Diploma in Ophthalmic Medicine and Surgery

SPRINGFIELD RESEARCH UNIVERSITY

PG Diploma in Ophthalmic Medicine and Surgery

MISSION STATEMENT

The Springfield Research University (SRU) Diploma in Ophthalmic Medicine and Surgery program is designed to provide aspiring ophthalmologists with a robust foundation in ophthalmic science, advanced surgical and clinical skills, and a strong ethical framework for patient care. The curriculum integrates evidence-based practices, fosters innovation in research methodologies, and promotes compassionate, patient-centered care. Graduates will be equipped to contribute significantly to the advancement of eye health at national, regional, and international levels.

The Diploma in Ophthalmic Medicine and Surgery at Springfield Research University provides an in-depth education in ophthalmology, integrating cutting-edge research, advanced clinical training, and community engagement. The curriculum is designed to foster academic rigor, practical competence, and leadership qualities essential for impactful careers in ophthalmology.

Key Pillars of the Program:

1. **Academic Excellence:**
    - **Rigorous Curriculum:** The program offers a robust curriculum covering essential topics such as ocular anatomy, physiology, pathology, and surgical techniques.
    - **Critical Thinking:** Students are encouraged to develop critical thinking skills through problem-based learning and evidence-based practice.
    - **Clinical Competence:** Practical training in clinical assessment, diagnosis, and management of ocular diseases ensures that graduates are well-prepared for clinical practice.
2. **Innovative Research:**
    - **Research Integration:** Faculty and students engage in pioneering research that addresses emerging challenges in ophthalmology and vision science.
    - **Evidence-Based Practice:** The program emphasizes the integration of research findings into clinical practice, promoting evidence-based decision-making and improving patient outcomes.
    - **Research Opportunities:** Students participate in cutting-edge research projects, clinical trials, and interdisciplinary studies, contributing to the advancement of the field.
3. **Community Engagement:**
    - **Public Health Initiatives:** The program includes comprehensive community outreach activities aimed at promoting eye health, preventing visual impairment, and addressing disparities in access to eye care.

- **Ethical Leadership:** Students are trained to uphold the highest ethical standards, advocate for patient welfare, and contribute to healthcare policy and education.
- **Leadership Development:** The program fosters leadership skills, preparing graduates to take on influential roles in healthcare policy, clinical practice, and community advocacy.

Curriculum Integration:

1. **Foundational Sciences:**
    - **Core Subjects:** Students delve into advanced subjects such as ocular pharmacology, visual neuroscience, and systemic diseases affecting vision.
    - **Interdisciplinary Learning:** The curriculum integrates knowledge from related fields such as genetics, immunology, and psychology to provide a holistic understanding of vision and eye health.
2. **Clinical Training:**
    - **Simulated Practice:** State-of-the-art simulation labs allow students to practice complex clinical procedures in a controlled environment before working with real patients.
    - **Clinical Rotations:** Students gain hands-on experience through rotations in diverse clinical settings, including specialized eye care centers, hospitals, and community clinics.
    - **Patient Interaction:** Emphasis is placed on developing advanced communication skills, empathy, and cultural competence to enhance patient care and satisfaction.
3. **Research and Evidence-Based Practice:**
    - **Critical Appraisal:** Students learn to critically evaluate scientific literature, clinical guidelines, and treatment protocols, ensuring their practice is aligned with current best practices.
    - **Research Projects:** Opportunities to engage in innovative research projects help students develop skills in data collection, analysis, and interpretation, contributing to evidence-based ophthalmology.

Rationale for the Diploma in Ophthalmic Medicine and Surgery:

1. **National Needs (Eswatini):**
    - **Skilled Workforce:** The program addresses the need for highly skilled ophthalmologists who can provide advanced eye care in various settings, improving public health outcomes.
    - **Public Health Impact:** Graduates contribute to enhancing public health by addressing visual impairments, promoting eye health education, and advocating for equitable access to eye care.

- **Policy and Practice:** The program prepares graduates to engage in healthcare policy, research, and clinical decision-making, influencing eye care services at the national level.

2. **Regional Needs (SADC):**
    - **Harmonization of Practices:** The program aligns with regional goals of harmonizing clinical practices and improving eye care standards across SADC member states.
    - **Human Capital Development:** By training competent ophthalmologists, the program supports the development of a skilled healthcare workforce in the region.
    - **Healthcare Stability:** Graduates play a crucial role in maintaining the stability of healthcare systems by addressing visual health challenges and promoting well-being.

Purpose of the Program:

1. **Clinical Leadership:**
    - **Ethical Leaders:** The program aims to produce ethical leaders who advocate for evidence-based practice, patient-centered care, and healthcare equity.
    - **Policy Shapers:** Graduates are equipped to influence clinical policies and protocols, improving eye care services and patient outcomes.
2. **Innovative Research:**
    - **Innovative Solutions:** Students engage in research that addresses contemporary issues in ophthalmology, contributing to the advancement of the field.
    - **Evidence-Based Practice:** Research findings are integrated into clinical practice to enhance patient care and outcomes.
3. **Community Impact:**
    - **Positive Change:** The program prepares graduates to make a positive impact through clinical practice, patient management, and public health initiatives.
    - **Health Promotion:** Graduates are equipped to promote eye health and prevent visual impairments in their communities.

1. GOALS

The goal of Postgraduate (DOMS) course in Ophthalmology is to produce a competent ophthalmologist who:

- Recognizes the health needs of carries out professional obligations in keeping with principles of National Health Policy and professional ethics;
- Has acquired the competencies pertaining to Ophthalmology that are required to be practiced in the community and at all levels of health care system;

- Has acquired skills in effectively communicating with the child, family and the community;
- Is aware of the contemporary advances and developments in medical sciences as related to Eye care;
- Is oriented to principles of research methodology; and
- Has acquired skills in educating medical and paramedical professionals.

