.

#### **Lecture Plan: (3 hours of lecture; 1 unit of lab/week).**

Week 1/3	Terminologies and general principles of human anatomy
Week 4/6	Gross anatomy of upper limb
Week 7/8	Gross anatomy thorax
Week 9/10	Gross anatomy of abdomen/pelvis
Week 11/12	anatomy of lower limb
Week 13/14	Revision

### **OPT331: OCULAR BIOCHEMISTRY (3UNITS)**

#### **DESCRIPTION**

Introduction to ocular biochemistry. Enzymes and ocular catalyst. The Human Cell. Xenobiosis. Tear film and pH. The duplicity theory. Photochemistry of vision. Vitamin A metabolism and vision. Introduction to metabolic processes affecting the eye. Metabolism of the cornea. Metabolism of the lens. Metabolism of the aqueous humor. Rhodopsin cycle. Metabolism of the vitreous. HMP shunt. Leak-pump mechanism. Metabolism of the retina. Ocular biochemical degradation of the eye. Ageing and pathological processes. Ocular immunochemistry. Ocular neurochemistry.

#### **Lecture Plan: (2 hours of lecture)**

Week 1/2	Introduction to ocular biochemistry. Enzymes and ocular catalyst. The Human Cell. Xenobiosis. Tear film and pH
Week 3/4	The duplicity theory. Photochemistry of vision. Vitamin A metabolism and vision.
Week 5/9	Introduction to metabolic processes affecting the eye.

Metabolism of the cornea. Metabolism of the lens. Metabolism of the aqueous humor. Rhodopsin cycle. Metabolism of the vitreous. HMP shunt. Leak-pump mechanism. Metabolism of the retina

Week 10/12 Ocular biochemical degradation of the eye. Ageing and pathological processes. Ocular immunochemistry. Ocular neurochemistry.

### **OPT3317 OCULAR ANATOMY 1 (3UNITS)**

#### **DESCRIPTION**

Lecture plan (3 hours of lecture/week)

Week1/3 Ocular Embryology and Anatomy of the external adnexa and lids

Week4/6 Conjunctiva

Week7/8 Sclera

Week8/10 Choroid

Week11/13 Retina including blood and nerve supply to all the structures

### **OPT 3406: PHYSIOLOGICAL OPTICS 1 (4 UNITS)**

#### **DESCRIPTION**

A study of the dioptric functions of the visual apparatus consisting of lectures and demonstrations. The eye as an optical instrument. Schematic and reduced eyes, dioptrics of the eye, optical constant, cardinal points, refractive power of surfaces and media. Location and size of retinal image. Visual angle and the size of retinal image

Catoptrics image Amplitude of accommodation and presbyopia.

Emmetropia; refractive status of the eye and optical aberration.

Lecture Plan: (3 hours of lecture/week; 1 unit of lab/week).

Week 1/3 The eye as an optical instrument, schematic and reduced eyes, dioptrics of the eye, optical constant, cardinal points, refractive power of the surface and media.

Week4/5 Location and size of retinal image, visual angle and size of retinal image. Catoptric images.

Week 7/10 Amplitude of accommodation and presbyopia, Emmetropia.

Ocular Embryology

Week 11/14 Refractive status of the eye and optical aberration

## **YEAR THREE**

### **SECOND SEMESTER COURSE DESCRIPTION**

#### **OPT 3311: GENERAL PATHOLOGY (3 UNITS)**

##### **DESCRIPTION:**

Pathology and its subdivisions: The normal cells: the plasma cell coat; cytoplasm and its organelles, the nucleus. Cellular Adaptation: Atrophy, Hypertrophy, Hyperplasia, Metaplasia, Dysplasia, Hypoplasia, Aplasia and Agenesis.

**CELL INJURY AND CELL DEATH:** causes, cellular swelling, cell necrosis and types, somatic death, signs of death, cadaveria changes, cellular aging.

**INFLAMMATION AND REPAIR:** Types of inflammation, Acute inflammatory response and its major components, Hemodynamic changes. Changes in vascular permeability, Leukocytic exudation, and classical signs of acute inflammations.

**EXUDATE:** Types of exudates in acute inflammation. Chronic inflammation, causes and morphologic types of inflammatory reactions, ulcers. Abscesses, granuloma, etc. systemic effects of inflammatory response.

**HEALING AND REPAIR:** Regeneration of body cells involved. Repair of connective tissues. Healing by first intention and by second intention. Aberration of healing, proud flesh, keloid, cicatrix. Factors modifying the reparative process. Terminology of inflammation.

**FLUID HEMODYNAMIC DERANGEMENTS:** Edema, Hyperemia, Congestion, Hemorrhages and terminology, Thrombosis, Microcirculatory thromboses, Embolism, infarction, shock. These are treated as etiology types and variations, associated derangement, clinical: significance, or effect, clinical signs and symptoms.

**VASCULAR DISEASES:** hypertrophy and dilation of the heart. Disease, myocardia disease. Endocardial and vascular disease, tumors of the heart.

##### **GENETIC DISORDERS AND SYSTEMIC**

**DISORDERS:** cytogenetic disorders, down's syndrome. Turner's syndrome, Autosomal recessive disorder. Albinism, Wilson's

disease. Nieman-pick disease. Gaucher's disease, Glycogen storage disease, Diabetes mellitus, Iron storage disorders, Amyloidosis.

**INFECTIOUS DISEASES:** pathogenicity of micro-organisms, host defences, bacterial diseases. Rickettsial diseases. Chlamydial disorder, viral diseases, fungal diseases. Protozoan (parasitic) diseases. Helminthic diseases, of uncertain etiology.

**ONCOLOGY:** Neoplasia: Definitions, Nomenclature, Characteristics, Differentiation of Benign from malignant: carcinogenic agents, etiology and carcinogenesis. Lecture Plan: (3 hours of lecture/week).

Week 1	Pathology and its subdivision: Normal cell; Cellular adaptation
Week 2/3	Cell injury and cell death, inflammation and
Week 4/5	Fluid and Hemodynamic derangement
Week 6	Cardiovascular diseases
Week 7/8	Genetic disorders and systematic disorders
Week 9/10	Infectious diseases
Week 11/12	Oncology
Week 13/14	Review

### **OPT 3201: NEURO-PHYSIOLOGY (3 UNITS)**

#### **DESCRIPTION:**

Detailed functions of the central nervous system and its relationship with the ocular structure and vision. Neu connections of the eye and related structures, general neurology of the human body.

Autonomic innervation of the eye (sympathetic and parasympathetic) and the results of their individual blockades.

Cranial nerves: their origins and routes; with special mention of their innervations of the ocular muscles and other structures.

#### **Lecture plan: (3 Hours of lecture/week).**

Week 1/4	Detailed functions of the central nervous system and its relationship with the ocular structure and vision
Week 5/7	Neural Connections of the eye and related structures.
Week 8/11	General Neurology of the Human Body
Week 12/14	Review of the previous lectures

### **OPT 3305: OCULAR PHYSIOLOGY (3 UNITS) DESCRIPTION:**

This course includes a detailed description of the gross structures of the visual apparatus: the orbit, its contents, and related structures.

Specific description of the physiology of all parts: lids, cornea, **sclera, choroid, iris, lens, retina, humor, lacrimal apparatus, the** cranial nerves, extracular muscles, as well as the process of vision and visual pathway are included. The lectures are aided in the laboratory with coloured charts, models, human skull and actual dissection of bulls eyes.

#### **Lecture Plan: (2 hours of lecture/week; 2 unit of lab/week)**

Week 1/2	Lids, cornea, sclera
Week 3/4	Choroids, Iris, Lens
Week 5/7	Retina
Week 8	Humour, lacrimal apparatus
Week 9/11	The cranial nerves, extraocular muscles
Week 12/14	The process of vision and visual pathway

## **OPT 3222:GEOMETRICAL OPTICS ( 4 UNITS) DESCRIPTION:**

This course deals with the study of the nature, properties and phenomena of light. Reflection and refraction. Formation of images. The influence of mirrors, refractors, curved surfaces, lenses, prisms, ray tracing, varieties of lenses including spherical, cylindrical, spherocylinders, thin and thick, power of lenses. Theory of lens actions. Thin lens equation, magnification, prisms, deviation, prism as vector. Graphical construction in lens combinations, effectivity and equivalence. Aberration, lens formulae and symbols. Neutralisation, transposition, optical cross, decentration and other aspects and principles of optical instruments.

Lecture Plan: (2 hours of lecture/week; 1 unit of lab/week)

Week 1 Nature, properties and phenomena of light

Week 2 Reflection and refraction, formation of images

Week 3/4 The influence of mirror, refractors, curved surfaces lenses, prisms, Ray tracing.

Week 5 Varieties of lenses including spherical, cylindrical sphero-cylinders, thin and thick lenses, power of lens.

Week 6/7 Theory of lens action. Thin lens equation, magnification, prism deviation, prism as a vector.

