



தமிழ்நாடு டாக்டர் எம்.ஜி.ஆர். மருத்துவப் பல்கலைக்கழகம்  
**The Tamilnadu Dr. M.G.R. Medical University**  
69, Anna Salai, Guindy, Chennai, Tamilnadu, India

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## **Allied Health Science**

### **Diploma in Optometry Technology**

**Regulation, Curriculum and Syllabus  
(2010-2011)**

## Course Guideline & Framework

Eligibility	12th preferably Science Pass, 17 years completed
Duration	2 Yrs
Eye Centre	With list of specialized equipments
No of Opthal OT	2
External Tie-up	Tie up with Neuro OT in other specialty hospital
Maximum Student Intake	20 students
Medical College	Medical Colleges affiliated to the Tamil Nadu Dr. MGR Medical University can start this course with maximum student intake of 20
Student Common room	1
Class room(25x10sq ft)	2
Multimedia	LCD Projector, Computers
Library	Min of 100 Sq.ft, Min of 100 books, Internet
Teaching responsibility	Designated Course Director Ophthalmologist
Faculty	Part time lecturers to be named: 1 Anesthetist, 1 Surgeon, 1 ENT, 1 Opthal, 1 Pediatrician, 1 Physician and other relevant specialities
<b>Training Modality</b>	
1st Year	Theory
2 <sup>nd</sup> Year	Practical's and Log Book
<b>Examinations</b>	
1st Year	Theory examinations
2 <sup>nd</sup> Year	Theory, Practical's & Viva –External

<b>FEE</b>	
University Affiliation fee	Rs.100000 one time fee
Security deposit	Rs. 1 lakh Refund as per University Norms
Inspection fee	Rs 15000
Inspection duration	Every yr for 2 yrs, then once in 3 yrs
Registration University fee	Rs 500 per student

## **BRIEF SUBJECT TITLE TO BE COVERED**

Anatomy	Contrast Studies
Physiology	Ophthal equipments, Lens Workshop
Biochemistry	Refraction
Pathology	Bio Medical Engineering
Principles of Management	Operating Theatre Technology
English	Medical Ethics
Basics of Computer	Modern Trends
Principles of Optics, Optometry	Principles of Medical Emergencies
Introduction to surgery	Principles of Light

## **SYLLABUS FOR DIPLOMA IN OPTOMETRY TECHNOLOGY**

### **I Year**

#### **Paper 1 - Ocular Anatomy & Physiology**

##### **Ocular Anatomy**

The **Lids** - **Lacrimal** system -The Conjunctiva - Cornea - Sclera - Uvea - Anterior Chamber and Angle - Pupil- Extra Ocular Muscles-Posterior Chamber - Retina - Optic "Nerve- Visual pathway

##### **Ocular Physiology**

Retina -Physiology -Physiology of Normal vision - Visual acuity— Notations & Recording - Measurement - Relationship between sizes of letters and the thickness.

Colour Vision - Binocular Single Vision - ERG, EOG, VEP, Physiology of Aqueous Humuor - Formation Circulation & drainage — Intra Ocular Pressure — Corneal Transparency - Tears -Accommodation, Actions of Extra ocular muscles:

## **Paper 2- Microbiology, Pathology & Pharmacology**

### **Microbiology**

Morphology and Basic Characteristics of Bacteria - Fungi and Virus (Specific to the eye Microscopical Examination of Organisms - Staining - Culture Media -Specimen Collection , Sterilization & disinfection.

### **Pathology**

Infection, Inflammation & repair. Pathological Picture of the common eye diseases Pharmacology

### **Pharmacology**

Pharmacokinetics, Pharmacodynamics- Types of drugs - Systemic topical and parenteral - Strength - dose - Action - side effects. Mydriatics & Cycloplegics, Anti Glaucoma drugs, Common antibiotics, anaesthetics.