2. PROGRAM LEARNING OBJECTIVES

At the end of the DOMS course in Ophthalmology, the student should be able to :

- Recognize the key importance of child health in the context of the health priority of the country;
- Practice the specialty of Ophthalmology in keeping with the principles of professional ethics;
- Identify social, economic, environmental, biological and emotional determinants of patients and institute diagnostic, therapeutic, rehabilitative, preventive and promotive measures to provide holistic care to the patients;
- Recognize the importance of growth, nutrition and development as the foundation of Ophthalmology; and help each patient realize her/his optimal potential in this regard;
- Take detailed history, perform complete physical examination including anterior and posterior segment of eye and neuro Ophthalmology and make clinical diagnosis.
- Perform relevant investigative and therapeutic procedures for the ophthalmology patient;
- Interpret important imaging and laboratory results;
- Diagnose ocular ailment on the analysis of history, physical examination and investigative work up;
- Plan and advise measures for the prevention of eye disease and visual disability.
- Carryout common surgical procedures independently.
- Plan rehabilitation of patients suffering from ocular illness and handicap, and those with special needs;
- Manage ocular emergencies efficiently;
- Recognize the emotional and behavioral characteristics of persons with moral disability patients and keep these fundamental attributes in focus while dealing with them
- Demonstrate communication skills of a high order in explaining management and
- prognosis, providing counseling and giving health education messages to patients, families and communities;
- Develop skills as a self-directed learner, recognize continuing educational needs;
- use appropriate learning resources, and critically analyze relevant published literature in order to practice evidence-based medicine
- Demonstrate competence in basic concepts of research methodology and epidemiology;
- Facilitate learning of medical/nursing students, practicing physicians, para-medical health workers and other providers as a teacher-trainer;
- Play the assigned role in the implementation of national programs for control of blindness, effectively and responsibly;

- Organize and supervise the desired managerial and leadership skills;
- Function as a productive member of a team engaged in health care, research and education.

3. PROGRAM LEARNING OUTCOMES

1. Clinical Competence:

- Graduates will demonstrate proficiency in diagnosing and managing common ophthalmic conditions, including refractive errors, cataracts, glaucoma, and retinal disorders.
- They will perform ophthalmic procedures such as slit-lamp examinations, fundoscopy, and tonometry with precision and safety.

2. Surgical Skills:

- Students will acquire hands-on experience in ophthalmic surgery, including cataract extraction, trabeculectomy, and pterygium excision.
- They will understand sterile techniques, wound closure, and postoperative care.

3. Patient Communication and Counseling:

- Graduates will effectively communicate with patients, explaining diagnoses, treatment options, and potential risks.
- They will provide empathetic counseling to patients and their families regarding visual impairment and management strategies.

4. Ethical Practice and Professionalism:

- Students will adhere to ethical principles, maintaining patient confidentiality and respecting cultural diversity.
- They will collaborate with other healthcare professionals and contribute to interdisciplinary care.

5. Research and Evidence-Based Practice

- Graduates will critically evaluate scientific literature, staying updated on advancements in ophthalmology.
- They will engage in research projects, contributing to evidence-based practice in eye care.

6. Community Outreach and Advocacy

- Students will participate in eye health awareness campaigns, promoting preventive measures and early detection.
- They will advocate for equitable access to eye care services.

These outcomes are designed to prepare students for a successful career in ophthalmology.

ENTRY REQUIREMENTS

Applicants typically need an **MBBS degree** (Bachelor of Medicine, Bachelor of Surgery) from a recognized medical school. A **passing score** in the relevant science practical examination is usually required.

CAREER OPPORTUNITIES

The **Postgraduate Diploma in Ophthalmic Medicine and Surgery (DOMS)** opens up diverse career opportunities for graduates. Here are some paths you can explore:

1. Consultant Ophthalmologist:
- As a consultant, you'll diagnose and manage various eye conditions, perform surgeries (such as cataract surgery), and provide sight-saving treatments.
- Sub-specialties include oculoplastics, cornea, glaucoma, medical retina, and vitreoretinal surgery.

2. Academic Research:
- Engage in research related to eye health, contributing to advancements in ophthalmology.
- Collaborate with universities, institutes, and research centers.

3. Community Ophthalmology:
- Work in community health centers, addressing eye care needs in rural and underserved areas.
- Conduct eye health awareness campaigns and preventive measures.

4. Urgent Eye Care:
- Provide emergency eye care services, managing conditions like trauma, infections, and acute vision loss.

5. Partnerships and Interdisciplinary Care:
- Collaborate with other medical specialties (diabetes, rheumatology, neurology) to address co-morbidities affecting eye health.

6. Teaching and Training:
- Contribute to medical education by teaching medical students, residents, and junior doctors.

COURSE STRUCTURE

Year 1: Semester I

Code	Course	Lecture	Practical	Credits
OMS500	Anatomy and Physiology	60	20	8
OMS501	Ophthalmic Optics	60	20	8
OMS502	Ocular Examination & Ocular Therapeutics	60	20	8
OMS503	Diseases of the Eye	60	20	8
	Total			32

Year 2: Semester II

Code	Course	Lecture	Practical	Credits
OMS500	Disorders of Motility	60	20	8
OMS501	Systemic Ophthalmology	60	20	8
OMS502	Preventive Ophthalmology	60	20	8
OMS503	Surgical Instruments in Ophthalmology	60	20	8
	Total			32

Year 2: Semester III

Code	Course	Lecture	Practical	Credits
OMS500	Ophthalmology Practice I: Minor Procedures	0	160	16
OMS501	Project Work I	0	120	12

	Total			28

Year 2: Semester IV

Code	Course	Lecture	Practical	Credits
OMS500	Ophthalmology Practice I: Major Procedures	0	160	16
OMS501	Project Work II	0	120	12
	Total			28

4. SYLLABUS

4.1. Theory

During the training period effort should always be made so that adequate time is spent discussing ocular health problems of public health importance in the country.

