



Prospectus

2013 - 2014

Elite School of Optometry

Unit of Medical Research Foundation

In Collaboration with Birla Institute of Technical and Science, Pilani

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FROM THE PRINCIPAL'S DESK



Welcome to the field of Optometry and congratulations for having selected Optometry as your career.

In your search for choosing the best career, you would have come across many programs, few, which have scope for higher studies, few with high income earning potential, few with aspects of service to community and few with diverse areas of career opportunities. Optometry is one, which offers you all these possibilities and I am sure you will be proud and make your parents too proud having joined this course.

Optometry is a very demanding profession. Your skills, application of knowledge and attitude should all converge towards the successful completion of the program. Your efforts should begin from the very first day of the college. Continuous assessments and cumulative grading necessitates consistent performance throughout the semesters. Expert faculty, state of art infrastructure and exposure to clinical and community services in large scale aim to add to the rich knowledge base of the students.

Make Primary Eye Care your goal. I wish you a bright future ahead.

A handwritten signature in black ink, appearing to read 'R. Krishna Kumar R' with a flourish at the end.

Dr Krishna Kumar R

Elite School of Optometry Founders



Prof. Jay M Enoch, Late Prof. S. R. Govindarajan and Dr. S. S. Badrinath

Vision

Be always a foremost and distinguished leader in optometric education and vision science research in India.

Mission

- ★ To promote excellence in vision and eye care education, service and research.
- ★ To educate students to become highly competent practitioners, to render professional and ethical care, to understand their professional role in public service, to analyze new information critically, and to advance vision and eye care through scientific enquiry.

BITS PILANI

The Birla Institute of Technology & Science (BITS), Pilani is an all-India Institute for higher education. The primary motive of BITS is to "train young men and women able and eager to create and put into action such ideas, methods, techniques and information". The institute is a dream come true of its founder late Mr G.D.Birla - an eminent industrialist, a participant in Indian freedom struggle and a close associate of the Father of Indian Nation late Mr. Mohandas Karamchand Gandhi (Mahatma Gandhi). What started in early 1900s as a small school, blossomed into a set of colleges for higher education, ranging from the Humanities to Engineering until 1964 when all these colleges amalgamated to culminate into a unique Indian University of International standing. This university was christened as the Birla Institute of Technology and Science, Pilani, known to many as BITS, Pilani.



Over the years, BITS has provided the highest quality technical education to students from all over India admitted on the basis of merit. Its graduates may be found throughout the world in all areas of engineering, science and commerce. BITS symbolize the maturing of Indian technical ability and "can-do" entrepreneurial spirit, especially as derived from the private sector.

Members of the Board of Studies

<p>Dr. S.S. Badrinath President & Chairman Emeritus Medical Research Foundation 18, College Road Chennai 600 006</p>	<p>Prof. Bijendra Nath Jain Vice Chancellor Birla Institute of Technology and Science Pilani</p>
<p>Prof. Jay M Enoch Emeritus Dean School of Optometry (M C 2020) University of California Berkeley, CA 94720, U S A</p>	<p>Prof. G Sundar Director WILP Birla Institute of Technology and Science Pilani</p>
<p>Dr. S Bhaskaran Chairman, Medical Research Foundation 18, College Road Chennai 600 006</p>	<p>Prof. S Guru Narayanan Dean Birla Institute of Technology and Science Pilani</p>
<p>Dr. Lingam Gopal Ex-Chairman Medical Research Foundation 18, College Road Chennai 600 006</p>	<p>Prof. K Venkatasubramanian Assistant Dean - WILP Birla Institute of Technology and Science Pilani</p>
<p>Dr. T.S. Surendran Vice Chairman Medical Research Foundation 18, College Road Chennai 600 006.</p>	<p>Ms R. Bharathi Coordinator, BITS-Collaborative Programs 195, Tagore Street Ramakrishna Nagar Alwarthirunagar Chennai – 600087</p>
<p>Dr R Krishna Kumar Principal Elite School of Optometry Chennai 600016</p>	<p>Dr. S Meenakshi Director - Academics Medical Research Foundation 18, College Road Chennai 600 006.</p>
<p>Dr. H.N. Madhavan Director - Research Vision Research Foundation 18, College Road Chennai 600 006.</p>	<p>Dr Ronnie George Professor – ESO and Director Research</p>

Members of the Board of Studies

<p>Dr. K N Sulochana Professor and Head Dept. of Biochemistry, VRF Chennai 600 006.</p>	<p>Ms N Anuradha Lecturer</p>
<p>Prof. S. Veeraraghavan "Jayaram" No.55 "S" Block, 20th Street Anna Nagar Chennai 600 040.</p>	<p>Dr. S. Ramaswamy 125, Chamiers Road Nandanam Extn. Chennai 600 035.</p>
<p>Dr M Rajeswari Asst. Professor, ESO</p>	<p>Ms Anahita Baliwalla Dastur D/o (Late) Sri Naval P Baliwalla Optometrist and Contact Lens Practitioner Baliwalla & Homi P Ltd 365, Dadabhai Naoroji Road, Mumbai 400001.</p>
<p>Mr S Viswanthan H. O. D.- Optometry and Optical Services</p>	<p>Ms A Rashima Lecturer</p>
<p>Ms Jameel Rizwana Lecturer</p>	<p>Ms Akila Ganesan General Manager</p>

PART 1

History

There was a time in India when there were 30 million people blind without even knowing the reason for their blindness. Cataract, about which at least the urban community is aware of nowadays, was the main reason for the blindness and to bring this eye ailment totally to zero, every ophthalmologist had to do at least three surgeries per day. If the entire time was spent doing this, who will take care of the other more common eye problems? There were the simple refractive errors (need for glasses), to the more dangerous silent killers like Glaucoma waiting to make the Indians blind, which could be easily avoided, had it only been for another set of professionals to take care of the primary eye care needs of the society.

This disturbed the mind of Dr. S. S. Badrinath, a world renowned ophthalmologist who had already set up an eye hospital in Chennai, India in 1976, which would cater to the eye care needs of the rich and poor, the same way. Sankara Nethralaya, a unit of Medical Research Foundation was functioning providing quality ophthalmic services of international standards with a missionary spirit.