## **Paper 3- Physical, Geometric & Visual Optics**

### **Physical Optics**

Nature of light, Electromagnetic Spectrum, Interference, Diffraction, Polarization, Fluorescence and Phosphorescence

### **Refraction**

Laws of refraction - Refractive index - Refractive Index of different media- Spherical lenses-Different types identification - refraction of light through a lens - Power of a lens - Formation of images using lenses - Characteristics of images - Real, virtual - Magnification - Cylindrical lens - power - Crossed cylinder - Spherical equivalent-Notation of cylindrical lens- Spherocylindrical lenses -sturms

conoid -Measurement of power of lens - Neutralisation method - Lensometer (foci meter) Prisms - Path of a ray of light through a prism - Deviation - Power of a prism- prismatic power of a lens - Use of prisms

### **Refractive errors**

Myopia, Hypermetropia, Astigmatism, Presbyopia, Aphakia, Pseudophakia, Anisometropia, Aniseikonia, Amblyopia

### **Examination techniques**

Objective Refraction- Retinoscope - Plane mirror - Streak - their description and use -Use of Retinoscope in refraction- in myopic, hyperopic, astigmatic eyes. Explanation of "with" and "against" motions in retinoscopy- plane and concave mirror Subjective refraction - cycloplegic refraction- PMT - Duochrome- JCC- presbyopic correction - Prescription of glasses - Writing down prescription- spherical equivalent-Transposition - Specification of axis

### **Community optometry**

Conducting Screening and Refraction eye camps , ,Eye donation

## **II Year**

### **Paper 4-Optometric Optics, Contact Lenses, Low Vision Aids**

#### **Dispensing**

**Lens types :** Single vision lens. Bi-focal lenses, multifocal -trifocal,progressive lenses Lens materials-glass,plastic,polycarbonate Lens surfacing

Ophthalmic lens coating, Absorptive lenses, Impact resistant lenses, Lenses for the Aphakic patient, Aspheric lenses Inspection of lens quality

**Spectacle frame:** Materials( Plastics, Metals) ,Types Frame measurements-  
The boxing system, The datum system Facial Measurement: The IPD, Visual axes  
Measuring heights: Single Vision, Bi -focal,Progressive

### **Contact lens**

Types, Parameters, Indications, Contraindications, Preftting assessment,  
(Keratometry), Fitting, contact lens solutions, complications of using CL. Toric,  
cosmetic & therapeutic lenses.

### **Low Vision Aids**

Definition of blindness- legal blindness-Low vision aids-optical, non  
optical. Artificial eye.

## **Paper 5- Ocular Diseases**

**Diseases of the Lids** - Ptosis, Blepharitis - Ulcerative ,Squamous. Stye, Chalazion,  
trichiasis, Entropion - Ectropion

**Diseases of the orbit** - Orbital Cellulitis, Proptosis, Enophthalmos, Exophthalmos

**Lacrimal Apparatus-** Chronic Dacryocystitis - Acute dacryocystitis  
Dacryocystectomy - Dacryocystorhinostomy

### **Motility of Eye**

Squint — Comitant squint - Paralytic Squint- Investigation - Treatment -  
Synoptophore

### **Diseases of the Conjunctiva**

Acute Catarrhal or Mucopurulent Conjunctivitis , Purulent conjunctivitis -  
Ophthalmia Neonatorum - Membranous conjunctivitis - Trachoma - Phlectenular

conjunctivitis -Spring vernal conjunctivitis - Pingecula - Pterygium - Xerosis - Bitot's spot.

### **Diseases of the Cornea - Sclera - Uveal Tract**

Corneal opacities. Infective Keratitis —(Bacterial, fungal and viral) - Allergic keratitis(Phlyectenular Keratitis) - Episcleritis - Scleritis - Iridocyclitis, Panophthalmitis. Endophthalmitis

### **Diseases of the Lens**

Congenital Cataract - Development Cataract - Zonular Cataract ,acquired Cataract - Senile Cataract - Cortical Cataract - "Nuclear Cataract - Complicated Cataract – Diabetic Cataract - After cataract, Secondary Cataract.

### **Glaucoma**

Congenital Glaucoma - Primary open angle Glaucoma - Angle Closure Glaucoma Secondary Glaucomas - Investigations - Provocative tests. Diurnal variation- Treatment-Medical and surgical treatment

### **Diseases of Retina - Optic Nerve ,Injuries**

Hypertensive Retinopathy - Diabetic Retinopathy - Reninitis Pigmentosa Optic Neuritis - Optic Atrophy.

**Ocular Emergencies** : Extra Ocular foreign body, Injuries, Burns,, Sympathetic Ophthalmitis.

## **Paper 6- Optometric Instruments**

Snellen's Charts -Distant Vision Charts ,Near vision chart - vision Drum  
their descriptor and use - Prism bar - RAF Ruler, Synoptophore, Hess Screen,  
Maddox wing, Trial set-accessories-Maddox rod - Pinhole - Cross cylinders

Spot Retinoscopes - Streak Retinoscopes - Autorefractometer,  
lensometer(Manual & Automated) Tonometers,- Digital, Indentation, Applanation,  
NCT Keratometer-principle, different types, Placido's disc, Corneal topography,  
Pachymeter.