Week 8/9 Graphical construction in lens combinations, effectivity and equivalence

Week 10 Aberration Lens formulae and symbols, Neutralisation, transportation, optical cross

Week 11 Decentration and other aspects and principles of optical instruments

## **OPT 3422 OCULAR PATHOLOGY 1(4UNITS)**

### **DESCRIPTION:**

The course brings the student to the facts regarding diseases of the anterior segment, including congenital and acquired deformities. The lectures are presented in good details to give students a well-rounded understanding of the basic causes, symptoms and signs of pathology, prognosis, treatment and prevention of the eye diseases the Optometrist is likely to meet. Included under the course are diffitse diseases of the eye and sequelae; cornea, sclera, uveal tract, lens, vitreous, glaucoma, orbit, trauma, and ocular emergencies.

Lecture Plan: (2 hours of lecture/week; 1 unit of lab/week).

Week 1	Included under the course are diffi.tse disease of the eye and sequalae, diseases and abnormalities of the external eye and adnexa
Week 2/3	Conjunctiva
Week 4	Cornea, sclera
Week 5/6	Uveal tract
Week 7	Lens
Week 8/9	Vitreous, glaucoma
Week 10/11	Orbit and lacrimal apparatus
Week 12/14	Trauma, ocular emergencies

### **OPT3327 OCULAR ANATOMY 11(3UNITS)**

#### **DESCRIPTION:**

#### **Lecture plan (3hour of lecture/week)**

Week1/2	Anatomy of the skull and the orbit
Week3/4	Lens and the uvea
Week5/7	The extra-ocular muscles,(their origin and insertion, innervation and blood supply)
Week8/10	The naso-lacrimal glands, tear production
Week11/13	The visual pathway and optic nerve. (The innervation, blood supply and drainage to all the tissue listed must be explained)

### **OPT 3407: PHYSIOLOGICAL OPTICS II (4 UNITS)**

#### **DESCRIPTION:**

Monocular sensory aspects of vision. The eye as a photo detector, iris, pupil, photo-pupil reflex, pupillary reaction; effects of chemical substances/compounds. Disturbances in the neural pathway. Retinal, photo-receptors, photochemistry, retinal-neural connections and neurophysiology. The optic disc. The visual pathway. Nerve impulses and various factors affecting it. Scotopic and photopic vision. Luminous curve, duplicity theory, two retinas theory, rhodopsin and its transformation. The optogram. Rods and cones distinction. Retinal stimulation and resultant changes. Generation of nerve impulses. Retinal sensitivity and visibility. The luminal stimulus. Factors affecting the threshold range of visual operation. Intensity discrination. Least perceptible difference. Psychophysical laws of Fechner. Webers, etc, Laws. Visual fields (briefly treated) repetitive retinal stimulation. Colour vision, theories of colour



vision, colour mixing, adaption and induction, colour blindness.

Lecture Plan: (3 hours of lecture/week; 1 unit of lab/week).

- Week 1/2 Monocular sensory aspects of vision. The eye as a photo detector. Iris, pupil, photo-pupil reflex, pupillary reactions; Effects of chemical substances/compounds. Disturbances in the neural pathway.
- Week 3/4 Retina, photo-receptors, photo-receptors, photochemistry, retinal neural connections and neurophysiology. The optic disc.
- Week 5 The visual pathway, nerve impulse and various factors affecting it.
- Week 6/8 Scotopic and photopic VISION, luminosity curve, duplicity theory, two retinas theory, rhodopsin and its transformation.
- Week 9/10 The optogram, rods and cones distinction. Retinal stimulation and resultant changes. Generation of nerve impulses. Retinal sensitivity and visibility. The luminal impulses. Factors affecting the threshold, range of visual operation
- Week 11 Intensity discrimination. Least perceptible differences. Psychophysical law of Fechner. Weber's etc laws.
- Week 12 Visual fields (briefly treated) repetitive retinal stimulation
- Week 13/14 Colour, vision, theories of vision, colour mixing, adaption and induction, colour blindness.

**OPT 3321: GENERAL PHARMACOLOGY (4 UNITS)**

**DESCRIPTION:**

The scope/branches of pharmacology- special mention of novel arms like pharmacogenetics, immune pharmacology, etc.

Drug: meaning, sources and outline of the processes of preparation. Processes of drug preparation and stages of trial. Patent right. Proprietary and trade name of drugs.

Definitions of basic concepts in pharmacology, pharmacy, pharmacognosy, therapeutic, toxicology, etc. regulation of drugs – OTC and prescription drugs. Methods and routes of administration of drugs with special emphasis on the administration of ocular drugs. Advantages and disadvantages of each method.

**Fundamental concepts:**

Pharmacokinetics, pharmacodynamics, fate of topically administered ophthalmic medications; physiologic factors that influence corneal absorption of drugs. Fate of systematically administered drugs. Prescription writing. Compliance and non-compliance. Adherence and non-adherence (and other terms used for compliance/non-compliance). Action of drugs. Factors influencing it. Compatibility and incompatibility. Tolerance, tachyphylaxis, potentiation, synergism, additive, antagonism, etc.

**Lecture Plan: (3 hours of lecture/week: 1 unit of lab/week).**

Week 1/2	Introduction, meaning, sources and outlines of Drugs
Week 3	Basic concepts in pharmacology
Week 4/6	Routes of administration of ophthalmic preparations.
Week 7/9	Fundamental concepts in ocular pharmacology
Week 10/11	Prescription writing
Week 12/13	Action of drugs
Week 14	Revision

**OPT 3421: GENERAL OPTOMETRY 1 (2 UNITS)**

**DESCRIPTION:** Overview of the refractive status of the eye: concepts of emmetropia and ametropia. Distribution of refractive errors, concept of emmetropization. The major refractive anomalies, each considered as to etiology, pathophysiology, classification, genetics and incidence, associated conditions, signs and symptoms, consideration in examination, prescription, prevention and control. The major ametropias include myopia, hyperopia, astigmatism, review of tests for accommodative function, presbyopia. Accommodative inefficiency and insufficiency, unequal accommodation, paresis of accommodation, Aphakia.

**Lecture Plan:(2 hours of lecture/week).**

Week 1	Overview of the refraction status of the eye, concepts of emmetropia and ametropia
Week 2	Distribution of refractive errors; elements of Refraction
Week 3	Component and correlational ametropia, concept of emmetropization. The major refractive anomalies each considered as to etiology, pathophysiology, classification, genetics and incidence, associated conditions, signs and symptoms, consideration in examination, prescription, prevention and control.
Week 4/5	Myopia
Week 6/7	Hyperopia
Week 8/9	Astigmatism
Week 10	Review of tests for accommodative functions
Week 11	Presbyopia
Week 12	Accommodative inefficiency and insufficiency
Week 13	Unequal accommodation
Week 14	Paresis of accommodation, Aphakia.

## **YEAR FOUR**

### **FIRST SEMESTER- COURSE DESCRIPTION**

#### **OPT401: OPTOMETRIC COMPUTER APPRECIATION (3UNITS)**

##### **DESCRIPTON**

Introduction to computer application software using any four (4) of the following major software applications. Review of Database Software Design. Introduction to basic manipulation and troubleshooting. Digital optometric instruments. Software design for Ocular Coherence Tomography. Software Design for Central Visual Field. Software packages for Pachymetry. Software Packages for Biometry. Use of Computer appreciation in practice management. Digital Imaging. Data sharing/exchanging. Diagnostic coding. Computerized clinical support. Electronic referral. Computer guided clinical review and interviews. Dispensing software. Digital IPD meters. Software behind automated lensometry. Software packages for autorefractor/autokeratometry. Introduction to Artificial Intelligence in Optometry

Lecture Plan: (3 hours of lecture/week: 1 unit of lab/week).

Week1/2 Introduction to computer application software using any four (4) of the following major software applications. Review of Database Software Design.

Week3/6 Introduction to basic manipulation and troubleshooting. Digital optometric instruments. Software design for Ocular Coherence Tomography. Software Design for Central Visual Field. Software packages for Pachymetry. Software Packages for Biometry.

Week7/10 Use of Computer appreciation in practice management. Digital Imaging. Data sharing/exchanging. Diagnostic coding. Computerized clinical support. Electronic referral. Computer guided clinical review and interviews.

Week11/13 Dispensing software. Digital IPD meters. Software behind automated lensometry. Software packages for autorefractor/autokeratometry. Introduction to Artificial Intelligence in Optometry

## **OPT402: BIOSTATISTICS (3UNITS)**

**DESCRIPTION:** Introduction to biostatistics. Variables and data. Methods of data collection. Data presentation and summarization. Descriptive statistics. Central tendency and Variability. Probability sampling. Normal distribution. Central limit theorem. Inferential statistics. Confidence interval estimation. Introduction to Hypothesis testing. Parametric tests. Non-parametric tests. Test of difference (Z-test, T-test, F-test and Chi-square ( $X^2$ )). Test of Relationships (correlation and regression). The general linear model.