With the same intention of serving the community in all possible eye care arenas, Elite School of Optometry was established in the year 1985. Functioning in the same building with Sankara Nethralaya, Elite School popularly known as ESO was awarding Baccalaureate program in Optometry.

Functioning in the same building with Sankara Nethralaya, Elite School popularly known as ESO was awarding Baccalaureate program in Optometry. This is the first four year program in optometry in India although there were other efforts offering diploma, two/three year courses by many other institutes. The school owes so much to its founding members Prof. Jay M Enoch, who shipped many valuable books and instruments and also for his guidance and expertise in structuring the curriculum to international standards along with Prof. S. R. Govindarajan. In 1987, the school shifted to its present location in St. Thomas Mount, G.S.T.Road, Chennai, India from where it successfully extended its arms to reach out to the needy people by producing quality optometrists.



Eso-Inauguration - 1987

It was to the surprise of nobody when Birla Institute of Technology and Science, Pilani accepted the program giving it the present degree B.S.Optomety since 1994. Today Elite School of Optometry is the leading and the distinguished college of optometry in India because of the tireless efforts of all her mentors

Dr. T. S. Surendran, Dr.K.Ravishankar, Dr.P.P.Santhanam, Late Dr. E. Vaithilingam, Late Dr. S.Srinivasan, Late Dr. VG.Appukutty and many more without whose wholehearted support, the college would not have attained this significant place in the history of optometry in India. Having been the foremost in providing the four year professional degree, ESO is proud to be the only college in India providing post graduate (M.Phil.) and doctoral programs (Ph. D) in optometry since 1996.

ESO stands out from all the other colleges in that it hosts many national and international conferences and the students and all the optometrists get the opportunity of listening to national and international speakers. The first All India workshop on clinical refraction in 1994, the first National Dispensing workshop in 1998, the first international Low vision Aids Workshop in 2001 and Elite School of Optometry's International Vision Science and Optometry Conference (EIVOC) in 2005 enriched the knowledge of the students and practicing optometrists. Dr.E.V.Memorial Scientific Session conducted every year by ESO since 2003 provides the ground for all the optometrists to share their research knowledge and also contribute significantly to the country's optometric literature. ESOites proved themselves as best Vision research Scientists and clinical optometrists not only in India but all over the world and all the alumni would be sure to remember the strong optometric foundation laid in their minds by ESO.

The dedicated and committed faculty members of the college always keep in mind the best interests of the students and give individual attention to the students. Our faculty members are recipients of international awards and have contributed significantly to the ophthalmic, optometric, basic science and vision science knowledge of the international community. Being a unit of the Medical Research Foundation, the students have easy accessibility to the infrastructure and the sophisticated instruments and the training in the tertiary eye care diagnostics. We are committed to giving our students exposure to the state of the art facilities and recent advances in information and technology.

City, location, neighborhood

Elite School of Optometry, located at St.Thomas Mount, is a few kilometers away from the St. Thomas Mount railway station and the Anna International airport, Chennai, India.

Campus-Facilities



Dr V G Appukutty Campus

Built in 1987, ESO and C.U.Shah Eye Hospital, units of Medical Research Foundation are in the Dr. V.G.Appukutty campus. The campus is named after Dr.V.G.Appukutty who donated the land for establishing the ESO.

Main Campus

The main building of ESO is situated in the cool green V.G.Appukutty campus in a vast area of 3.17 acres. This building houses all the classrooms, labs, library, seminar hall and the administrative office.

Main Campus



Laboratories



Biochemistry Lab

Students will be able to analyze, identify and estimate biochemicals of importance in health and disease. Students learn the main aspects of the metabolism of major biochemicals in the body and techniques like electrophoresis

Optics Lab



Optics Lab

Students will be trained to have a clear understanding of image formation, the simple imaging concepts in single lenses and mirror.

Visual Optics Lab

Students practice the various clinical testing procedures from the second year of their academics.

Visual Optics Lab



Dispensing Lab

The students are trained to make lens blanks skillfully and the fitting of these blanks in the frame.



Dispensing Lab

Computer Lab

A lab with 24 hour internet access is available. Students are taught the basics in computers and Visual Basic.



Computer Lab

Seminar/ Video Conferencing Hall

The seminar hall with videoconferencing facility provides an opportunity for the students to update themselves with the recent advances in Optometry by attending to the lectures of eminent professors.

Seminar/ Video Conferencing Hall



Psychophysics is a way of understanding the complex functioning of the visual system by using non-invasive, non-contact methods. By using specially designed visual stimuli and studying the response of the patients to these stimuli, psychophysicists model these functions. Located in Sri. V. Venugopal block in the main campus in Sankara Nethralaya, Chennai, the lab is heading on answering new research questions in vision science.



Smt Sundari Subramanian Department of Visual Psychophysics

Library

A well equipped library is a reflection of an institution's commitment to education and research. The 1500 sq. ft ESO library owes its vast collection of 4000 books and journals to the many people who have come forward to add to its collection. Prof. Jay M Enoch offered his personal library consisting of a variety of books, reference sources and journals to the Elite School and also requested many others to contribute to the ESO library, which has the biggest optometry collection in Asia.

BHAGWAN ADINATH JAIN LIBRARY



Donated By Mr. Sugal Chand Jain

The Library at Sankara Nethralaya has over 4850 books on Ophthalmology and Visual Science besides texts in General Medicine. Other educational aids include audio cassettes and DVD and CD ROMs. The Hospital also subscribes to over 35 National and International scientific journals and has facility to access journals Online through OVID. Medlars database through the Internet is also available.

Two more Libraries at Sankara Nethralaya HRD and Consultant Study Libraries with collection of Optometry / Culture / Education and Religion books and journals.



Student life

Hostel facility for the students is arranged on request.

Cultural and Recreational activities

Students are given the opportunity of organizing and participating cultural programs at the end of every semester. Students also have the opportunity of participating in the inter college cultural competitions. Sankara Nethralaya's Foundation Day is celebrated every year and this has nurtured the creative and cultural talents of the students. Music concerts, film shows and discourses are regularly organized by the mother institute. The Foundation day is a much awaited occasion for the students as they participate in large numbers in all the events and contribute significantly for the success of the event.