Slit lamp, dry eye tests, Ascan ,IOL measurement, Ophthalmoscope -  
Direct & Indirect, lacrimal duct patency-syringing, Amsler charts, FFA

Perimeters - Bjerrum Screen,goldmann,automated - Gonioscope

Blood Sugar - Glucometer — Urine sugar - Detection ,- BP Apparatus -  
Thermometers Operating Microscope,Surgical Instruments-(cataract and  
glaucoma)



# Internal Paper- Functional English & Computer

## Functional English

### 1. Grammar

Components of a sentences  
Positive and "Negative statements  
Interrogative Statements  
Parts of speech in brief  
Transformation and synthesis of sentences  
Verb and Tense forms  
Voice  
Reported Speech  
Common errors and how to avoid them

### 2. Vocabulary

Medical Terminology  
Words often confused or misused  
Words and expression in British and American English  
Idioms and Phrases

### 3. Oral communication

Importance of speaking efficiently  
Voice culture  
Preparation of Speech  
Secrets of good delivery  
Audience Psychology  
Presentation Skills  
Using non-verbal communication

Interview technique

Skill in arguing

#### **4. Spoken English**

The phonetic symbols

Stress

Intonation

Rhythm

Transcription

Using dictionaries for learning to pronounce

#### **5. Written communication**

##### **(a) Arts of writing**

Rules for effective writing

Expansion of proverbs & Ideas

Precis writing

##### **(b) Letter writing**

Private letters & social letters

Business letters

Letter to a Bank

Letter to a Newspaper

Letter to Application

Curriculum Vitae (Different models)

Placing an order

##### **(c) Report writing**

Guidelines to prepare a good report

Usage of impersonal language

- (d) Note making and Note taking  
Note making and note taking strategies  
Organizing notes  
Exercise and note making/taking
- (e) Comprehension  
Listening and reading comprehension  
(Exercise of prescribed short answers)

## **6. Reading**

- (a) What is efficient and fast reading?
- (b) Awareness of existing reading habits
- (c) Tested techniques for improving speed
- (d) Improving concentration and comprehension through systematic study

### **Reference books**

1. English for competitive Examinations by R.P. Bhatnagar, Rajiel Bhargava
2. English for college and competitive exams by Dyvadatham
3. Written communication in English by Sarah Freeman
4. Writing with a purpose by Tickoo & Sasikumar
5. English Phonetics for beginners by P. Iyadurai
6. English through reading by W.Bhaskar and N.S.Prabhu
7. Empowerment through verbs & idioms by Padmini Devkumar
8. High School English Grammar and composition by Wren & martin
9. Communication techniques for your success everywhere by Muralidharan.

### **Computers**

Practicals in Microsoft office- word, excel, Powerpoint

Tally

Usage of Internet

## **Internship**

### **Practicals**

1. History taking
2. Refraction
3. Dispensing-frame and lens markings, IPD & facial measurements
4. Torch light examination of anterior segment
5. Schiottz tonometry
6. Keratometry
7. Orthoptics
8. Schirmers test
9. Colour vision tests
10. A-scan
11. Perimetry
12. Contact lens insertion and removal
13. corneal topography
14. Pachymetry

**DIPLOMA IN OPTOMETRY TECHNOLOGY  
I YEAR EXAMINATION PATTERN**

**First Year :**

Sl. No.	Subject Title	I A		University Exam		Practical	
		Max	Min	Max	Min	Max	Min
1.	Ocular Anatomy & Physiology	50	25	100	50	100	50
2.	Microbiology, Pathology & Pharmacology	50	25	100	50	100	50
3	Physical, Geometric & Visual Optics	50	25	100	50	100	50

**Internal Assessment:**

1. Theory (20)
2. Log Book (10)
3. Practical (20)

**DIPLOMA IN OPTOMETRY TECHNOLOGY  
II YEAR EXAMINATION PATTERN**

**Second Year :**

Sl. No.	Subject Title	I A		University Exam		Practical	
		Max	Min	Max	Min	Max	Min
1.	Optometric Optics, Contact Lenses, Low Vision Aids	50	25	100	50	100	50
2.	Ocular Diseases	50	25	100	50	100	50
3	Optometric Instruments	50	25	100	50	100	50

**Question paper pattern:**

Essay	3 x 10 = 30 Marks
Short Notes	10 x 5 = 50 Marks
Short Answers	10 x 2 = 20 Marks
Total	100 Marks

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