### **Lectur1/e Plan: (2 hours of lecture/week**

- Week1/2 Introduction to biostatistics. Variables and data. Methods of data collection. Data presentation and summarization.
- Week3/6 Descriptive statistics. Central tendency and Variability. Probability sampling. Normal distribution. Central limit theorem. Inferential statistic. Confidence interval estimation.
- Week7/9 Introduction to Hypothesis testing. Parametric tests. Non-parametric tests.
- Week10/13 Test of difference (Z-test, T-test, F-test and Chi-square ( $X^2$ )). Test of Relationships (correlation and regression). The linear model.
- Week 14 Review

## **OPT404 OPHTHALMOLOGICAL CLINICAL POSTING (3UNITS)**

### **DESCRIPTION:**

#### **Lecture Plan: (16 hours/ week of clinical exposure)**

- Week1/2 Comprehensive vision and eye health examination. Preliminary eye examinations. Visual acuity assessment. Glaucoma clinical diagnostic evaluation. Cataracts clinical diagnostic evaluation.
- Week3/4 Ocular effects of many general health disorders. Eye Diseases. Ocular persistent vision loss. Flashes and floaters. Foreign body removal. Pressure patching. Pre-operative assessment. Post-operative assessment. Ocular first aid. Use of the Schematic eye. Minor ophthalmic procedure.
- Week5/6 Introduction to ocular Anaesthesia. Interpretation of OCT results. Interpretation of CVF results. IOL Calculation. Slit lamp

biomicroscopy examination. Binocular Indirect Ophthalmoscopy.  
Ocular biometric examination. Introduction to ophthalmic  
surgical procedures.

### **OPT4415: OPHTHALMIC OPTICS (4UNITS)**

**DESCRIPTION:** The history and development of ophthalmic lenses. Introduction to the manufacture of glasses: components, stops, defects, and how to prevent them, common composition of the different types of glasses including materials for tinting materials used for making lenses. Determination of lens and prism power; neutralisation. Sphere• cylinders and their classification, flat transport, toric lenses and single vision transportation. Lens blanks classification, vertex powers. Grinding procedure. Defects, blocking, types of abrasives, emeries, and roughes. Bifocals, history of development and types. Double vision toric transposition. Oblique cross cylinders. Thick lenses, current expressions for thick lens powers; equivalent power/vertex power, back vertex power, centre thickness, their calculation and checking. Prisms; calculations and grinding, effectivity, prentice rule. Lens and prism calculation and grinding formulae included.

#### **Lecture Plan: (3 hours of lecture/week; 2 unit of lab/week).**

Week 1	The history and development of ophthalmic lenses, introduction to the manufacture of glasses, stops, defects and how to prevent them, common composition of the different types of glasses including materials used for making lenses.
Week 2	Determination of lens and prism power; Neutralization
Week 3	Sphero cylinder and their classification
Week 4	Flat transportation
Week 5	Toric lenses and single vision transposition. Lens blanks classification, vertex power.
Week 6/8	Grinding offences and prisms, grinding procedures, defects, blocking, types of abrasive, emeries, roughes

- Week 9: Bifocals, history of development and types  
Week 10: Double vision toric transportation  
Week 11: Oblique cross cylinders  
Week 12: Thick lenses. Current expression for thick lens powers, equivalent powers, vertex power, centre thickness and their calculations.  
Week 13: Prisms, calculations and grinding effectivity, prentice rule, lens and prism calculations and grinding Formulae  
Week 14: Review

### **OPT 4315: BINOCULAR VISION AND FUSION (3 UNITS) DESCRIPTION:**

The extra ocular muscles, innervations and innervational control, electrophysiology ocular motility, versions vergences, duction, torsions, associated and conjugated movements. Fusion, binocular vision, visual projections and space perception. Fixation disparity, horopter, stereopsis. The cyclopean eye, phorias and tropias. Convergence, accommodation and convergence relationship.

#### **Lecture Plan: (3 hours of lecture week).**

- Week 1 Ocular muscles innervations and innervational control, electrophysiology.
- Week 2 Ocular motility: versions  
Week 3 Vergences  
Week 4 Ductions  
Week 5 Torsions  
Week 6 Associated and conjugated movements  
Week 7/8 Fusion, binocular vision  
Week 10 Fixation disparity, horopter, stereopsis  
Week 11 The cyclo eye  
Week 12/13 Phorias and tropias  
Week 14 Convergence, accommodation and accommodation convergence relationship.

## **OPTS 4212: GENERAL OPTOMETRY II (2 UNITS)**

### **DESCRIPTION:**

An overview of clinical procedures and consideration in arriving at a proper diagnosis of non-refractive ocular problem, the concept of differential diagnosis, case history, especially in the case of ocular complaints and asthenopia. Ocular signs and symptoms. Headaches, fatigue, neurosis and psychogenic problems. General health conditions of the eye, ocular manifestations of systematic diseases. Visual agnosia, hysterical amblyopia and analysis of reaction to the structure surrounding the eyes. Drugs and ocular effects.

### **Lecture Plan: (2 hours of lecture/week).**

Week 1	Case history, ocular complaints, signs and symptoms
Week 2	Differential diagnosis headaches, fatigue, neurosis and psychogenic problem
Week 3	General health and influence of general health on conditions of the eye
Week 4/5	Ocular manifestations of systemic diseases
Week 6/7	Visual agnosia and hysterical amblyopia
Week 8/9	Analysis of the reaction to stress of the anatomical structural surroundings of the eye
Week 10/11	Drugs and ocular effect
Week 12	Revision

## **OPT 4421: DIAGNOSTIC OPTOMETRY 11(4 UNITS)**

### **DESCRIPTION:**

Orientation on clinical procedures such as preliminary examination, visual acuity in the different forms and their interpretation. Uses of trial case accessories as well as procedures in conducting subjective examination both with the use of a phoropter and trial case.

### **Lecture Plan: (2 hours of lecture/week; 1 unit of lab/week).**

Week 1/3	Visual acuity, the procedure, evaluation, interpretations both at far and at near
Week 4/7	Preliminary examination that includes Pupillary distance; papillary reflex tests, external



	examinations, ocular motility tests, N.P.C
Week 8/10	Trial case accessories, their purpose and interpretation in the visual examination
Week 11/13	Subjective examination with the uses of both phoropter and trial case.
Week 14	Entopic phakometer and review

### **OPT 4413: OCULAR PATHOLOGY 11 (4 UNITS) DESCRIPTION:**

Described under this course are diseases of the retina, diseases of the optic nerve and neural pathway, ocular manifestations of the systematic and localized diseases. The course involves advance

ophthalmoscopy; the students should be able to recognize and differentiate the various retinopathies seen ophthalmoscopically and are expected to produce individually, coloured illustrations of these conditions in the laboratory.

#### **LECTURE PLAN: (2hours of lecture/week;1 unit of lab/week)**

Week 1/5	Diseases of the retina
Week 6/8	Diseases of the optic nerve
Week 9/11	Neural pathway
Week 12/14	Ocular manifestations of systemic and localized diseases.

### **OPT 4316: EPIDEMIOLOGY (3 UNITS) DESCRIPTION:**

This introductory course deals with the principles and methods of epidemiology, which includes the concepts and scope of epidemiology, description and application of the descriptive epidemiological models of person- Time-Place Relationships and Agent-Host-Environment Relationships with respect to specific diseases. Describe the natural history of disease and relate the role of epidemiology in the prevention and control of diseases to it, the derivation and application of epidemiological measures of risk in a population. The concept and practice of screening and disease surveillance in the control of and prevention of diseases (as specific application of epidemiological principles and methods) are explained. The basic principles and techniques of morbidity surveys, case-controls (retrospective) and cohort (prospective) studies must be understood and applied. The application of epidemiological

principles and methods in decision analysis and clinical decision making. Also, the measurements/rates and specific applications of biostatistical techniques in epidemiology are included;

**Lecture Plan: (2 hours of lecture/week).**

- Week 1 Definition and scope of epidemiology. Basic tenets of epidemiology, Epidemiologic model of disease occurrence
- Week 2 The concept of disease, health, disease prevention and populations at risk. Natural history of disease.
- Week 3/4 Description of disease occurrence in populations; person-time-place model
- Week 5/6 Description of disease occurrence in population; Agent-Host-Environment model.
- Week 7/8/9 Epidemiologic measures of Risk of Disease in population: Attack rates, incidence rates, prevalence rates, specific rates, relative risk, attributable risk, etc. adjustment of rate.
- Week 10 Principles of screening in disease control and surveillance
- Week 11 Study designs in epidemiology, morbidity surveys; study design, cohort study design, clinical trial (experimental epidemiology)
- Week 14 Decision analysis and clinical decision making. Measurements/rates and specific applications of biostatistical techniques in epidemiology.

**YEAR FOUR**

**SECOND SEMESTER-**

**OPT 4322: OCULAR PHARMACOLOGY I (3 UNIT)**

**DESCRIPTION:**

Ocular drugs, types and preparations. Routes of administration of ocular drugs. Prescription writing continued. Autonomic drugs.

- a) Cholinergic system: synthesis, storage, release and
- b) of the neurotransmitter. Ach; Cholinergic of the eyes, cholinergic agonist — Ach
- c) inactivation/inactivation

rpine, carbachol, methacholine; anticholinesterase agents; physostigmine, Neostigmine Cholinergic antagonist - atropine, homatropine, tropicamide, cyclopentolate.