Games and Sports

The College has a volley ball court and a badminton court. Students have the opportunity of participating in the Annual Sports event of the Medical Research Foundation.



Student Services

Orientation

At the time of admission, the institute organizes an orientation programme in order to familiarize the students with the highlights of the academic programme.

Mentors

Optometrists working at Sankara Nethralaya also act as mentors for the students to guide them when they are in their internship.

Consultation/Insurance Coverage

- All students are eligible to undergo comprehensive eye evaluation in any branch of Sankara Nethralaya during their four years of academics
- Students are also covered under the group health Insurance scheme

Medical Facilities

The V G Appukutty campus has a hospital inside. A Physician and a staff nurse are available during the working hours

Communication Facilities

Students have access to electronic mail round the clock. St. Thomas Mount head post office is located adjacent to the campus

Field Trips

★ **Industrial Visits**

- ★ Students are given the opportunity to visit various industrial settings during the third year. They observe the various work situations and the visual demand for each task and the lighting requirements. They also observe the various possible hazards in industries, exposure level and safety measures followed to overcome the same. Students visit LUCAS TVS in Ambattur and RLI in Adyar, CPCL, Manali, TVS Delphi Diesel systems Ltd, Sriperumbudur, Caterpillar India, Thiruvallur and Anatomy Lab at Sri Rama Chandra University.

★ **Visit to Low Vision Rehabilitation Centers**

Students visit centers to observe the rehabilitation services provided, vocational training and orientation. They interact with the trainers and benefactors about the effective services and Low Vision Care. NIVH in Poonamallee, Little Flower Convent in Nungambakkam and Spastics Society are a few of the centers.

★ **Visit to Contact Lens Manufacturing Unit**

★ **Visit to Spectacle Lens Manufacturing Unit**

Every year students are taken to the Essilor Spectacle Manufacturing Unit, Bangalore

Seminars/ Continuing Medical Education

Lectures on optometric updates, current trends are given as presentations by the final year students along with case discussions. Periodical optometry quiz and guest lectures are also arranged for the benefit of the students every week in the main campus of Sankara Nethralaya



Seminars/ Continuing Medical Education

ESOAA aims to help in the development of the college. Alumni exchange their professional knowledge by guest lectures, seminars, lectures and meetings. web : www.esoaa.org ESO Alumni Association

Rotaract Club

The Rotaract club is a part of Rotary club, in which students will be board members. It was started by the Rotary club for college and school students. The main objective of the club is to motivate the students for participating in social activities. Not only social activities, but also many personality development programs are conducted especially for students.

Rotaract Club



The Rotaract club of ESO was started in November 2008, with the help of Rotary club of North Madras. This was started to make the campus clean and green. Saplings were planted inside the campus. Plans are being put up to make tree planting successful outside the campus too.

PART - 2

Educational Process and Programs of studies

Programmes Offered

Programmes	Duration
BS Optometry:	4 years (three years of academics and one year of Internship)
M.Phil Optometry:	A two-year intensive research program
Ph.D Optometry:	A research program of minimum three-years
ESO-SN Pediatric Optometry Fellowship	6 months (Beginning January 1st or July 1st)

B S Optometry

Course Content – First Year					
Course No.	Course Title	Unit	Course No.	Course Title	Unit
	First Semester			Second Semester	
OPTO ZC111	Functional English & Communication	3	OPTO ZC131	Physical Optics	4
OPTO ZC211	Computer Programming	3	OPTO ZC142	Ocular Anatomy	2
OPTO ZC141	Basic Biochemistry I	3	OPTO ZC152	Ocular Physiology	3
OPTO ZC151	General Anatomy	2	OPTO ZC162	Basic Biochemistry II	3
OPTO ZC161	General Physiology	5	OPTO ZC121	Mathematics I	2
OPTO ZC112	Basic Accountancy	2	OPTO ZC182	Principles of Lighting	1
OPTO ZC172	Nutrition	1	OPTO ZC122	Public Relations	1
OPTO ZC133	Hospital Procedures	1	OPTO ZC171	Geometric Optics I	4

Course Content - Second Year

Course No.	Course Title	Unit	Course No.	Course Title	Unit
	First Semester			Second Semester	
OPTO ZC192	Mathematics II	2	OPTO ZC132	Pharmacology	2
OPTO ZC221	Optometric Optics I	3	OPTO ZC212	Medical Psychology	1
OPTO ZC231	Optometric Instruments	3	OPTO ZC222	Pathology & Microbiology	3
OPTO ZC241	Clinical Exam of Visual System	2	OPTO ZC232	Optometric Optics II	3
OPTO ZC251	Ocular Diseases I	3	OPTO ZC242	Ocular Diseases II	3
OPTO ZC261	Visual Optics I	2	OPTO ZC252	Visual optics II	3
OPTO ZC123	Geometric Optics II	3	OPTO ZC272	Clinics II	5
OPTO ZC281	Clinics I	4	OPTOZC292	Monocular Sensory Perception	2

B S Optometry

Course Content - Third Year

Course No.	Course Title	Unit	Course No.	Course Title	Unit
	First Semester			Second Semester	
OPTO ZC282	Dispensing Optics	3	OPTO ZC312	Binocular Vision II	1
OPTO ZC311	Binocular Vision I	1	OPTO ZC322	Law & Optometry	1
OPTO ZC323	Contact Lens I	1	OPTO ZC324	Contact Lens II	1
OPTO ZC331	Systemic Diseases	1	OPTO ZC332	Public Health & Community Optometry	1
OPTO ZC341	Glaucoma	1	OPTO ZC342	Pediatric Optometry	1
OPTO ZC371	Clinics & Special Clinics I	8	OPTO ZC352	Occupational Optometry	2
OPTO ZC381	Low Vision Aids	1	OPTO ZC372	Clinics & Special Clinics II	8
OPTO ZC421	Epidemiology	3	OPTO ZC382	Geriatric Optometry	1
OPTO ZC431	Biostatistics	3	OPTO ZC422	Project	5

Course Content - Fourth Year

Course No.	Course Title	Unit	Course No.	Course Title	Unit
	First Semester			Second Semester	
OPTO ZC411	Internship I	20	OPTO ZC412	Internship II	20

Course Descriptions

★ **OPTO ZC111 Functional English and Communication**

Grammar in usage - Tenses, Prepositions, Phrasal verbs; Communication - Process, Speaking, Listening, Reading, Memory, Self image; Comprehension, Precise writing; Report writing

★ **OPTO ZC112 Basic Accountancy**

Terms, Principles, Journal & Journalizing, Ledger & Ledger posting, Trial balance, Cash book, Sales & Purchases register, Bank reconciliation, Depreciation, Balance sheet, Income and Sales tax.