Anatomy and Physiology

- Embryology and Anatomy
- Physiology of the Eye
- The Physiology of Vision
- The Neurology of Vision

Ophthalmic Optics

- Elementary Optics
- Elementary Physiological Optics
- Refraction
- Refractive Errors of the Eye

Ocular Examination Techniques and Ocular Therapeutics

- Ocular Symptomatology
- Assessment of Visual Function
- Examination of the Anterior Segment
- Examination of the Posterior Segment and Orbit
- Ocular Therapeutics
- Ocular Microbiology

Diseases of the Eye

- Diseases of the Conjunctiva
- Diseases of the Cornea
- Diseases of the Sclera
- Diseases of the Uveal Tract
- The Lens
- The Glaucomas
- Diseases of the Retina
- Diseases of the Vitreous
- Diseases of the Optic Nerve
- Intraocular Tumors
- Injuries to the Eye

Disorders of Motility

- Anatomy and Physiology of the Motor Mechanism
- Comitant strabismus
- Incomitant Strabismus

Diseases of the Adnexa

- Diseases of the Lids
- Diseases of the Lacrimal Apparatus
- Diseases of the Orbit

Systemic Ophthalmology

- Diseases of the Nervous System with Ocular Manifestations
- Ocular Manifestations of Systemic Disorders
- Systemic drugs – Effects on eye

Preventive Ophthalmology

- Genetic Ophthalmology
- The Causes and Prevention of Blindness
- Eye Banking
- Eye Camps

Surgical Instruments in Ophthalmology

- Surgical Instruments in Ophthalmology
- Local Anesthesia in Ophthalmology
- Lasers in Ophthalmology

4.2 PRACTICAL

During the training period, PG students should learn various clinical and skilled work. PG's should be encouraged to perform the procedures (both minor and major including) given below:

Minor Procedures

- Thorough ocular examination.
- Ocular examination of children.
- Removal of Corneal/ forniceal foreign body.
- Syringing and probing
- Pterygium excision
- Chalazion excision
- I & D for Adnexal infections(stye)
- Posterior/Anterior sub tenon injection
- Intravitreal injection
- Tarsorrhaphy
- Epilation
- Corneal Scrapping

- Conjunctival swab
- Anterior chamber tap
- Subconjunctival injection

Major Procedures

- Cataract Surgery with IOL implantation
- Glaucoma surgery
- Lid surgeries including entropion, ectropion & ptosis
- Ocular trauma management
- Enucleation, Evisceration (and Exenteration)
- Corneal transplant
- Basic Squint Surgery

Surgical Training

It may be helpful to expose all PG students to artificial eyes for various surgical steps and to hone surgical skills.

Course Synopsis and Descriptions

Ocular Anatomy and Physiology (OPTH11007)

This foundational course explores the intricate anatomy and physiology of ocular structures. Students will gain a deep understanding of normal ocular function, enabling them to recognize deviations from the norm and contribute effectively to patient care. Topics include the structure of the cornea, lens, retina, and optic nerve, as well as visual pathways and accommodation mechanisms.

Ophthalmic Optics (OPTH11008)

In this foundational course, students delve into the principles of ophthalmic optics. They explore the behavior of light as it interacts with ocular structures, including the cornea, lens, and vitreous. Topics include spectacle lens design, contact lenses, and low vision aids. Practical workshops enhance skills in lensometry, refraction, and optical dispensing. By mastering these concepts, students contribute to effective vision correction and patient care.

Ocular Examination and Ocular Therapeutics (OPTH11009)

This comprehensive course provides a deep dive into the clinical aspects of ophthalmology. Students gain proficiency in ocular examination techniques, including investigations and differential diagnosis. Additionally, they explore ocular therapeutics, mastering pharmacology, pathophysiology, and evidence-based management plans. The course blends face-to-face teaching, distance learning, webinars, and online assessments, preparing graduates to excel in patient care and contribute significantly to the field of ophthalmology.

Diseases of the Eye (OPTH11010)

This course delves into the intricate world of ocular pathology. Students explore a wide range of eye conditions, including common disorders like cataracts, glaucoma, and diabetic retinopathy, as well as less frequent entities. Topics include etiology, clinical presentation, diagnostic methods, and evidence-based management. By mastering the intricacies of ocular diseases, graduates contribute significantly to patient care and vision preservation.

Disorders of Motility (OPTH11010)
This course focuses on the treatment and management of eye movement disorders, eye alignment issues, and double vision (often associated with amblyopia). Students explore conditions such as squints (in both children and adults) and complex problems arising from brain injury or stroke. Treatment options include optical interventions (glasses, prisms), orthoptic exercises, botulinum toxin therapy, and squint surgery. By mastering these skills, graduates contribute significantly to patient care in ophthalmology.

Systemic Ophthalmology (OPTH11011)
This course explores the intricate interplay between systemic health and ocular conditions. Students delve into eye manifestations of systemic diseases, including those affecting the nervous system, cardiovascular system, and endocrine system. Topics cover drug effects on the eye and the impact of systemic disorders on visual function. By mastering these connections, graduates contribute significantly to holistic patient care in ophthalmology.

Preventive Ophthalmology (OPTH11012)
This course focuses on proactive strategies to maintain ocular health and prevent vision-related issues. Students delve into preventive measures, including eye health promotion, early detection of risk factors, and community outreach. Topics cover lifestyle modifications, nutrition, and ocular hygiene. By mastering preventive approaches, graduates contribute significantly to reducing the burden of eye diseases.

Surgical Instruments in Ophthalmology (OPTH11013)
This practical course immerses trainees in the world of ophthalmic surgery instruments. Participants learn to handle microsurgical tools, suturing techniques, and operating microscopes. The focus is on building confidence through hands-on learning. Trainees engage in simulated surgery using cutting-edge model eyes, and they have the opportunity to practice on the simulation machine.