- d) Adrenergic system: synthesis, storage, release and inactivation of the neurotransmitter - Adrenaline and noradrenaline, adrenergic inactivation of the eye – adrenaline receptors: adrenergic agonists – adrenaline, phenylephrine, hydroxamphetamine, ephedrine. Adrenergic antagonist – propranolol, timolol. Adrenergic blocking agents, Thymozarnine. Both sympathomimetic, Parasympathomimetic drugs or agents are to be treated thus - Actions, use, side effects and contraindications.

**Lecture Plan: (2 hours of lecture/week).**

Week 1 Ocular drugs and types and preparation  
Week 2 Routes of administration, prescription writing  
Week 3/6 Autonomic drugs  
Week 7 Adrenergic antagonist  
Week 8/9 Cholinergic antagonist  
Week 10/11 Anticholinesterases  
Week 12/13 Treatment of toxic effects of autonomic drugs  
Week 14 revision

**OPT 4426: CLINICAL OPTICS 1(4 UNITS)**

**DESCRIPTION:**

Bench work, terminologies, preparatory procedures, bench work stages. Centering layout, cutting, chipping and cunbling, edging, drilling. Bench work assembly. Lens shapes Description and classification of glasses. Glasses, the frame, frame and mounting specifications and measurements. Preliminary adjustments (trueing); horizontal alignment of glasses, vertical alignment, alignment of temples when opened, alignment of temples when closed, fittings; cosmetic factors, occupational factors, optical factors, special considerations.

**Lecture Plan: (3 hours of lecture/week; 1 unit of lab/week)**

Week 1 Benchwork, terminologies  
Week 2 Preparatory procedures  
Week 3/5 Benchwork stages, centering, layout, cutting, chipping and enunbing, edging, drilling

Week 6 Bench work assembly

Week 7 Lens shape

Week 8 Description and classification of glasses

Week 9 Glasses, the frame, frame and mounting specifications and measurements

Week 10/11 Preliminary adjustments (Trueing); Horizontal alignment of glasses; vertical alignment of glasses; alignment of temples when open, alignment of temples when closed.

Week 12/14 Fitting: cosmetic factors; occupational factors optical factors, special consideration

**.OPT 4326: ANOMALIES OF BINOCULAR VISION (3 UNITS) DESCRIPTION:**

This course involves the study of sensory and motor anomalies of binocular vision. Anomalies of the sensory mechanism refers to perceptual adaptations such as suppression, amblyopia and abnormal retinal correspondence-Anomalies of motor mechanism refer to ocular muscle malfunction that leads to undesirable phorias and tropias.

**Lecture Plan: (3 hours of lecture/week).**

Week 1	Definition, etiology and identification of suppression
Week 2/3	Definition, etiology classification of amblyopia
Week 4	Tests involving identifying and determining depth of amblyopia
Week 5	Definition, etiology of abnormal Retinal correspondence
Week 6/7	Tests involved in differentiating normal from abnormal retinal correspondence.
Week 8	Study of uncompensated heterophoria
Week 9	Anomalies of convergence, both excess and insufficient
Week 10/11	Classification of strabismus
Week 12/13	Investigation of strabismus that includes duction, concomitance and angle of deviation
Week 14	Review

### **OPT 4421: DIAGNOSTIC OPTOMETRY II (4 UNITS)**

#### **DESCRIPTION:**

Continuation of Diagnostics Optometry 1 which emphasizes the use of the photopter to perform visual tests in accordance with O.E.P standardised and assigned numbers for the tests using phoropter.

Week Y. Tests no. 3, 13A, 8, 13B and all other lateral phoria tests.

Week3	Duction tests, limits of fusion tests
Week4/5	Cross cylinder tests
Week 6/8	Amplitude of accommodation and other accommodative tests
Week 9/10	Application and practice of above mentioned tests
Week 11/13	Application of the tests in graphical analysis
Week 14	Review

### **OPT 4522: DIAGNOSTIC OPTOMETRY III (5 UNITS)**

#### **DESCRIPTION:**

The course includes optometric objective examination procedures and instrumentations. Covered in the course are keratometry, Ophthalmoscopy, Retinoscopy, Schematic eye neutralisation. Neutralisation of unknown lenses, Human eyes, Dynamic retinoscopy, Tonometry, Biomicroscopy, Colour vision testing. The topics are treated with reference to definition, History/development, principles, essential parts of instruments, uses and values, clinical procedures and techniques, observations and interpretation of findings, and other discussions relevant to the topics.

#### **Lecture Plan: (3 hours of lecture/week; 2 units of lab/week).**

Week 1	Keratometry
Week 2/3	Ophthalmoscopy
Week 4	Retinoscopy
Week 5	Schematic eye neutralisation
Week 6	Neutralisation of unknown lenses
Week 7	Neutralisation of human eyes
Week 8/9	Dynamic retinoscopy
Week 10/11	Tonometry
Week 12/13	Biomicroscopy
Week 14	Colour vision testing

**YEAR FIVE:**

**OPT531: RADIOLOGICAL CLINICAL POSTING (3 UNITS)**

**DESCRIPTION:** Introduction to radiology posting (observership). Diagnostic imaging techniques. Ocular Ultrasound Scan procedure and interpretation. Coronal Section (Caldwell's position) of viewing both Orbits. A-scan and B-scan procedure and interpretation. Head and neck X-ray procedure and interpretation. CT (head, neck and emphasis on the orbit) procedure and interpretation. MRI (head, neck and emphasis on the orbit) procedure and interpretation. Ocular Doppler ultrasound Scan. Ocular Angiography. Fluorescein Angiography. Axial MRI. Coronal MRI. Fibre proliferative Source. Basilar View of the orbit. Waters Position considering cases of suspected orbital floor fractures in Trauma. Radiological procedures in ocular emergencies. Radiological procedures in oculoplasty and tumours.

**Lecture Plan: (16 hours/ week of clinical exposure)**

- Week1/2 Introduction to radiology posting (observership). Diagnostic imaging techniques. Ocular Ultrasound Scan procedure and interpretation. Coronal Section (Caldwell's position) of viewing both Orbits. A-scan and B-scan procedure and interpretation.
- Week3/4 Head and neck X- ray procedure and interpretation. CT (head, neck and emphasis on the orbit) procedure and interpretation. MRI (head, neck and emphasis on the orbit) procedure and interpretation. Ocular Doppler ultrasound Scan. Ocular Angiography. FluoresceinAngiography.
- Week5/6 Axial MRI. Coronal MRI. Fibre proliferative Source. Basilar View of the orbit. Waters Position considering cases of suspected orbital floor fractures in Trauma. Radiological procedures in ocular emergencies. Radiological procedures in oculoplasty and tumours.

## **OPT533 OPTOMETRY MANAGED CARE (3UNITS)**

**DESCRIPTION:** Background to and history of medical care. Models for delivering medical care. Definition of managed care. The goal of managed care. Features or components of managed care. Challenges with and solutions in managed care. Legal obligations versus moral obligations in managed care. Standard of care. Types of Managed care with examples. The National Health Insurance Authority. Health Management Organizations. Primary and secondary care provision in managed care. Optometry as a secondary care provider in managed care. Optometric services covered. List of exclusions. Requirements for on-boarding optometric practices as secondary providers. The service level agreement.

### **Lecture Plan: (2 hours of lecture/ week)**

- Week1/2 Background to and history of medical care. Models for delivering medical care. Definition of managed care. The goal of managed care.
- Week 3/5 Features or components of managed care. Challenges with and solutions in managed care.
- Week6/8 Legal obligations versus moral obligations in managed care. Standard of care. Types of Managed care with examples.
- Week9/11 The National Health Insurance Authority. Health Management Organizations. Primary and secondary care provision in managed care.
- Week12/13 Optometry as a secondary care provider in managed care. Optometric services covered. List of exclusions. Requirements for on-boarding optometric practices as secondary providers. The service level agreement.
- Week 14 Revision

## **OPT 5317: CLINICAL OPTICS II (3 UNITS)**

### **DESCRIPTION:**

Dispensing procedures, physiological, physical and psychological accomplishments of an ophthalmic prescription. Lens styling, absorptive and occupational glasses; significance, factors to be considered in fitting absorptive lenses, metallic oxides used for tinting of absorptive lenses. The spectrum, classification of glasses, special cases; Lenticular lenses; Occupational analysis: Factors to be considered with regards to the occupation. Bifocal prescription analysis. Prismatic effects in reading area, bifocal compensation. Trifocals: criteria for screening patients for trifocals, procedure for determining the segment height of multifocallenses.

Lecture Plan: (2 hours of lecture/week; 1 unit of lab/week).

Week 1/2	Dispensing procedure, physiological, physical and psychological accomplishments of an ophthalmic prescription
Week 3	Lens styling
Week 4/6	Absorptive and occupational glasses; significance, factors to be considered in fitting absorptive lenses; metallic oxides used for the tinting of absorptive lenses
Week 7/8	The spectrum, classification of glasses, special cases; lenticular lenses.
Week 9/10	Occupational analysis. Factors to be considered with regards to the occupation
Week 11	Bifocal prescription analysis. Prismatic effects in reading area bifocals, compensation
Week 12/13	Trifocals: criteria for screening patients for trifocal, procedure for determining the segment height.
Week 14	Multifocal-lenses.