★ **OPTO ZC121 Mathematics I**

Limits; sequences and series; continuity and differentiability of real valued functions of a real variable; integration; applications of derivatives and integrals; linear differential equations with constant coefficients; analytical geometry of conics.

★ **OPTO ZC122 Public Relations**

Definition - Universe, Phrases, Benefits; Methods - Press relation, Printed word, spoken word, Radio and other Audio media, Film & TV, Research; In action - Employee public, Customer public, Government public, Community public; Specialized - Welfare agencies, Health agencies, Hospitals.

★ **OPTO ZC123 Geometric Optics - II**

Stiles Grawford Effect, Ametropia, Correction of Spherical Ametropia, Magnification, Presbyopia, Aphakia Spherometer & lens gauge, Critical Angle; spectrometer, Facimeter Refractive Index of lenses.

★ **OPTO ZC131 Physical Optics**

Nature of light, Interference, Diffraction, Polarization, Laser Optics, Spectrum, Scattering, Surface tension, Viscosity, Newton's rings, Grating, Resolving power of telescope

★ **OPTO ZC132 Pharmacology**

Mechanism of drug action, Dose response relationship, Tachyphylaxis, Pharmacokinetics of drug absorption, distribution, biotransformation; Principles of ocular pharmacology, Optometric diagnostic drugs.

★ **OPTO ZC133 Hospital Procedures**

Administration, Bioengineering department, Medical Records, Reception, Computer, Appointment scheduling and Accounts, Laboratory, Funds, fluorescein angiography, Medical Photography, Correspondence, Stores.

★ **OPTO ZC141 Basic Biochemistry-I**

Chemistry and functions of constituents of cells and tissues; Introduction to Carbohydrates; Proteins; Lipids; Enzymes; Vitamins; Minerals

★ **OPTO ZC142 Ocular Anatomy**

Anatomy & Embryology of Sclera, cornea, Uvea, retina & visual pathway.

★ **OPTO ZC151 General Anatomy**

Tissues of Body, General Plan of Organ System, Cell structure, and other anatomical aspects of vital organs of body.

★ **OPTO ZC152 Ocular Physiology**

Protective Mechanism in the eye, extraocular muscle, physiology, lens metabolism, Refractive Errors, Visual Acuity, color vision.

★ **OPTO ZC161 General Physiology**

Cell physiology, Blood, Digestion, Excretion, Endocrines, Reproduction circulation, Nervous System & Special Senses.

★ **OPTO Zc162 Basic Biochemistry II**

Hormones and metabolic regulation; Whole body metabolism; Ocular Biochemistry - aspect of eye, viz. tears, cornea, lens, aqueous, vitreous, retina and pigment Rhodopsin; Biochemistry techniques; Clinical Biochemistry.

★ **OPTO Zc171 Geometric Optics I**

Photometry, Refraction through Spherical Surfaces, Aberration, Fiber Optics, Color theory, Lens Power, Prismatic Power, Gull strands, Schematic Eye, Visual Acuity.

★ **OPTO Zc172 Nutrition**

Energy, Carbohydrates, Proteins, Fats, Minerals, Vitamins, Miscellaneous associated eye disorders.

★ **OPTO ZC181 Remedial Mathematics**

Basic mathematical concepts from algebra, trigonometry and calculus.

★ **OPTO ZC182 Principles of Lighting**

Visual tasks, Synthesis of light, Additive and subtractive synthesis of color, light sources, illumination, lighting installation, photometry, Eye care & lighting.

★ **OPTO ZC191 Remedial Biology**

Living systems and their properties; major biological compounds; basic physiological processes; introduction to genetics; environment and evolution.

★ **OPTO ZC192 Mathematics II**

Heuristic approach to manipulations with sets; language of logic; vectors and matrices, elementary applications; simplex method for a linear programming problem; elementary probability and statistical tools for tests of significance; game theory; graphs and networks; applications to behavioral and managerial sciences.

★ **OPTO ZC211 Computer Programming**

Elementary computer organization; introduction to Number Systems; Representation of integers, real numbers and characters on computers; concept of range and accuracy; Arithmetic Overflow; Algorithms and algorithm development; structured program development through step wise refinement. Introduction to C language; Functions; Recursion; Data structure & algorithms; File management & file handling; Problem solving using C.

★ **OPTO ZC212 Medical Psychology**

Definition, Emotions & feelings, Motivation, Personality, Normality & Abnormality, Impact of eye diseases on the patient, Rehabilitation of the blind.

★ **OPTO ZC221 Optometric Optics**

Form of lenses, Base curves, lens tools & blanks, Cylindrical lenses, Spherocylinders, Ophthalmic prism, Determining lens power, Aberrations in Ophthalmic lenses, Absorptive lenses.