Ophthalmology Practice I: Minor Procedures (OPTH11014)
This practical course equips trainees with essential skills for performing minor ophthalmic procedures. Participants learn core techniques, including eyelid lesion excision, chalazion drainage, and pterygium surgery. The focus is on hands-on experience, guided by experienced ophthalmologists. By mastering these minor procedures, graduates enhance their clinical competence and contribute significantly to patient care.

Project Work I (OPTH11015)
In this course, students engage in practical project work related to ophthalmology. They apply theoretical knowledge to real-world scenarios, conducting research, case studies, or clinical investigations. The focus is on problem-solving, critical thinking, and evidence-based practice. By completing Project Work I, graduates enhance their skills and contribute meaningfully to the field of ophthalmic medicine.

Ophthalmology Practice II: Major Procedures (OPTH11016)
This intensive course focuses on advanced ophthalmic surgical techniques. Trainees gain hands-on experience in major procedures such as cataract surgery, vitrectomy, and corneal transplantation. Expert faculty guide participants through preoperative planning, intraoperative skills, and postoperative management. By mastering these complex procedures, graduates enhance their clinical competence and contribute significantly to eye care.

Project Work II (OPTH11015)
In this practical course, students engage in real-world ophthalmology projects. They apply theoretical knowledge to research, case studies, or clinical investigations. The focus is on problem-solving, critical thinking, and evidence-based practice. By completing Project Work II, graduates enhance their skills and contribute meaningfully to the field of ophthalmic medicine

5. TEACHING PROGRAM

5.1 General Principles

Acquisition of practical competencies being the keystone of postgraduate medical education, postgraduate training is skill oriented. Learning in postgraduate program should essentially be self-directed and primarily emanating from clinical and academic work. The formal sessions should merely be meant to supplement this core effort.

5.2 Teaching Sessions

- Seminar presentations including detailed topics covering all aspects of ophthalmology shall be taken up by the residents
- Journal clubs shall be held for having wider view of the subject and latest research work and papers discussed in routine.
- Case discussions should be mandatory for PG students so as to be expert in clinical examination, reach a diagnosis and then plan for appropriate and required management.

5.3 Teaching Schedule

In addition to bedside teaching rounds, in the department there should be daily hourly sessions of formal teaching per week. The suggested departmental teaching schedule is as follows:

1. Seminar Presentation — Once a week
2. Journal Club — Once a week
3. PG Case Discussion — Once a week

Note:

- All sessions shall be attended by all the faculty members except for those on emergency duties. All Junior and Senior Residents are supposed to attend the session.
- All teaching sessions should be assessed by all consultants at the end of session and logbooks signed.
- Attendance of the Residents at various sessions has to be at least 75%.

6. Posting

- All PG students shall be posted in Eye OPD and ward on rotation.
- OT duties shall be mandatory for all PG students and has to be taken up as per monthly roster.

- PG students should be posted in emergency to deal with any ocular emergency in casualty.
- Effort should be made to expose PG students to the latest techniques even though they may have to be sent for some time to the centers performing and using latest instruments or surgeries.

7. Assessment

All the PG residents should be assessed daily for their academic activities and also periodically.

7.1. General Principles

- The assessment is valid, objective and reliable.
- It covers cognitive, psychomotor and affective domains.
- Formative, continuing and summative (final) assessment is also conducted in theory as well as practical/clinicals. In addition, thesis is also assessed separately.

7.2. Formative Assessment

The formative assessment is continuous as well as end-of-term. The former is to be based on the feedback from the senior residents and the consultants concerned. End-of-term assessment is held at the end of each semester (6 months). Formative assessment will not count towards pass/fail at the end of the program but will provide feedback to the candidate.

7.3. Internal assessment

The performance of the Postgraduate student during the training period should be monitored throughout the course and duly recorded in the logbooks as evidence of the ability and daily work of the student. Marks should be allotted out of 100 as follows:

Sr No.	Item	Marks
1	Personal Attributes	20
2	Clinical Work	20
3	Academic Activities	20
4	End of term theory examination	20
5	End of term practical examination	20

Personal attributes

- **Behavior and Emotional Stability**: Dependable, disciplined, dedicated, stable in emergency situation shows positive approach.
- **Motivation and Initiative**: Takes on responsibility, innovative enterprising, does not shirk duties or leave any work pending.
- **Honesty and Integrity**: Truthful, admits mistakes, does not cook up information, has ethical conduct, exhibits good moral values, loyal to the institution.

- **Interpersonal Skills and Leadership Quality**: Has compassionate attitude towards patients and attendants, gets on well with colleagues and paramedical staff, is respectful to seniors, has good communication skills.

Clinical Work

- **Availability**: Punctual, available continuously on duty, responds promptly on calls and take proper permission for leave.
- **Diligence**: Dedicated, hardworking, does not shirk duties, leaves no work pending, does not sit idle, competent in clinical case work up and management.
- **Academic ability**: Intelligent, shows sound knowledge and skills, participates adequately in academic activities, and performs well in oral presentation and departmental tests.
- **Clinical Performance**: Proficient in clinical presentations and case discussion during rounds and OPD work up.
  Preparing Documents of the case history/examination and progress notes in the file (daily notes, round discussion, investigations and management).
  Skill of performing bed side procedures and handling emergencies.

- **Academic Activity**: Performance during presentation at Journal club/Seminar/Case discussion/Stat meeting and other academic sessions.
  Proficiency in skills as mentioned in job responsibilities.

End of term theory examination: Written test conducted at end of 1st year and 9 months.

End of term practical/oral examination: Practical exam and viva examination at end of 1year and 9 months

Marks for **personal attributes** and **clinical work** should be given annually by all the consultants under whom the resident was posted during the year. Average of the two years should be put as the final marks out of 20.