## **OPT 5413: CLINICAL PROCEDURES & PRACTICE 1 (No UNIT; CLINICALS)**

### **DESCRIPTION:**

This course is the ultimate integration and application of all the techniques and procedures learnt so far to a limited clinical practice in the examination, diagnosis, treatment and management of vision under the supervision of clinical Faculty. Emphasis is placed on the O.E.P. The student junior clinician would be required to present and practices, with a specified number of persons including students and non-students, some of who must be actual cases of ametropia. Compliance with this requirement and successful application of the techniques and procedures is a pre-condition for a passing grade in the course.

In lieu of lecture plan, the students are expected to comply with the specific requirements necessary to pass this course for a period of 13 weeks. The 14 week will be a review and preparation for clinical exams.

## **OPT 5316: VISUAL ANALYSIS I (3 UNITS)**

### **DESCRIPTION:**

Visual analysis involves a thorough case study based on the **various eye examination procedures that the clinician** learned in the previous levels of the programme. Hypotheses are formulated as a result of the test findings that the clinician has performed on the patient. The didactic study in this course is applied in the clinic.

### **Lecture Plan: (3 hours of lecture/week).**

Week 1	Significance of patient care in the various aspects of taking the history and preliminary examinations.
Week 2/3	Problem oriented approach (POA)
Week 4/5	Significance of visual tests
Week 6/7	Graphical analysis
Week 8/9	Morgan's analysis
Week 10	Discomforts emanating from visual disorders
Week 11	Guidelines in modifying subjective findings
Week 12	Problems: Non-refractive in nature
Week 13	Marlow's occlusion
Week 14	Review

## **OPT 5311: CONTACT LENS (3 units)**

### **DESCRIPTION:**

This course deals with basic and some advanced lectures in contact lens, its design, manufacture and fitting. It includes history of contact lens, types of contact lenses, indications, and contraindications, advantages and disadvantages, factors involved in fittings.

Cornea: Topography, anatomy and physiology, biomicroscopy, sensitivity, tear structure. Methods of fitting, fitting techniques. Ordering of contact lens, verification of lens specification; evaluation of physical fit. Patient management. Troubleshooting, contact lens solution. Modification procedures.

### **Lecture Plan: (2 hours of lecture/week; 1 unit of lab/week).**

Week 1/2	History of contact lenses, types of contact lenses
Week 3	Indications and contraindications, advantages and disadvantages
Week 4/5	Cornea: topography, anatomy and physiology, biomicroscopy, sensitivity, tear structure.
Week 6/7	Methods of fitting, fitting techniques
Week 9	Ordering of contact lens.
Week 10/12	Verification of lens specification: evaluation of physical fit.
Week 13	Patient management, troubleshooting, contact lens solutions
Week 14	Modification procedures

### **OPT 5319: ORTHOPTICS (3 UNITS)**

#### **DESCRIPTION:**

This course is introduced with a review on anomalies of binocular vision, since its aim is to apply the prescribed treatment for those disorders. Proper selection of patients who will benefit from these training regimens must be strongly considered. Finally, an in-depth study of the treatment through a training programme for these anomalies are given due attention.

#### **Lecture Plan: (2 hours of lecture/week; 1 unit of lab/week).**

Week 1	Review of anomalies, including the etiology of latent and manifest squint
Week 2/3	Selection of patients to undergo visual training for latent squint and other considerations
Week 4/6	Training regime for latent squint
Week 7/8	Selection of patient to undergo visual training for manifest squint and other considerations
Week 9/10	Treatment for manifest squint
Week 11	Review of sensory anomalies and factors that must be taken into consideration
Week 12	Treatment for suppression
Week 13/14	Treatment for amblyopia and anomalies retinal correspondence

### **OPT 5318: ENVIRONMENTAL & PREVENTIVE OPTOMETRY (3 UNITS)**

#### **DESCRIPTION:**

The study of the principles and measures required for the preservation of health including general and specific. Nutritional, environmental and social factors at home, school industrial and business predisposing vision anomalies or decreased visual

efficiency. Prevention and control of diseases. The course emphasizes the role of the Optometrists in Public Health on such aspects, as prevention of blindness, provision of optical aids to the blind and the near-blind and industrial vision.

Lecture Plan: (3 hours of lecture/week).

Week 1	Prevention and management of ocular injuries at Home
Week2/3	Prevention and management of ocular injuries at School
Week4/5	Industry and business predisposing vision anomalies or decreased visual efficiency. Prevention and control of diseases
Week6/8	Role of the optometrists in public health on such aspects as prevention of blindness
Week 9/12	Provision of optical aids to the blind and the near• Blind
Week 13/14	Industrial vision

## **YEAR FIVE**

### **SECOND SEMESTER- COURSE DESCRIPTION**

#### **OPT534: MEDICAL LABORATORY POSTING**

#### **(3UNITS)**

#### **DESCRIPTION:**

Introduction to medical laboratory set up. Pre-operation Medical Evaluation of patient awaiting ocular surgery or procedures. Full or complete blood count (FBC or CBC). Microscopic testing. Macroscopic testing. Total Urinalysis. Virology testing. Chemical pathology tests. Lipid Profile (LP). Histopathology testing. Hematology testing. Liver Function Test (LFT). Thyroid Function Test (TFT) Hematology, Chemistry and Recurrent Uveitis Immunological Laboratory tests. Microbiology test. Blood group serology. Molecular and genetics. Forensic science. Clinical chemistry.

#### **Lecture Plan: (16 hours/ week of clinical exposure)**

- Week1/2 Introduction to medical laboratory set up. Pre-operation Medical Evaluation of patient awaiting ocular surgery or procedures. Full or complete blood count (FBC or CBC). Microscopic testing. Macroscopic testing. Total Urinalysis. Virology testing.
- Week3/4 Chemical pathology tests. Lipid Profile (LP). Histopathology testing. Hematology testing. Liver Function Test (LFT). Thyroid Function Test (TFT), Hematology.
- Week5/6 Chemistry and Recurrent Uveitis. Immunological Laboratory tests. Microbiology test. Blood group serology. Molecular and genetics. Forensic science. Clinical chemistry

## **OPT532 APPLIED MICROBIOLOGY (3UNITS)**

### **DESCRIPTION:**

Principles of infection. Ocular manifestation of infectious diseases. Hospital eye infection. Causative agents and mode of transmission. Specific considerations for infection control in ophthalmic practice. Collection of infection samples from eye clinic. Culturing techniques. Antibioqram interpretation and therapeutic application. Ocular immunity. Sterilization in ophthalmic practice. Antimicrobial resistance. Rationale for antimicrobial resistance study Common modes of antimicrobial drug resistance. Fungal resistance. Actions to fight resistance. How to prevent antibiotic resistance. Infections and general infection control principles in hospital practice. Ocular implication of current epidemic diseases e.g Ebola, Covid-19 etc.

### **Lecture Plan: (2 hours of lecture/week;1 unit of lab/week )**

- Week1/2 Principles of infection. Ocular manifestation of infectious diseases. Hospital eye infection. Causative agents and mode of transmission.
- Week3/ 5 Specific considerations for infection control in ophthalmic practice. Collection of infection samples from eye clinic.
- Week6/7 Culturing techniques. Antibioqram interpretation and therapeutic application. Ocular immunity. Sterilization in ophthalmic practice.
- Week8/9 Antimicrobial resistance. Rationale for antimicrobial resistance study Common modes of antimicrobial drug resistance. Fungal resistance.
- Week10/11 Actions to fight resistance. How to prevent antibiotic resistance. Infections and general infection control principles in hospital practice.
- Week12/13 Ocular implication of current epidemic diseases e.g Ebola, Covid-19 etc

## **OPT522 SPORTS VISION (2UNITS)**

### **DESCRIPTION:**

Historical background of Optometry in sport activities. Visual recommendations for all sporting activities. Connection between our eyes and our body, Eye-hand, eye-foot and eye-body communication. Recommendation for contact sports. Appropriate refractive error correction methods for each type of sport (corrective glasses, contact lenses, refractive surgery). Vision training program to improve performance of athletes and how to use most common Sport Vision equipment in optometric practice. The optometrist role in Ocular emergencies in sports

### **Lecture Plan: (2 hours of lecture/week)**

Week1/2 Historical background of Optometry in sport activities.

Week3/4 Visual recommendations for all sporting activities.

Week5/7 Connection between our eyes and our body, Eye-hand, eye-foot and eye-body communication.

Week8/10 Recommendation for contact sports. Appropriate refractive error correction methods for each type of sport (corrective glasses, contact lenses, refractive surgery).

Week11/13 Vision training program to improve performance of athletes and how to use most common Sport Vision equipment in optometric practice. The optometrist role in Ocular emergencies in sports

## **OPT 5414: OCULAR PATHOLOGY 111 (3 UNITS) DESCRIPTION:**

To cover under this symptomatology in clinical cases in relation to visual field disorders. Visual fields, nature of impairment, system, shape and size of fields. Monocular and binocular field, neutral zones. Field defects, types, causes, pathology, interpretation of the various fields. Hemianopias, Wernicks'syndrome, quadrantanopsias, direct and consensual reflexes, scotomas, primary optic atrophy. Leber's disease. The study of different instruments of field charting include

Lecture Plan: (3 hours of lectures/week).