- ★ **OPTO ZC222 Pathology & Microbiology**
Inflammation & repair, Infection, Neoplasia, Circulatory disturbances, Clinical pathology, Principles of cultivation of bacteria, sterilization and disinfection.
- ★ **OPTO ZC261 Visual Optics I**
Review of Geometric optics, Optics of ocular structures, Measurement of the optical constants of the eye. Refractive anomalies and their causes, Refractive conditions, Far and near points of accommodation.
- ★ **OPTO ZC272 Clinics II**
- ★ **OPTO ZC281 Clinics I**
- ★ **OPTO ZC282 Dispensing Optics**
Surfacing & Polishing, Glazing frame manipulations, Facial development and frame choice. Dispensing, lens, faults inspection, Marking & edging of bifocal lenses.
- ★ **OPTO ZC311 Binocular Vision I**
Spatial Sense, Grade of Binocular Vision, Panum's Space, Development of Binocular Vision.
- ★ **OPTO ZC312 Binocular Vision II**
ARC, Amblyopia, Clinical evaluation of squint, Heterophorias & Tropias, Nystagmus.
- ★ **OPTO ZC322 Law & Optometry**
Legal environment and techniques, Therapy of lenses, Optometrists in court, Malpractice, Insurance, Negligence, Ethics, Laws governing Practice of medical profession and Para medical profession in India.
- ★ **OPTO ZC323 Contact Lens I**
History of development, review of corneal physiology and contact lenses besides detailed instruction to preliminary measurements and investigations, fitting of Hard and Soft Lenses in high and low emetropia, children and adults.
- ★ **OPTO ZC324 Contact Lens II**
Toric contact lens, Bifocal contact lens, disposable contact lens, specialty contact lens, contact lens fitting in post operative cases and bandage lenses, contact lens complications and post fitting management..
- ★ **OPTO ZC331 Systemic Disease**
Hypertension, Diabetes, Acquired heart disease, Genetics, Thyroid disorders, Connective tissue disease, General medical emergencies, introduction to neurology.
- ★ **OPTO ZC332 Public Health & Community Optometry**
Philosophy of public health, Epidemiology, Health care system, Modes of health & vision care, Environmental vision.
- ★ **OPTO ZC341 Glaucoma**
Aqueous humor dynamics, IOP & Tonometry, Evaluation of Optic nerve head, Visual fields, Open angle glaucoma, Angle closure glaucoma, Secondary glaucoma, Principles of medical therapy.
- ★ **OPTO ZC342 Pediatric Optometry**
Examination and Diagnosis in children; Refractive status; Ocular motility examination; Normal appearance;

- **OPTO ZC352 Occupational Optometry**
Occupational health, hygiene, Factories Act, ESI Act, Occupational diseases, Safety, prevention, Visual standards, Problems of special occupational groups.
- **OPTO ZC371 Clinics & Special Clinics I**
- **OPTO ZC372 Clinics & Special Clinics II**
Case sheet, History taking, Lensometry, Visual acuity, Tests for phorias and tropias, External examination, Slit lamp examination, Drugs and method of application, Do's and don'ts - pupillary dilatation, Direct ophthalmology, Indirect ophthalmoscopy, Instrumentation, Patients selection, Keratometry reading, Refraction, Fluorescein pattern, Over refraction, Slit lamp examination, Fitting of hard lenses, Rigid gas permeable lenses & soft lenses in refractive errors and in specialized condition. The students are made to observe the interns initially, and then gradually they are encouraged to work up a patient, and perform various examination techniques.
- **OPTO ZC381 Low Vision Aids**
Identifying and evaluating a low-vision patient; Refraction; Demonstrating Aids; Low vision care and rehabilitation; Diagnostic procedures in Low Vision Aids, Case management; Optics of Low Vision Aids; Telescopes.
- **OPTO ZC382 Geriatric Optometry**
Structural and Physiological changes in eye; Optical and Refractive changes in eye; Aphakia; ocular diseases in old age.
- **OPTO ZC411 Internship I**
- **OPTO ZC412 Internship II**
During the internship programme the students are rotated in various subspecialties like General out-patient department, Community out-patient department, contact lens clinic, low vision aid clinics, vitreo-retinal clinic, glaucoma clinic, uvea clinic, lens clinic, emergency clinic, and cornea clinic. The students work up on their own and they are given exposure in their specialties. Six months of their internship is at Sankara Nethralaya and 6 months at the Rural Eye Hospital, St. Thomas Mount, Chennai.
- **OPTO ZC421 Epidemiology**
Introduction to the principles and methods of epidemiology. Epidemiology of some illustrative infectious diseases (of bacterial, rickettsial and viral origins), sexually transmitted diseases, chronic diseases such as cancer, cardiovascular diseases, neurological disorders etc. Use of biostatistics in epidemiology.
- **OPTO ZC422 Project 5**
Students are given a project assignment. They visit nearby schools, factories and help in the running of eye camps.

- **OPTO ZC431 Biostatistics**

Methods of collection and presentation of statistical data; calculation and interpretation of various measures like mean, median, mode, standard deviation, kurtosis, correlation coefficient; probability distributions; sampling and estimation of parameters; tests of hypothesis; data analysis. Topics covered will aim to relate to the health field; introduction to decision analysis; decision

Course Descriptions

Course Content - M.Phil. Optometry (SN)

Course No.	Course Title	Unit	Course No.	Course Title	Unit
	1 Year - First Semester			1 Year - Second Semester	
OPTO ZG642	Computers & Information Systems	3	New Course	Visual Perception	3
OPTO ZG623	Research Methodology I	3	OPTO ZG663	Research Methodology II	3
OPTO ZG511	Special Clinics I	4	OPTO ZG512	Special Clinics II	4
	Elective I	4		Elective II	4
	2 Year - First Semester			2 Year - Second Semester	
OPTO ZG659	Technical Communication	4	OPTO ZG629T	Dissertation	20
OPTO ZG644	Recent Advances in Optometry	4			
OPTO ZG513	Special Clinics III	4			
	General Elective				

Elective

Pool of Elective Pairs		
Course No	Course Title	U
OPTOZG673	Clinical Optometry I	4
OPTOZG683	Clinical Optometry II	4
OPTOZG631	Advanced Glaucoma I	4
OPTOZG682	Advanced Glaucoma II	4
OPTOZG612	Advanced Contact Lens I	4
OPTOZG611	Advanced Contact Lens II	4
New Course	Neurological Basis and Electrophysiology of Vision I	4
New Course	Neurological Basis and Electrophysiology of Vision II	4
New Course	Low Vision Care and Vision Enhancement Techniques –I	4
New Course	Low Vision Care and Vision Enhancement Techniques –II	4

General Electives		
Course No	Course Title	U
OPTOZG613	Ophthalmic Photography	2
OPTOZG683	Medical Records	4

- **OPTO ZG511 Special Clinics I**
- **OPTO ZG512 Special Clinics II**
- **OPTO ZG513 Special Clinics III**
- **OPTO ZG611**

Advanced Contact LensII

Appearance of Contact Lenses: Pre and Post cleaning; Calculation of DK/L, EOP and oedema; Measurements of corneal swelling with the Phachometer; Measurement of the Oxygen needs of the eye or needs and contact lens transmissibility; The effect of materials and deposits of DK/L; Identification of Lens deposits; The effect of hypoxia on corneal structure; Soft wearing schedules DW Vs EW; Bifocal Contact Lens fitting and assessment; Toric SCL Lenses; Toric RGP Lenses; Advancements in Contact Lens instrumentation and techniques; Visual recognition of conditions and problem solving; Fitting consideration for sports vision; Corneal prosthesis; Special applications of Contact Lens in Research and Industry; Future trends in industry, R & D and marketing for Contact Lenses and associated product: Vision correction by refractive surgery, Ortho keratology etc; Advanced study of Contact Lens research methods and analysis of Contact Lens literature and database.