Marks for **academic activity** should be given by all consultants who have attended the session presented by the student. The Internal assessment should be presented to the Board of examiners for due consideration at the time of Final Examination

7.4 Summative Assessment

- Ratio of marks in theory and practicals will be equal.
- The pass percentage will be 50%.
- Candidates will have to pass theory and practical examinations separately.

A. Theory examination

Title	Marks
Paper 1: Ocular Anatomy, Physiology & Pathology	100

Paper 2: Optics, Refraction & Recent advances in Ophthalmology		100
Paper 3: General Ophthalmology including Ophthalmic Surgery		100
	Total	**300**

B. Practical examination

1. Long Case (1)	100
2. Short Cases 2 (50each)	100
3. Dark Room/Refraction	20
4. Spotting-(6 each) Any 5 of them. Fundus Photograph FFA USG(A&B Scan) X-rays Perimetry CT/MRI OCT Corneal Topography HRT/GDx	20
Surgical Instruments/steps	20
5. Oral (Grand Viva)	40
Total	**300**

8. Job Responsibilities

- During first year the resident will work under direct supervision of the 2nd/3rd year resident/senior resident and consultant on call. She/he will be responsible for taking detailed history, examination of patients as per the file record and send appropriate investigations as advised by seniors. Initially all procedures are to be observed and then done under supervision of seniors and during 1st year.
- In the 2nd semester of 1st year, the resident is posted in specialty clinics.
- In 2nd year, resident is also encouraged to make independent decisions in management of cases. She/he is also involved in teaching undergraduate students.
- Residents on emergency duty attend bedside calls in various wards, ICUs and emergency.
- In 2nd year Junior Residents should be performing surgeries stepwise and then independently under the guidance of Senior Residents/ Consultants.

9. Suggested Books and Journals

9.1 Books

- Parson's Diseases of the Eye — Sihota & Tandon Clinical
- Ophthalmology — Kanski. J.J
- Ophthalmology — Yanoff Duker

- Retina — Stephen. J. Ryan
- Systems of Ophthalmology — Duke Elder
- Principles and Practices of Ophthalmology — Peyman, Sander &Goldberg
- Diagnosis and Therapy of Glaucoma — Becker Shaffer
- Glaucoma — Chandler & Grant
- Refraction — Duke Elder
- Practical Orthoptics in treatment of Squint — Keith Lyall
- Mastering Phacoemulsification — Paul. S.Koch
- Anatomy and Physiology of the Eye — A.K.Khurana
- Glaucoma — Shields
- Cataract Surgery and its complications — Jaffe
- Stallard's Eye Surgery — Stallards
- Automated Static Perimetry — Anderson and Patela
- Cornea — Smolin

9.2 Journals

- American Journal of Ophthalmology
- British Journal of Ophthalmology
- Archives in Ophthalmology
- Ophthalmology
- Indian Journal of Ophthalmology
- International Ophthalmology Clinics

Model Test Papers

MODEL QUESTION PAPER
Diploma in Ophthalmic Medicine & Surgery (DOMS)
Paper-I
Ocular Anatomy, Physiology and Pathology

Max. Marks:100 Time: 3 hrs.

- **Attempt ALL questions**
- **Answer each question & its parts in SEQUENTIAL ORDER**
- **ALL questions carry equal marks**
- **Illustrate your answer with SUITABLE DIAGRAMS**

1. Diagrammatically illustrate the development of vitreous.
2. What are the grades of binocular vision and write about a method to detect them.
3. Write in detail the relations of cavernous sinus.
4. Write about the visual cycle and its importance.
5. Write in detail about the pathological classification of malignant melanoma.
6. Define the vascular coat and discuss its arterial supply.
7. What are the layers of tear film and also mention their origin and its clinical importance.
8. In sequence, discuss the etiopathogeneses of nongranulomatous iridocyclitis.
9. Discuss the various techniques to check the color vision.
10. What is the histology of cornea and discuss the factors which keep it transparent.

MODEL QUESTION PAPER
Diploma in Ophthalmic Medicine & Surgery (D.O.M.S)
Paper-II
General Ophthalmology including Ophthalmic Surgery

Max. Marks:100 **Time: 3 hrs.**

- **Attempt ALL questions**
- **Answer each question & its parts in SEQUENTIAL ORDER**
- **ALL questions carry equal marks**
- **Illustrate your answer with SUITABLE DIAGRAMS**

1. Define hypermetropia. Mention its types in relation to accommodation.
2. What are prisms. Where in a physiological and optical condition these can be used.
3. Diagrammatically show the optics of indirect ophthalmoscope.
4. What is anisometropia. What are its problems and how to take care of them.
5. What do you understand by component surgery for corneal opacity.
6. Write about the corneal surface detection techniques with emphasis in their role to detect keratoconus.
7. Write in detail about the age-related macular degeneration and anti VEGF's.
8. Differentiate between LASIK and LASEK.
9. What is Pentacam and write about its role in glaucoma.
10. What do you understand by non-penetrating glaucoma surgery.

MODEL QUESTION PAPER
Diploma in Ophthalmic Medicine & Surgery (DOMS)
Paper-III

Max. Marks:100 **Time: 3 hrs.**

- **Attempt ALL questions**
- **Answer each question & its parts in SEQUENTIAL ORDER**
- **ALL questions carry equal marks**
- **Illustrate your answer with SUITABLE DIAGRAMS**

Optics, Refraction & Recent advances in Ophthalmology

1. Write briefly about signs and symptoms of glaucoma and the field defects in chronic simple glaucoma.
2. Mention the late complications of cataract surgery. Discuss the management of a retinal complication.
3. Write about causes of cataract. Mention about the hypermature cataract.
4. Discuss the differential diagnosis of retinoblastoma.
5. What are the various types of entropion. Mention briefly about the surgical procedures to correct it.
6. What do you understand by hypotonous absence of anterior chamber. Write about its management.
7. What is the role of meibomian glands. Write briefly about meibomitis.
8. Define blindness, mention the important causes of blindness in India. How will you manage ocular xerosis.
9. Write about a patient who got injury in his right eye by a shuttlecock.
10. Briefly discuss signs, symptoms and management of VKH syndrome.