Week 1/4 Visual fields, nature of impairment system and size fields.

Week 5 Monocular and binocular fields

Week 6/8 Neutral zones. Fields defects, types, causes, Pathology, interpretation of the various fields

Week 9/11 Fields charting with various instruments both kinetic and static

Week 12 Hemianopias, wernick's syndrome quadrantanopias

Week 13 Direct and consensual reflexes, scotomas

## **OPT 5422: OCULAR PHARMACOLOGY, THERAPEUTICS AND TOXICOLOGY (4 UNITS)**

### **DESCRIPTION:**

Methods and routes of administration of ophthalmic drugs and example of drugs administered by each method, prescription writing. Antimicrobial drugs. Anti-inflammatory drugs. Anti-hypertensive drugs. Local anaesthetics, diagnostic stains. Drug treatment of common ocular diseases. Malaria, chemotherapy, vitamins, ivermectin (Ivermectin). Drugs affecting the central nervous system; drug abuse - (i) stimulants (ii) depressants (iii) analgesics (iv) sedatives (v) antipyretics (vi) tranquilizers Muscle relaxants. Antidiabetics. Oral contraceptives. Toxicology: adverse ocular effects of systemic drug therapy.

Adverse systemic effects of ocular drug therapy

Lecture Plan: (3 hours of lectures/week: 1 unit of lab/week).

Week 1 Methods and routes of administration of ophthalmic drugs.

Week 2 Anti microbial drugs

Week 3 Anti-inflammatory drugs

Week 4 Muscle relaxants, vitamins

Week 5 Anti-hypertensives



## **OPT 5424 CLINICAL PROCEDURE AND PRACTICE II (4 UNITS CLINICALS)**

### **Description:**

A continuation of clinic with a broadening of the horizon of the students clinical practice under the supervision of clinic faculty. Routine examination and treatment are emphasized. After the clinical examination, the average of the students score from the first and second semester result will be taken and entered for each student

No lecture plan

### **OPT5327 visual analysis II(3 units)**

#### **Description:**

Continuation of visual analysis with emphasis on cases that need prismatic correction. Methods pf determining AC/A ratio. Relating AC/A ratio to fimal prescription of the patient. ModifYing a patient's prescription on the basis of PRA and NRA as well as the range of Accommodation. Age related visual problems, neurosis, and other problems that a patient would likely suffer from and how a clinician should handle such cases.

#### **Lecture plan: (3 hours of lecture/week)**

Week 1	Vertical Imbalance
Week 2	Lateral Imbalance
Week 3/4	Modification of prescriptions based on AC/A ratio PRA and NRA as well as Range of accommodation
Week 5/6	Problems of the aged.
Week 7/8	Problems of the very young.
Week 9/11	Neurosis and patient's complaints of prescription
Week 12	Problems emanating from patient's classification
<b>Week 13/14</b>	<b>Visual efficiency</b>

### **Opt 5325 Low Vision/Ocular Prosthesis (3 Units)**

#### **Descriptions:**

Definition, historical overview. Prevalence, etiology, factors involved in low vision care. Optical aids for correction of low vision, factors in evaluating low vision care. Optical aids. Examination techniques and procedures guide posts in low vision aids prescription. The partially seeing child. Clinical results of low vision studies, social and vocational rehabilitation of the blind and partially seeing patient, ocular prosthesis, enucleation, evisceration, exenteration, indications for enucleation, motives and principles for prosthetics. Types of artificial eye. The procedure and steps in the preparation and fitting of the artificial eye. The materials for artificial eye.

#### **Lecture plan: (1 hour of lecture/week; 1 unit of lab/week)**

- |        |  |
|--------|--|
| Week 1 | Definition, historical overview, prevalence, etiology, factors involved in low vision care |
| Week 2 | Optical aids for correction of low vision, factors in evaluating low vision aids           |
| Week 3 | Examination techniques and procedure, guideposts in low vision aids prescription.          |
| Week 4 | The partially seeing child   |
| Week 5 | Clinical results of low vision studies.  |

- Week 6 Social and vocational rehabilitation of the blind and partially seeing child
- Week 7/9 Ocular prosthesis, enucleation, evisceration, exenteration. Indications for enucleation, motives and principles for prosthetics. Types of artificial eye. Techniques for determining the size of the orbital cavity. Techniques for determining the character of the artificial eye.
- Week 10/14 The procedure and steps in the preparation and fitting of the artificial eye. The materials for artificial eye.

### **OPT 5329 RESEARCH (3 UNITS)**

**AIM:** Define abilities evaluate and discern good research methods; Prepare the graduate optometrist for continued education via scientific papers and journals. Application of statistics and experimental design.

- Week 1 Research as a vital tool in solving problems and challenges of the society. It is a systematic study. As an attempt to extend the boundary of knowledge/ contribution to knowledge.
- Week 2 Referencing: reference writing types & standard
- Week 3 The concept of plagiarism and the dangers. Biostatistics as a sub-specialty of statistics and its applications.
- Week 4 Making/ writing a research proposal.
- Week 5 The concept of variables and types; experimental/biological variable dependent/independent, discrete/continuous.
- Week 6 The concept of research hypothesis null and alternative statistical and biological hypothesis.
- Week 7 Biostatistical tests of hypothesis types, steps confidence limits and levels of significance.
- Week 8-9 Sampling techniques.

Week 10-14 Research reporting institutional standard  
and academic journal.

**OPT 5320 OCULAR EMERGENCIES (3UNITS)**

**DESCRIPTION:**

Meaning of Health Emergency. True and Urgent emergency. The principles of Health emergency management. Common signs and symptoms in ocular emergency. Diagnosis and treatment of Orbital cellulitis. Diagnosis and treatment of Endophthalmitis. Diagnosis and Treatment of Exposure Keratitis. Diagnosis and management of Microbial Keratitis. Diagnosis and management of Ophthalmia Neonatorum. Diagnosis and treatment of Retinal Detachment. Diagnosis and management of ocular Chemical burns. Diagnosis and management of ocular Thermal burns. Diagnosis and treatment of Ocular Trauma. Diagnosis and management of Ocular Trauma. Diagnosis and treatment of Penetrating eye injuries. Make up of Ocular First aid box. Production of Fluorescein strips

**Lecture plan: (2hours of lecture/week;1 unit of lab/week)**

- Week1/2 Meaning of Health Emergency. True and Urgent emergency. The principles of Health emergency management. Common signs and symptoms in ocular emergency.
- Week3/4 Diagnosis and treatment of Orbital cellulitis. Diagnosis and treatment of Endophthalmitis. Diagnosis and Treatment of Exposure Keratitis. Diagnosis and management of Microbial Keratitis.
- Week5/6 Diagnosis and management of Ophthalmia Neonatorum. Diagnosis and treatment of Retinal Detachment. Diagnosis and management of ocular Chemical burns.
- Week7/9 Diagnosis and management of ocular Thermal burns. Diagnosis and treatment of Ocular Trauma.
- Week10/11 Diagnosis and management of Ocular Trauma. Diagnosis and treatment of Penetrating eye injuries.
- Week 12/13 Make up of Ocular First aid box. Production of Fluorescein strips

## **OPT544 COMMUNITY EYE CARE (4UNITS)**

### **DESCRIPTION:**

The concept of 'community'. Community diagnosis and community mobilization. Eye Health Need Assessment. Eye Health Education and Promotion. The Alma Ata Declaration and Primary Health Care. Integration of Primary Eye Care in to Primary Health care. Definitions of blindness and visual impairment. Global initiatives of VISION 2020 (The Right to Sight) and beyond. Universal eye health: a global action plan 2014-2019. Impacts of blindness and visual impairment in Nigeria and globally. Issues in the prevention and control of major blinding eye diseases. Understanding the social determinants of blindness and visual impairments. Health systems and eye health. An Overview of indigenous eye care models in Nigeria

### **Lecture Plan: (3 hours of lecture/week)**

- Week1/2 The concept of 'community'. Community diagnosis and community mobilization. Eye Health Need Assessment.
- Week3/5 Eye Health Education and Promotion. The Alma Ata Declaration and Primary Health Care. Integration of Primary Eye Care in to Primary Health care. Definitions of blindness and visual impairment.
- Week6/9 Global initiatives of VISION 2020 (The Right to Sight) and beyond. Universal eye health: a global action plan 2014-2019. Impacts of blindness and visual impairment in Nigeria and globally.
- Week10/12 Issues in the prevention and control of major blinding eye diseases. Understanding the social determinants of blindness and visual impairments. Health systems and eye health.
- Week13 An Overview of indigenous eye care models in Nigeria
- Week14 Revision

## **YEAR SIX**

### **FIRST SEMESTER- COURSE DESCRIPTION**

#### **OPT631 ACCIDENT AND EMERGENCY POSTING (3UNITS) DESCRIPTION:**

Urgency. Emergency. Legal concepts involved in emergencies. Triage. Record keeping. The Good Samaritan law. Checking for consciousness and unconsciousness. Circulation. Rescue Breathing. Defibrillation. CPR. Management of burn injuries in emergencies. Arresting bleeding. Ocular Geriatric emergencies. Management of Ocular Paediatric emergencies. Management of ocular trauma and adnexa injuries. Ocular first aid.