- **OPTO ZG612 Advanced Contact Lens I**
Current concepts in anatomy and Physiology of the cornea and tear film, Microbiology and Immunology in

relation to Contact Lens wear; Vision and Optics with Contact Lenses; Corneal Topography measurement; use of Slit Lamp in Contact Lens Practice; Correlation of illumination with conditioning observed Pharmacology of Contact Lens solutions; Review of Contact Lens solution contents; The effects of wear on Contact Lenses; Contact Lens wear in dry eye; Soft Contact Lens EW complications: Causes and management; Rigid vs permeable, EW complications: Clinical management; Keratoconus; Overview and contact lens fitting; Contact lens for children; Contact Lenses for aphakics; Contact Lenses for Pseudo aphakics; Contact Lenses in post refractive surgery/PRK; Lens choice for astigmatism; Soft Contact Lens Design; R.G.P. Lens modification; Contact Lenses and Driving; Bandage Lenses- Assessment of deposits/micro organisms.

- **OPTO Zc613 Ophthalmic Photography**

External photography of the eye: Macro photography, slit lamp mydriatic and nonmydriatic fundus cameras, slit lamp photography of cornea and lens including high magnification techniques, Photograph of the angle of anterior chamber, Fundus photography by conventional and infrared imaging systems: Fluorescein photography, Methods of image enhancement, Preparing slides for projection. Advances in video imaging would also be taught.

- **OPTO ZG623 Research Methodology**

Methods of collecting and presentation of statistical data, Calculation and interpretation of various measures like mean, mode, median, mode standard deviations, Probability distribution, Correlation and regression, Significance tests and confidence intervals, Tests for equality of proportion, Tests for the equality of means, Measures of association, Prevalence incidence, rates, ratios, proportions, Questionnaires etc.

- **OPTO ZG629T Dissertation**

A student registered in this course must take a topic in an area of professional interest drawn from the on the job work requirement which is simultaneously of direct relevance to the degree pursued by the student as well as to the employing / collaborating organization of the student and submit a comprehensive report at the end of the semester working under the overall supervision and guidance of a professional expert who will be deemed as the supervisor for evaluation of all components of the dissertation. Normally the Mentor of the student would be the Dissertation supervisor and in case Mentor is not approved as the supervisor, Mentor may play the role of additional supervisor. The final grades for dissertation are Non-letter grades namely Excellent, Good, Fair and Poor, which do not go into CGPA computation.

- **OPTO ZG631 Advanced Glaucoma I**

- **OPTIC DISC:**

Ophthalmoscopic techniques for evaluation of the optic nerve head and optic disc drawings; Optic disc photography; Flicker analysis; Planimetry; Stereophotogrammetry; Image analyzers, Retinal nerve fiber layer evaluation.

- **OPTO ZG642 Computers & Information Systems:**

Introduction to MS-Windows; Introduction to MIS, SSADM; Word-processing using MS-Word; Database management and programming using MS-Foxpro; SpreadSheet using MS-Excel; Presentation Graphics using MS-PowerPoint.

- **OPTO ZG644 Recent Advances in Optometry**

- **OPTO ZG659 Technical Communication :**

Role and importance of communication; effectiveness in oral and written communication; technical reports; technical proposals; technical descriptions; definitions and classifications; business correspondence; precis writing; memorandum; notices, agenda and minutes; oral communication related to meetings, seminars, conferences, group discussions, etc.; use of modern communication aids.

- ★ **OPTO ZG663 Research Methodology II** : Epidemiological basis of disease, Planning a research project, sensitivity, specificity, predictive values, Bias and randomization, Retrospective and prospective studies, Clinical trials, Screening Studies and measures of agreement, Case control studies, Sampling methodology, Data analysis.
- ★ **OPTO ZG673 Clinical Optometry I**
The Course in Clinical Optometry consists of the Study of diseases affecting the lids and adnexa including the orbit, ocular motility, refractive errors, Diseases affecting the cornea, sclera.
- ★ **OPTO ZG 681 Medical Records**
Introduction to medical records: History, Need for medical record; Content of medical records: Content, Special records, Formats; Forms design and control; Filing methods, storage and retention; Nomenclatures and classification systems; Indexes and registers; Legal aspects of medical records; quality assurance; Recent advances in medical records system.
- ★ **OPTO ZG682 Advanced Glaucoma II**
Visual fields: Interpretation without statistical analysis; Interpretation with statistical analysis. Newer programmes; Psychophysical changes in glaucoma; Psychophysiological and electrophysiological testing of vision in glaucoma; Ultra-sound biomicroscopy: Early diagnosis of glaucoma.
- ★ **OPTO ZG683 Clinical Optometry II**
Diseases affecting uveal tract, retina, vitreous, lens, optic nerve, cranial nerves connected with vision and visual apparatus. It will also involve the study of ocular manifestations of systemic diseases.

Teaching and Learning process

Evaluation

Registration

All courses are conducted and evaluated in a continuous & internal manner by the faculty who teach these courses. The student registers for a certain number of courses each semester; the year being divided into two semesters, and a summer term, whenever offered. A faculty member, as registration advisor, helps a student to draw up his programme, suitable to his pace and needs, which is made possible by the course-wise time-table of the Institute. Every student gets, incidentally, a training in decision-making through

- ★ choice of load, i.e. number of courses per semester to suit his pace,
- ★ selection of his own time-table to suit his convenience, and
- ★ picking up courses as electives to meet his own aspirations. It is the responsibility of the student to attend classes regularly and to maintain a required level of scholastic standing

Assessment

The performance of a student in each course is assessed by the teacher by means of continuous evaluation throughout the semester in class work, periodical quizzes, tests (sometimes unannounced), tutorials, laboratory work, home work, project, etc. and a comprehensive examination at the end of the semester. The student is thereby given a large number of opportunities to exhibit himself and be evaluated.