Course Outlines

Course Title: Anatomy and Physiology

Course Description:

This course provides a comprehensive understanding of the structure and function of the human body, with a focus on the visual system. Students will explore anatomical structures, physiological processes, and their relevance to ophthalmology.

Learning Objectives:

- Identify and describe major anatomical structures related to vision, including the eye, optic nerve, and visual pathways.
- Explain the physiological processes involved in vision, such as light refraction, accommodation, and color vision.
- Understand the interplay between ocular anatomy and visual function.
- Relate anatomical variations to common eye conditions and diseases.

Topics Covered:

1. **Introduction to Anatomy and Physiology**
    - Overview of body systems
    - Terminology and anatomical planes
2. **Ocular Anatomy**
    - Eye structure: cornea, lens, retina, vitreous humor
    - Extraocular muscles and eye movements
    - Blood supply to the eye
3. **Visual Pathways**
    - Optic nerve and visual cortex
    - Visual field processing
4. **Physiology of Vision**
    - Refraction and accommodation
    - Phototransduction in the retina
    - Color vision
5. **Clinical Applications**
    - Anatomical basis of common eye disorders
    - Surgical considerations in ophthalmology

Assessment:

- Quizzes and exams to evaluate understanding of anatomical structures and physiological concepts.
- Practical demonstrations (e.g., eye model dissections) to reinforce learning.
- Written assignments on clinical correlations.

Recommended Reading:

- “Clinical Anatomy of the Eye” by Richard S. Snell
- “Physiology of the Eye” by Hugh Davson

Course Title: Ophthalmic Optics

Course Description:

This course explores the principles of optics as they relate to ophthalmology. Students will gain a solid understanding of optical concepts, lens systems, and their applications in vision correction and eye care.

Learning Objectives:

- Explain the basics of light propagation, refraction, and reflection.
- Understand the properties of lenses, including focal length, power, and aberrations.
- Apply optical principles to spectacle lens prescriptions, contact lenses, and intraocular lenses.
- Discuss the impact of optical corrections on visual acuity and patient comfort.

Topics Covered:

1. **Geometrical Optics**
    - Light as waves and particles
    - Snell's law and refraction
    - Lens formula and magnification
2. **Lens Systems**
    - Convex and concave lenses
    - Lens power and focal length
    - Corrective lenses for myopia, hyperopia, and astigmatism
3. **Contact Lenses**
    - Types of contact lenses (soft, rigid gas-permeable)
    - Fitting and care
    - Complications and contraindications
4. **Intraocular Lenses (IOLs)**
    - IOL materials and designs
    - Cataract surgery and IOL implantation
    - Multifocal and toric IOLs
5. **Clinical Applications**
    - Refraction techniques
    - Prescribing eyeglasses and contact lenses
    - Low vision aids

Assessment:

- Written exams on optical principles and calculations.
- Practical assessments involving lens measurements and fitting.
- Case studies on real-world optical scenarios.

Recommended Reading:

- "Clinical Optics" by Andrew R. Elkington and Helena J. Frank
- "Optics, Refraction, and Contact Lenses" by A.K. Khurana

Course Title: Ocular Examination and Ocular Therapeutics

Course Description:

This course focuses on developing essential clinical skills related to ophthalmic examination and therapeutic interventions. Students will learn how to perform comprehensive eye assessments, diagnose ocular conditions, and implement evidence-based treatment strategies.

Learning Objectives:

- Conduct a thorough ophthalmic examination, including visual acuity assessment, slit-lamp biomicroscopy, and fundoscopy.
- Recognize common eye disorders, such as cataracts, glaucoma, and retinal diseases.
- Understand the principles of ocular pharmacology and therapeutic agents.
- Apply treatment protocols for various ocular conditions.

Topics Covered:

1. **Clinical Examination Techniques**
    - Visual acuity testing
    - Tonometry (intraocular pressure measurement)
    - Gonioscopy and anterior chamber evaluation
2. **Slit-Lamp Biomicroscopy**
    - Corneal assessment
    - Lens examination
    - Anterior segment abnormalities
3. **Fundoscopy and Retinal Evaluation**
    - Direct and indirect ophthalmoscopy
    - Retinal findings (e.g., hypertensive retinopathy, diabetic retinopathy)
4. **Ocular Therapeutics**
    - Topical medications (antibiotics, anti-inflammatories)
    - Glaucoma management (beta-blockers, prostaglandin analogs)
    - Postoperative care (cataract surgery, refractive surgery)
5. **Clinical Decision-Making**
    - Differential diagnosis
    - Treatment planning and patient education

Assessment:

- Practical skills assessments (performing eye examinations, using diagnostic tools).
- Case studies on patient scenarios.
- Written assignments on therapeutic protocols.

Recommended Reading:

- “Clinical Ophthalmology: A Systematic Approach” by Jack J. Kanski
- “Basic and Clinical Science Course (BCSC): Section 3 - Clinical Optics” (American Academy of Ophthalmology)

Course Title: Diseases of the Eye

Course Description:

This course delves into the pathophysiology, clinical presentation, and management of various eye disorders. Students will explore common ocular diseases, their etiology, and evidence-based treatment approaches.

Learning Objectives:

- Recognize signs and symptoms of ocular diseases.
- Understand the underlying mechanisms of eye conditions.
- Develop diagnostic skills for differentiating between benign and serious eye pathologies.
- Implement therapeutic strategies to improve patient outcomes.