#### **Lecture Plan: (16 hours/ week of clinical exposure)**

Week1/2 Urgency. Emergency. Legal concepts involved in emergencies. Triage. Record keeping. The Good Samaritan law.

Week3/4 Checking for consciousness and unconsciousness. Circulation. Rescue Breathing. Defibrillation. CPR. Management of burn injuries in emergencies. Arresting bleeding.

Week5/6 Ocular Geriatric emergencies. Management of Ocular Paediatric emergencies. Management of ocular trauma and adnexa injuries. Ocular first aid

#### **OPT621 PROFESSIONALISM IN HEALTHCARE PRACTICE (2UNITS) DESCRIPTION:**

Introduction to Professionalism in Healthcare Practice. Communication and Interpersonal Skills: The importance of effective communication and the role of active listening, empathy, and nonverbal communication in building trust and rapport with patients. Ethics and Legal Issues: An overview of ethical principles and decision-making, including patient autonomy, confidentiality, and informed consent. The course should also cover legal issues such as malpractice and negligence. Teamwork and Collaboration: The importance of teamwork and collaboration in providing high-quality patient care. The course

should cover topics such as conflict resolution, leadership, and cultural competency. Patient-Centered Care: The importance of understanding and addressing patients' physical, emotional, and social needs. The course should cover topics such as patient education, patient safety, and patient satisfaction. Professional Development and Self-Reflection: The importance of ongoing professional development and the role of self-reflection in improving performance. The course should cover topics such as continuing education, mentoring, and performance evaluation. Time management and organization: The ability to manage time and organize tasks and schedule effectively is crucial for healthcare professionals. Dealing with stress and burnout: Understanding the causes of stress and burnout in healthcare and developing coping strategies to deal with it. Medical record-keeping and documentation: Understanding the importance of accurate and timely documentation, and the legal and ethical implications of record-keeping. Medical billing and coding: Understanding the basics of medical billing and coding, and the role of healthcare professionals in the billing process. Patient privacy and security: Understanding the importance of patient privacy and security, and the role of healthcare professionals in protecting patient information. Diversity and cultural competency: Understanding the importance of cultural competency in healthcare, and the role of healthcare professionals in providing culturally sensitive care. Infection control: Understanding the principles of infection control and the role of healthcare professionals in preventing the spread of infectious diseases. Quality improvement and patient safety: Understanding the importance of quality improvement and patient safety, and the role of healthcare professionals in implementing quality improvement initiatives. Medical research and evidence-based practice: Understanding the importance of medical research and evidence-based practice, and the role of healthcare professionals in staying up to date with the latest research and guidelines.

**Lecture Plan: (3 hours of lecture/week)**

- Week1 Introduction to Professionalism in Healthcare Practice. Communication and Interpersonal Skills: The importance of effective communication and the role of active listening, empathy, and nonverbal communication in building trust and rapport with patients. w
- Week2 Ethics and Legal Issues: An overview of ethical principles and decision-making, including patient autonomy, confidentiality, and informed consent. The course should also cover legal issues such as importance of teamwork and collaboration in providing high-quality patient care.
- Week3 The course should cover topics such as conflict resolution, leadership, and cultural competency. Patient-Centered Care: The importance of understanding and addressing patients' physical, emotional, and social needs. The course should cover topics such as patient education, patient safety, and patient satisfaction.
- Week4 Professional Development and Self-Reflection: The importance of ongoing professional development and the role of self-reflection in improving performance. The course should cover topics such as continuing education, mentoring, and performance evaluation.
- Week5 Time management and organization: The ability to manage time and organize tasks and schedule effectively is crucial for healthcare professionals. Dealing with stress and burnout: Understanding the causes of stress and burnout in healthcare and developing coping strategies to deal with it.
- Week6 Medical record-keeping and documentation: Understanding the importance of accurate and timely documentation, and the legal and ethical implications of record-keeping.
- Week7 Medical billing and coding: Understanding the basics of medical billing and coding, and the role of healthcare professionals in the billing process.
- Week8 Patient privacy and security: Understanding the importance of patient privacy and security, and the role of healthcare professionals in protecting patient



information.

- Week9 Diversity and cultural competency: Understanding the importance of cultural competency in healthcare, and the role of healthcare professionals in providing culturally sensitive care.
- Week10 Infection control: Understanding the principles of infection control and the role of healthcare professionals in preventing the spread of infectious diseases. Quality improvement and patient safety:
- Week11 Understanding the importance of quality improvement and patient safety, and the role of healthcare professionals in implementing quality improvement initiatives. Medical research and evidence-based practice:
- Week12 Understanding the importance of medical research and evidence-based practice, and the role of healthcare professionals in staying up to date with the latest research and guidelines
- Week13/14 revision

### **OPT632 BEHAVIOURAL OPTOMETRY (3UNITS)**

#### **DESCRIPTION:**

Overview of Neuroanatomy and Neurophysiology. Review of genetic related diseases. Assessment, diagnosis and management of accommodative, convergence and fusion disorders. The diagnosis and management of strabismus and its complications. Case presentations of non-strabismic anomalies. Developmental and perceptual assessment of the learning-disabled child. Testing and evaluation of motor skills. Visual form recognition. Development of a treatment programme

#### **(2hours of lecture/week; 1 unit of lab/week)**

- Week1/2 Overview of Neuroanatomy and Neurophysiology. Review of genetic related diseases.
- Week3/5 Assessment, diagnosis and management of accommodative, convergence and fusion disorders.
- Week6/8 The diagnosis and management of strabismus and its complications. Case presentations of non-strabismic anomalies.
- Week9/11 Developmental and perceptual assessment of the learning-disabled child. Testing and evaluation of motor skills.

Week12/13 Visual form recognition. Development of a treatment programme  
Week 14 Revision

### **OPT633 ADVOCACY IN OPTOMETRY (3UNITS)**

#### **DESCRIPTION:**

Introduction to advocacy. Definition. Types of Advocacy. Identifying an issue for advocacy. Developing an advocacy strategy. Identifying an issue for advocacy. Policy analysis. Building relationships with stakeholders. Goals and objectives for advocacy. Specific actions in advocacy. Developing an advocacy campaign. Developing the advocacy message. Advocacy approaches and tools. Monitoring and evaluation (M & E) of advocacy. Risks in advocacy. Strategies for mitigating risks in advocacy. Working with the media in advocacy.

#### **Lecture Plan: (2 hours of lecture/week)**

- Week1/2 Introduction to advocacy. Definition. Types of Advocacy. Identifying an issue for advocacy. Developing an advocacy strategy.
- Week3/5 Identifying an issue for advocacy. Policy analysis. Building relationships with stakeholders.
- Week6/8 Goals and objectives for advocacy. Specific actions in advocacy.
- Week9/10 Developing an advocacy campaign. Developing the advocacy message.
- Week11 Advocacy approaches and tools. Monitoring and evaluation (M & E) of advocacy.
- Week12 Risks in advocacy. Strategies for mitigating risks in advocacy. working with the media in advocacy
- Week13/14 Revision

### **OPT6311: PAEDIATRIC OPTOMETRY (3 UNIT)**

#### **DESCRIPTION:**

This course involves the study of ocular development, typical ocular disorders exclusive of orthoptics that occur in the early years of one's life or from infancy to adolescent period. It includes treating the refractive problems among the young, psychological and physiological problems with ocular manifestations.

#### **Lecture Plan: (1 hour of lecture/week)**

- Week 1/2 Study of development of ocular function
- Week 3/5 Study of etiology of malfunction due to development from

	prenatal period to infancy finally to adolescent stage.
Week 6/8	Study of visual examinations, particularly specific visual tests applicable to the very young.
Week 9/11	Prognosis, diagnosis of the various visual anomalies associated with the young
Week 12/13	Treatment of these anomalies
Week 14	Review.

### **OPT 6015: PRIMARY EYE CARE 1 (0 UNITS; CLINICALS) DESCRIPTION:**

Senior clinicians go on tour of duty both in external and campus optometry clinics and are exposed to both pathological and non• pathological visual disorders. They examine, prescribe and assist in dispensing drugs and prescriptions. This course starts during the long vacation. Completion and compliance to all clinical requirements is a prerequisite for graduation.

In addition to the normal 14 weeks period of a semester, 10 weeks of the Long vacation are used to provide the student clinician adequate exposure to clinical practice.

No lecture Plan. Students go on actual tour of duty and examine patients throughout the duration mentioned above.