The system encourages and rewards continuous and systematic study. It provides a constant feedback to the student as to where he stands, thus enabling him to cultivate regular habits of studying / learning and preparing himself for the future.

Grading

The system discards the conventional emphasis on a single final examination and numerical marks as the only absolute indication of the quality of student's performance. Thus, at the end of the semester the teacher of the course awards letter grades A, B, C, D, E to the student based on the total performance of the student and it is relative to the performance of others taking the same course. These letter grades stand for quality performance: A-Excellent, B-Good, C-Fair, D-Poor and E-Exposed. Further, these letter grades have points associated with them in a quantified hierarchy. There are also courses in which the teacher awards non-letter grades which have only a qualitative hierarchy. The teacher may also pronounce the performance of a student in a course in terms of certain reports which should not be misconstrued as grades.

Although BITS does not stipulate a minimum percentage of attendance before a student is permitted to appear in any test/examination, the Institute, being a fully residential university with internal and continuous evaluation system, expects every student to be responsible for regularity of his attendance in classrooms and laboratories, to appear in scheduled tests and examinations and to fulfill all other tasks assigned to him in every course. The system has adequate resilience to accommodate unforeseen

situations through withdrawal from a course, make-up test, feedback from examinations and interaction with teachers. When in spite of all these facilities a student fails to cooperate with the teacher in the discharge of his part of the contract to such an extent that the teacher is unable to award any grade, the teacher is authorized to give a "Not Cleared" (NC) report.

A student is deemed to have cleared a course if he obtains a grade in the course. However the educational philosophy of the Institute interlinks and at the same time distinguishes between the performance of a student in a single course and his overall cumulative performance. The overall performance of a student is indicated by an index known as the "Cumulative Grade Point Average" (CGPA). It is the weighted average of the grade points of all the letter grades received by the student since his entry into the Institute and is expressed on a 10-point scale.

During the student's stay in the Institute, the Institute expects him to show a certain minimum performance and progress. The minimum academic requirements regarding the performance and progress for the Integrated First Degrees and Higher Degrees are:

A CGPA of at least 4.5 at the end of every semester for integrated first degree students and 5.5 for higher degree/Ph.D. students.

Not more than one E grade in a semester for integrated first degree programmes and no E grade in the higher degree programmes. The pace of progress of a student should be such that at any stage of reckoning the student should not have spent more than 50% extra time than what is prescribed for him up to that stage in his programme. Higher Degree Programs.

Flexibilities

The structure of degree programmes and the Academic Regulations also provide certain other flexibilities like choice of electives, number of electives, repetition of courses, departure from normal pace, withdrawal from or substitution of course(s) etc.

Research At ESO

As a part of the undergraduate curriculum, an ESO student is required to do an original research project. Knowledge and skill required for this activity is imparted to the students in the form of various courses (such as Epidemiology, Biostatistics, etc) and hands-on training. Researches in various subspecialties of eye and vision care are carried out. Some of these research findings are presented in the national/international conferences and a few are published in international peer reviewed journals.

Administrative Office

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Details of Endowment
Elite School of Optometry
 (Unit of Medical Research Foundation)

No	Sponsor of the Endowment	Name of the Award	Subject
1	Dr Gowri Sivaraman	Smt. Alamelu Prabhakaran Memorial Prize	English
2	Dr Sumathi Narayanan	Dr Sumathi Narayanan Award	Communication
3	Dr H D Singh	Srimathi Pramila Singh Memorial Prize	General Physiology
4	Sri Surendra M Mehta	Sri S M Mehta Prize	Nutrition
5	Prof. G Kannian and M/s Luxottica Group	Luxottica Excellence Award	Physical Optics
6	Dr. (Mrs.) Sundari Krishnamurthy	Dr (Mrs) Sundari Krishnamurthy Prize	Public Relations
7	M/s Luxottica Group	Luxottica Excellence Award	Ocular Physiology
8	Dr S Ramaswamy	Dr S Ramaswamy Prize	Anatomy
9	Prof. S Veeraraghavan	Prof. S Veeraraghavan Prize	Mathematics
10	Dr S Srinivasan	Dr Revathy Srinivasan Prize	Geometric Optics
11	M/s Ramnath Charities	Sri V R Ramanatha Iyer Memorial Prize	Optometric Instruments
12	Srimathi Jayammal	Srimathi Jayammal Prize	Optometric Instruments

Details of Endowment
Elite School of Optometry
 (Unit of Medical Research Foundation)

13	M/s Luxottica Group	Luxottica Excellence Award	Clinical Examination of Visual System
14	M/s Ramnath Charities	Sri V R Ramanatha Iyer Memorial Prize	Ocular Diseases
15	Sri Nathella Narayana Gupta and Sri Nathella Ranganatha Gupta	Sri Narayana Gupta Prize	Visual Optics
16	Lion. R. Vijayaraghavan	Dr S Narasimhan Prize	Pharmacology
17	Mr S S Rajan and M/s Luxottica Group	Luxottica Excellence Award	Binocular Vision
18	Sri V Vaidyanathan	Sri V Vaidyasubramaniya Iyer Memorial Prize	Contact Lens
19	Prof. S Seshasayee	Sri K Sreenivasan Prize	Glaucoma
20	M/s, Essilor India Private Limited	Essilor Award	Dispensing Optics
21	Prof. S Veeraraghavan	Prof. S Veeraraghavan Prize	Bio Statistics
22	M/s Luxottica Group	Luxottica Excellence Award	Epidemiology
23	Dr S Srinivasan	Sri R Sankaranarayanan Prize	Low Vision Aids
24	M/s Luxottica Group	Luxottica Excellence Award	Law and Optometry
25	Ms Thanuja Panickar	Sri C N S Panicker Memorial Prize	Public Health and Community Optometry
26	Prof. S.R. Govindarajan	Prof. SRG Prize	Pediatric Optometry