Topics Covered:

1. **Common Ocular Disorders**
    - Conjunctivitis (viral, bacterial, allergic)
    - Dry eye syndrome
    - Blepharitis and chalazion
2. **Corneal Diseases**
    - Corneal ulcers
    - Keratoconus
    - Herpes simplex keratitis
3. **Glaucoma**
    - Open-angle glaucoma
    - Angle-closure glaucoma
    - Medical and surgical management
4. **Retinal Disorders**
    - Age-related macular degeneration (AMD)
    - Diabetic retinopathy
    - Retinal detachment
5. **Neuro-ophthalmic Conditions**
    - Optic neuritis
    - Ischemic optic neuropathy
    - Papilledema

Assessment:

- Case studies on real patients with eye diseases.
- Written exams covering disease etiology, clinical features, and treatment options.
- Practical assessments (e.g., identifying specific eye conditions from clinical images).

Recommended Reading:

- “The Wills Eye Manual: Office and Emergency Room Diagnosis and Treatment of Eye Disease” by Nika Bagheri, Brynn Wajda, and Charles Calvo
- “Ophthalmology Secrets in Color” by James F. Vander

Course Title: Disorders of Motility

Course Description:

This course focuses on the diagnosis and management of eye movement disorders, including strabismus (squints) in both children and adults. Students will learn about complex cases related to brain injury, stroke, and other motility challenges. The course emphasizes evidence-based treatment strategies and practical clinical skills.

Learning Objectives:

- Recognize signs and symptoms of ocular motility disorders.
- Understand the underlying mechanisms of strabismus and other eye movement issues.
- Develop diagnostic skills for differentiating between benign and serious motility pathologies.
- Implement therapeutic approaches to improve eye alignment and visual function.

Topics Covered:

1. **Introduction to Ocular Motility**
    - Definition and classification of motility disorders
    - Amblyopia and its association with strabismus
2. **Types of Strabismus**
    - Esotropia (convergent squint)
    - Exotropia (divergent squint)
    - Vertical deviations (hypertropia, hypotropia)
3. **Complex Motility Cases**
    - Post-brain injury strabismus
    - Strabismus following stroke
    - Nystagmus and its management
4. **Treatment Modalities**
    - Optical correction (glasses and prisms)
    - Orthoptic exercises
    - Botulinum toxin therapy
    - Surgical options for strabismus
5. **Clinical Decision-Making**
    - Differential diagnosis of motility disorders
    - Patient counseling and expectations

Assessment:

- Case studies involving real patients with motility challenges.
- Practical assessments (e.g., measuring ocular alignment, assessing eye movements).
- Written assignments on treatment plans.

Recommended Reading:

- “Diagnosis and Management of Ocular Motility Disorders” (Practical guide by experts[1])
- “Clinical Ophthalmology: A Systematic Approach” by Jack J. Kanski

Course Title: Systemic Ophthalmology

Course Description:

This course explores the intersection of ophthalmology with systemic diseases. Students will learn how various medical conditions impact ocular health, including manifestations, treatment implications, and preventive measures.

Learning Objectives:

- Understand the ocular manifestations of systemic disorders (e.g., diabetes, hypertension).
- Recognize the effects of systemic drugs on the eye.
- Explore preventive strategies to maintain ocular health in patients with underlying medical conditions.

Topics Covered:

1. **Diseases of the Nervous System with Ocular Manifestations**
    - Neurological conditions affecting vision
    - Cranial nerve palsies
2. **Ocular Manifestations of Systemic Disorders**
    - Diabetic retinopathy
    - Hypertensive retinopathy
    - Autoimmune diseases and the eye
3. **Systemic Drugs and Their Effects on the Eye**
    - Medications impacting ocular health
    - Side effects and management
4. **Preventive Ophthalmology**
    - Lifestyle modifications for eye health
    - Screening protocols for systemic diseases

Assessment:

- Written exams on systemic ophthalmology concepts.
- Case studies linking systemic conditions to ocular findings.
- Practical assessments related to drug-induced ocular changes.

Recommended Reading:

- “Clinical Ophthalmology: A Systematic Approach” by Jack J. Kanski
- “The Wills Eye Manual” for quick reference.

Course Title: Preventive Ophthalmology

Course Description:

This course focuses on strategies to prevent vision loss and promote eye health. Students will learn about preventive measures, early detection of eye conditions, and community-based interventions.

Learning Objectives:

- Understand the importance of preventive eye care.

- Identify risk factors for common eye diseases.
- Implement screening programs for eye health promotion.

Topics Covered:

1. **Epidemiology of Eye Diseases**
    - Prevalence and incidence of common eye conditions
    - Global burden of blindness and visual impairment
2. **Primary Prevention Strategies**
    - Health education and awareness campaigns
    - Nutritional interventions (e.g., vitamin A supplementation)
3. **Screening and Early Detection**
    - Vision screening protocols
    - Identifying high-risk populations
4. **Community-Based Interventions**
    - Outreach programs for underserved communities
    - School-based eye health initiatives

Assessment:

- Case studies on preventive measures.
- Designing community eye health programs.
- Written assignments on public health approaches.

Recommended Reading:

- “Public Health Approaches to Eye Care” (Edited by Serge Resnikoff and Hugh R. Taylor)
- “Community Eye Health Journal” (Open-access resource)

Course Title: Surgical Instruments in Ophthalmology

Course Description:

This course provides an in-depth understanding of ophthalmic surgical instruments, their uses, and proper handling. Participants will learn about microsurgical tools, suturing techniques, and operating microscope utilization.

Learning Objectives:

- Familiarize participants with various ophthalmic instruments.
- Develop proficiency in handling surgical tools during eye procedures.
- Understand the role of precision and safety in ophthalmic surgery.