### **OPT 6317: COMMUNITY EYE HEALTH (3 UNITS) DESCRIPTION:**

To equip the student clinician with the knowledge, attitude and skills necessary to be able to plan, implement and manage comprehensive eye care services for community health programme. It includes the description of global regional and national blindness, application of epidemiological data, strategies for the prevention and control of the major causes of avoidable blindness, identification of human resource needs, ability to deliver training courses, knowledge of the infrastructure and technology requirements as well as principles of health economics. Fieldwork in Eye camps, Health Centres in rural settings, outreachclinics

### **Lecture Plan: (2 hours of lecture/week; 4 hours of fieldwork /week).**

Week 1/2	Global blindness, blindness in Africa and Nigeria
Week 3/5	Strategies for detection and elimination of Refractive error and low vision

Week 6 Control strategies for the major blinding eyediseases

Week 7 Human resources development and team building, infrastructure and technology Community participation health education and

Week 8/9 promotion advocacy health policy. National health policy and structures. Planning, managing, monitoring and evaluation of eye care programme

Week 10/11 Preparing a comprehensive 3-5 years eye care Programme for a defined population of approximately 1 million.  
Project report writing skills.

## ***YEAR SIX***

### **SECOND SEMESTER-COURSE DESCRIPTION**

#### **OPT6321: ETHICS, PRACTICE MANAGEMENT, & JURISPRUDENCE (3 UNITS)**

##### **DESCRIPTION:**

The first part consists of a study of the standards of professional conduct, ethical practice and Legal codes and code of ethics. The second part deals with practice establishment and management development. it is intended to familiarize the student with methods of establishing a professional practice, efficient techniques in handling patients, the organisation of office and office records system, professional methods of fee charging and the incidental legal requirements in the practice of Optometry. This includes the legal status of Optometry.

##### **Lecture Plan: (3 hours of Lecture/week)**

Week 1 Professional conduct

Week 3 Ethical practice

Week 3 Legal codes and code of ethics. Practice establishment and management development

Week 4/8 Methods of establishing a professional practice

Week 7/8 The organisation of office and office records

- system
- Week 11/14 Professional methods of fee charging and the incidental legal requirements in the practice of optometry. The legal status of optometry

### **OPT 6221: VISUAL PSYCHOLOGY & PSYCHOPATHOLOGY (3 UNITS)**

#### **DESCRIPTION:**

This course starts with a review of the nervous system, cortical visual centres. Light, seeing, visual efficiency and perceptual acuity, visual projection and space perception. It deals with such attributes as mind, effect, brain pattern, instinct, emotion, the unconscious mind, identification, reality, attention, including mental, ideal, and object attention. Voluntary and involuntary attention. Projection, mental perception, percepts, correction of perception, concepts, space perception, mental space system and origin, memory association conditioned reaction and stimulus, reason; mental judgment, judgment of distances and factors involved; depth perception, common causes of misjudgment, perception of motion and illusions. Clinical demonstrations; psychopathology.

#### **Lecture Plan: (3 hours of lecture/week).**

- Week 1 The course starts with a review of the nervous system, cortical and sub-cortical visual centres
- Week 3/5 Light, seeing, visual efficiency and perceptual acuity, visual projection and space projection
- Week 6/8 It deals with such attributes as mind, effect, brain, pattern, instinct, emotion, the unconscious identification, reality, attention, including mental, ideal and object attention. Voluntary and involuntary attention
- Week 9/10 Projection, mental, perception, percepts, correction of perception, concepts
- Week 11 Space perception, mental space system and origin
- Week 12 Memory association conditioned reaction and stimulus, reason, mental judgment
- Week 13 Judgment of distances and factors involved, depth perception, common causes of misjudgment
- Week 14 Perception of motion and illusion, clinical demonstrations.

**OPT 6121:GERIATRIC OPTOMETRY (1 UNIT) DESCRIPTION:**

This involves the study of cases of the aged patient. This includes the psychological and physiological approach in dealing with the geriatric patient.

**Lecture Plan: (1 hour of lecture/week).**

Week 1//2	Review of diseases associated with the aged
Week 3/5	Study of diseases and medications as they affect the ocular and visual functions
Week 6/9	Study of the psychological aspects in relation to an aged patient
Week 10/13	Study of the physiological aspects, of ocular functions in the geriatric patient
Week 14	Review.

**OPT 6326: PRIMARY EYE CARE 11(6 UNITS) DESCRIPTION:**

1. This course is a continuation of Primary Eye Care I. The students will have the opportunity to examine more patients both in the optometry clinic in the University and an external clinic.
2. Academic poster or Logbook submission.

**OPT634 PRE&POST SURGICAL CO-MANAGEMENT (3UNITS) DESCRIPTION:**

Review of optometric practice in Nigeria. Relationship of the scope of practice of the eye care team. Anaesthesia in eye surgeries. Types of cataract surgeries (ICCE, ECCE). Indications for cataract surgery. Pre-operative assessment. Post-operative management. Complications of cataract surgery. Types of glaucoma surgeries (trabeculectomy, trabeculotomy, glaucoma drainage devices, goniotomy, laser trabeculoplasty, minimally invasive glaucoma surgery). Indications for glaucoma surgery. Pre-operative assessment. Post-operative management. Complications of glaucoma surgery. Corneal surgeries (keratoplasty, photorefractive keratectomy, arcuate keratotomy, LASEK,

LASIK, phakic posterior chamber implant, corneal collagen cross-linking, laser induced monovision, karma presbyopic in-lay). Indications for corneal surgery. Pre-operative assessment. Post-operative management. Complications of corneal surgeries. Eye lid excision and biopsy. Blepharoplasty. Pterygium excision surgeries. Pre-operative assessment. Post-operative management and complications of pterygium excision surgeries. Retinal repair surgeries (pneumatic retinopexy, scleral buckling, cryopexy, laser photocoagulation, vitrectomy). Refractive changes secondary to post

ocular surgery. Referral systems. Medical report. Patient education and counselling.

**Lecture Plan (2hours of lecture/week; 1 hour of clinical work/week)**

- Week1/2 Review of optometric practice in Nigeria. Relationship of the scope of practice of the eye care team. Anaesthesia in eye surgeries.
- Week3/4 Types of cataract surgeries (ICCE, ECCE). Indications for cataract surgery. Pre-operative assessment. Post-operative management. Complications of cataract surgery.
- Week5/6 Types of glaucoma surgeries (trabeculectomy, trabeculotomy, glaucoma drainage devices, goniotomy, laser trabeculoplasty, minimally invasive glaucoma surgery). Indications for glaucoma surgery.
- Week7 Pre-operative assessment. Post-operative management. Complications of glaucoma surgery.
- Week8/10 Corneal surgeries (keratoplasty, photorefractive keratectomy, arcuate keratotomy, LASEK, LASIK, phakic posterior chamber implant, corneal collagen cross-linking, laser induced monovision, karma presbyopic in-lay). Indications for corneal surgery. Pre-operative assessment. Post-operative management. Complications of corneal surgeries.
- Week11/12 Eye lid excision and biopsy. Blepharoplasty. Pterygium excision surgeries. Pre-operative assessment. Post-operative management and complications of pterygium excision surgeries.
- Week13/14 Retinal repair surgeries (pneumatic retinopexy, scleral buckling, cryopexy, laser photocoagulation, vitrectomy). Refractive changes secondary to post ocular surgery. Referral systems. Medical report. Patient education and counselling.

## **OPT 6229: HOSPITAL PRACTICE (2 UNITS)**

### **DESCRIPTION:**

The aim of this course is to train the students in a hospital environment. It includes actual emergency cases that are referred to the optometrist and it is the optometrist's responsibility to refer to the proper practitioner for management in areas where ocular man

### **Lecture Plan: (2 hours of Lecture/week).**

- Week 1/3 Study of hospital administration including its standard policies including the differentiation between out-patients and patients on admission. Differentiate between clinical and hospital practice
- Week 4/6 Optometrist's role in coordinating and cooperating with other consultants within the hospital setting
- Week 7/9 Optometrist's input in cases referred to him
- Week 10/13 Optometrist's role as a consultant in the health care team in the hospital
- His area of responsibility
  - His proper management and treatment of cases
  - Interpretation of findings in the patient's chart
  - Proper referral in cases where ocular manifestations are secondary to other pathological conditions
- Week 14 Review

## **OPT 6741:ADVANCES IN OPTOMETRY (1 UNIT)**

### **DESCRIPTION:**

Recent developments in Optometry are studied in this course. A review of current Literature, critical views on the Latest diagnostic and therapeutic techniques are discussed.

Lecture Plan: (1 hour of lecture/week)

- Week 1/4 Recent development in optometry
- Week 5/6 Critical view on latest diagnostic and therepeutic Techniques
- Week 9/10 Student's input to the above subject matter
- Week 11/13 Review of current literature



Week 14 Overall Review.

### **OPT 6621: PROJECT (5 UNITS)**

#### **DESCRIPTION:**

Areas of research emphasis to be discussed with the Faculty. Each student is to undertake an investigation/research in a selected and approved area for the purpose of discovering, exposing new facts or elaborating/expanding and throwing more light on already known facts. Powerpoint presentations of their topic proposals are included. Each student is to submit four bound copies of his/her research work. The student will have an optometry Lecturer as the supervisor and, in certain situations, may have a co-supervisor outside the Department, whose nomination must have been approved by the Departmental Board. There will be an oral defence before a defence panel to be appointed by the Department whose membership should include the external examiner whose appointment had received the approval of the University Senate.

#### **No lecture plan.**

This involves entirely the application of research at the end of which the student is to submit four (4) hard-bound copies of the project.