27	Dr P P Santanam	Dr P P Santanam Prize	Occupational Optometry
28	M/s Luxottica Group	Luxottica Excellence Award	Geriatric Optometry
29	Dr S Srinivasan	Dr S Srinivasan Prize	Best Project
30	Sri Sugul Chand Jain	Sri Sugalchand Jain Prize	Clinical Examination
31	Sri V Mohan Rao	Sri V Venugopal Memorial Prize	Best out going Student
32	Ms Zarin Mistry	Dr M M Cooper Memorial Prize	Anatomy
33	Shree Banaskantha Palanpur Jain Association Award	Shree Banaskantha Palanpur Jain Association Award	Community Vision Care Service
34	Ms Sabiha N Jamal	Mrs Shakeron Nissa N P Jamal Award for Girl and Boy Studens	Optometry Clinical Excellence Award
		M Phil Optometry	
35	M/s Luxottica Group	Luxottica Excellence Award	Research Methodology
36	Dr Gowri Sivaraman	Sri R Sivaraman Memorial Endowment Prize	Best Research Project
		Other Awards	
37	Elite School of Optometry Alumni Association	ESO Alumni Award	Best Publication of the year
38	Dr S Rajagopal	Dr S Narasimhan Memorial Prize for Research	Best Research in Optometry
39	Dr P P Santanam	Dr P P Santatam and Jayalakshmi Award	Best Optometrist of the Year
		Best Student of First, Second and Third year	
40	Ms N Anuradha	Sumhitha Sriram Award	Best Student of First Year
41	M/s Bausch & Lomb Eye Care India Pvt Limited	Bausch & Lomb Eye Care India Pvt Limited Prize	Best Student of Second Year
42	M/s Bausch & Lomb Eye Care India Pvt Limited	Bausch & Lomb Eye Care India Pvt Limited Prize	Best Student of Third Year
		Best Faculty Award	
43	Management of Medical Research Foundation	Dr (Maj) S Srinivasan Memorial Prize	Best Senior and Junior Faculty

PART-3

Admission Requirements

BS OPTOMETRY:

Eligibility: Any student passing the Higher Secondary (+2) with excellent performance in Physics, Chemistry, Maths /Biology/Computer Science are eligible to enter the B.S.Optomety post interview / entrance exam. Only candidates having a minimum aggregate of 60% and above in 10+2 Board exam and individual subject marks of 60% in Physics, Chemistry and Maths/Biology are considered for Entrance Exam/Interview

M. PHIL:

Eligibility: Persons with a bachelor's degree in Optometry are admitted in to the program after a written entrance test and an interview.

PH. D:

Eligibility:Persons with an M.Phil or equivalent degree are admitted after a written entrance test and an interview.

Application Procedure

If you meet the academic requirements for admission to ESO, the application form and programme details can be downloaded from the BITS website (<http://www.bits-pilani.ac.in/dlp-home>). Duly completed application form is to be submitted along with requisite processing fee of Rs. 1,500/- (non-refundable) in the form of a crossed Demand

Draft drawn in favour of Birla Institute of Technology & Science (BITS), Pilani payable at State Bank of Bikaner & Jaipur, Pilani (Code: 10398) or UCO Bank, Vidya Vihar, Pilani (Code: 0150) or State Bank of India, Pilani (Code: 11309) or ICICI Bank Jhunjhunu (Branch Code 0799). In case of Demand Draft payable at any other bank (at Jaipur), a Demand Draft for Rs. 1,500/-, should be submitted. Early applications are encouraged. Application deadline is June 20th 2010. The Admissions Committee will carefully review your application and you will be invited for an interview or advised that you do not meet our admissions standards.

Tuition Fees Expenses

Fees Structure Applicable for candidates seeking admission during session
2013-2014

The fees schedule applicable for B.S.Optomety program is as follows:

Admission Fees:	Rs. 15,000/-
Each Semester Fees:	Rs. 35,600/- (Total of 8 Semesters)
Caution Deposit	Rs.1000/-
Library Fees	Rs.2000/-
Clinical Instrument	Rs.25,000/-

The fees schedule applicable for M. Phil Optometry program is as follows:

Admission Fees:	Rs. 15,000/-
Tution fee per Semester	Rs. 35,600/- (Total of 8 Semesters)
Caution Deposit	Rs.1000/-
Library Fees	Rs.2000/-
Research fee per Sem	Rs.25,000/-

Information for candidates

Rules and regulations

All students admitted to the institute will be governed by the rules and regulations that are prescribed from time to time.

College Timing

The working hours of college are from 8:00 AM to 5:00 PM. However during the final year as the students are posted in different specialty clinics and out patient procedures, the timing will depend on the clinical schedule. Punctuality and attendance will be considered for evaluations

Identity card

Each student will be given an identity card which the students are supposed to wear all the time inside the campus. Students will not be allowed to enter the branches of the hospital without the identity card.

Extra mural/ Guest Lectures

Medical Research Foundation organizes lectures and discourses on a variety of topics. Students can attend these sessions.

Instruments

All students must compulsorily possess a retinoscope and an ophthalmoscope before the first semester of the second year.

Log book

Students are expected to maintain a log book for all the practical and clinical sessions they attend with relevant details. The log book should be submitted whenever asked and before the examinations.

Dress code

Since the students are expected to work in a professional clinical setting formal dress code is mandatory.

Applying for leave

Students are advised to give prior information to the college authorities about their leave/ permission failing which strict disciplinary action will be taken. Medical Certificate need to be produced from a Register Medical Practitioner in case of leave days more than 2 days.

Sunday camps/ OPD

The third and final year students are given a chance to observe and perform community vision screening/ eye care awareness creation activities through various scheduled programs.

Holidays

Allotted holidays will be specified in the institution's calendar. The Principal holds the final authority to declare holiday on any other circumstances. The students are requested to contact the office for further information.

Anti- Ragging

The institute has formulated strict anti ragging guidelines and all students are required to sign an undertaking to abide by these guidelines. The institute has formulated strict anti ragging guidelines. Students, if found violating these guidelines are liable to disciplinary action including expulsion from the institute and also lodging of a criminal case against the student at the police station as per the directive from the honorable Supreme Court of India.



Elite School of Optometry

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