Topics Covered:

1. **Microsurgical Instruments**
    - Types of forceps, scissors, and needle holders
    - Microsurgical blades and keratomes
    - Vitreoretinal instruments
2. **Suturing Techniques**

    - Interrupted sutures
    - Continuous sutures
    - Corneal sutures
3. **Operating Microscope Skills**
    - Adjusting focus and illumination
    - Sterile draping and positioning
4. **Instrument Sterilization and Maintenance**
    - Autoclaving protocols
    - Proper storage and care

Assessment:

- Practical demonstrations using model eyes and surgical instruments.
- Written assessments on instrument identification and handling.

Recommended Reading:

- “Ophthalmic Instruments and Surgical Tools” (SpringerLink)
- Additional resources provided by your program or institution.

Course Title: Ophthalmology Practice I: Minor Procedures

Course Description:

This course focuses on developing essential clinical skills related to minor ophthalmic procedures. Participants will learn techniques for performing minor interventions, including eyelid repair, foreign body removal, and basic suturing.

Learning Objectives:

- Master the art of thorough ocular examination.
- Acquire proficiency in examining pediatric patients.
- Understand the principles of removing corneal or forniceal foreign bodies.

Topics Covered:

1. **Ocular Examination Techniques**
    - Visual acuity assessment
    - Slit-lamp biomicroscopy
    - Gonioscopy
2. **Pediatric Ophthalmology**
    - Examination of children’s eyes
    - Common pediatric eye conditions
3. **Foreign Body Removal**
    - Corneal foreign bodies
    - Forniceal foreign bodies
4. **Basic Suturing Skills**
    - Interrupted sutures
    - Knot tying

Assessment:

- Practical demonstrations of minor procedures.
- Written assessments on procedural knowledge.

Recommended Reading:

- "Clinical Ophthalmology: A Practical Approach" by John Ferris
- Additional resources provided by your program or institution.

Course Title: Project Work I

Course Description:

The Project Work I course provides an opportunity for students to engage in practical research, clinical projects, or case studies related to ophthalmology. Participants will apply their knowledge and skills to investigate specific topics, contribute to the field, and enhance their problem-solving abilities.

Learning Objectives:

- Develop research skills, including literature review and data collection.
- Apply critical thinking to ophthalmic cases or clinical scenarios.
- Collaborate with mentors and peers on meaningful projects.

Topics Covered:

1. **Project Proposal and Planning**
    - Identifying research questions or clinical objectives
    - Formulating a project proposal
2. **Literature Review and Background Research**
    - Reviewing relevant scientific literature
    - Understanding existing knowledge gaps
3. **Data Collection and Analysis**
    - Collecting patient data (if applicable)
    - Analyzing clinical outcomes or research findings
4. **Presentation and Reporting**
    - Preparing project reports or case studies
    - Presenting findings to peers and faculty

Assessment:

- Evaluation of project proposal and planning.
- Quality of literature review and research methodology.
- Final project report or presentation.

Recommended Reading:

- "Research Methodology in Ophthalmology" by Dr. John O. Hagan
- Additional resources provided by your program or institution.

Course Title: Ophthalmology Practice II: Major Procedures

Course Description:

This course focuses on advanced ophthalmic procedures, equipping students with the necessary skills and knowledge to perform major interventions. Participants will learn about surgical techniques, patient management, and postoperative care.

Learning Objectives:

- Develop proficiency in major ophthalmic surgeries.
- Understand the indications, contraindications, and potential complications of each procedure.
- Enhance decision-making skills for patient selection and surgical planning.

Topics Covered:

1. **Cataract Surgery**
    - Phacoemulsification technique
    - Intraocular lens implantation
    - Complications and management
2. **Vitreo-Retinal Surgery**
    - Retinal detachment repair
    - Macular hole surgery
    - Diabetic vitrectomy
3. **Glaucoma Surgery**
    - Trabeculectomy
    - Tube shunt procedures
    - Minimally invasive glaucoma surgery (MIGS)
4. **Corneal Transplantation**
    - Penetrating keratoplasty
    - Endothelial keratoplasty (DMEK, DSAEK)
    - Postoperative care and graft survival
5. **Oculoplastic Procedures**
    - Eyelid surgery (blepharoplasty, ptosis repair)
    - Orbital decompression
    - Lacrimal system surgery

Assessment:

- Practical assessments in a simulated surgical setting.
- Written exams on surgical principles and techniques.
- Case studies evaluating decision-making and patient outcomes.

Recommended Reading:

- “Ophthalmic Surgery: Principles and Practice” by George L. Spaeth et al.
- “The Wills Eye Manual: Office and Emergency Room Diagnosis and Treatment of Eye Disease” for quick reference.

Course Title: Project Work II

Course Description:

The Project Work II course builds upon foundational research skills acquired in Project Work I. Participants will engage in more advanced research, clinical projects, or case studies related to ophthalmology. The course emphasizes critical thinking, evidence-based practice, and practical application.

Learning Objectives:

- Conduct independent research or clinical investigations.
- Apply analytical skills to complex ophthalmic cases.
- Collaborate with mentors and peers on meaningful projects.

Topics Covered:

1. **Advanced Research Methodology**
    - Study design (observational, experimental, qualitative)
    - Data collection techniques (surveys, interviews, chart reviews)
2. **Clinical Case Studies**
    - In-depth analysis of challenging patient scenarios
    - Differential diagnosis and treatment planning
3. **Evidence-Based Practice**
    - Critical appraisal of scientific literature
    - Implementing research findings into clinical practice
4. **Project Presentation and Publication**
    - Preparing research posters or oral presentations
    - Manuscript writing for publication

Assessment:

- Quality of research proposal and methodology.
- Depth of analysis in clinical case studies.
- Final project presentation or written report.

Recommended Reading:

- “Research Methodology in Ophthalmology” by Dr. John O. Hagan
- Additional resources provided by your program or institution.

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