O/C

MGM INSTITUTE OF HEALTH SCIENCES

Accredited by NAAC with 'A' Grade
(Deemed University u/s 3 of UGC Act, 1956)
Sector-01, Kamothe, Navi Mumbai - 410 209
Tel 022-27432471, 022-27432994, Fax 022 - 27431094
E-mail : registrar@mgmuhs.com ; Website : www.mgmuhs.com

CHOICE BASED CREDIT SYSTEM (CBCS)

(With effect from 2018-19 Batches)

Curriculum for M. Optometry

Dr. Rajesh B. Goel
Registrar
MGM Institute of Health Sciences
(Deemed University u/s 3 of UGC Act, 1956)
Navi Mumbai- 410 209

Approved as per BOM –53/2018, [Resolution No. 4.5.2], Dated 19/05/2018
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1-8-2019

OUTLINE OF COURSE CURRICULUM

M.Optometry

Semester I

Code No.	Core Subjects	Credits/Week					Hrs/Semester					Marks		
		Lecture (L)	Tutorial (T)	Practical (P)	Clinical Posing/ Rotation	Total Credits (C)	Lecture (L)	Tutorial (T)	Practical (P)	Clinical Posing/ Rotation	Total hrs.	Internal Assessment	Semester Exam	Total
Theory														
MOPTOM 101 L	Epidemiology Public health & Community Eye Health	2	-	-	-	**2**	30	-	-	-	**30**	20	80	**100**
MOPTOM 102 L	Ocular Diseases	4	-	-	-	**4**	60	-	-	-	**60**	20	80	**100**
MOPTOM 103 L	Anterior Segment Dignostic	4	-	-	-	**4**	60	-	-	-	**60**	20	80	**100**
MOPTOM 104 CP	Optometry Directed Clinical Education-I	-	-	-	21	**7**	-	-	-	**315**	**315**	50	-	**50**
Practical														
MOPTOM 101 P	Epidemiology Public health & Community Eye Health	-	-	4	-	**2**	-	-	60	-	**60**	10	40	**50**
MOPTOM 103 P	Anterior Segment Diagnostic	-	-	4	-	**2**	-	-	60	-	**60**	10	40	**50**
Total		**10**	**0**	**8**	**21**	**21**	**150**	**0**	**120**	**315**	**585**	**130**	**320**	**450**

OUTLINE OF COURSE CURRICULUM

M.Optometry

Semester II

Code No.	Core Subjects	Credits/Week					Hrs/Semester					Marks		
		Lecture (L)	Tutorial (T)	Practical (P)	Clinical Posing/ Rotation	Total Credits (C)	Lecture (L)	Tutorial (T)	Practical (P)	Clinical Posing/ Rotation	Total hrs.	Internal Assessment	Semester Exam	Total
Theory														
MOPTOM 105 L	Ocular Diseases and Diagnostics II	3	-	-	-	**3**	45	-	-	-	**45**	20	80	**100**
MOPTOM 106 L	Advanced Contact Lenses I	2	-	-	-	**2**	30	-	-	-	**30**	20	80	**100**
MOPTOM 107 L	Binocular Vision and Pediatric Optometry	4	-	-	-	**4**	60	-	-	-	**60**	20	80	**100**
MOPTOM 108 L	Low vision and Geriatric Optometry	2	-	-	-	**2**	30	-	-	-	**30**	20	80	**100**
MOPTOM 109 CP	Optometry Directed Clinical Education-II	-	-	-	15	**5**	-	-	-	**225**	**225**	50	-	**50**
CC 001 L	Research Methodology & Biostatistics (Core Course)	4	-	-	-	**4**	60	-	-	-	**60**	20	80	**100**
Practical														
MOPTOM 105 P	Ocular Diseases and Diagnostics II	-	-	2	-	**1**	-	-	30	-	**30**	50	-	**50**
MOPTOM 106 P	Advanced Contact Lenses I	-	-	2	-	**1**	-	-	30	-	**30**	50	-	**50**
MOPTOM 107 L	Binocular Vision and Pediatric Optometry	-	-	4	-	**2**	-	-	60	-	**60**	10	40	**50**
MOPTOM 108 P	Low vision and Geriatric Optometry	-	-	4	-	**2**	-	-	60	-	**60**	10	40	**50**
CC 001 P	Research Methodology & Biostatistics (Core Course)	-	-	4	-	**2**	-	-	60	-	**60**	10	40	**50**
Core Elective Course														
CEC 001 L	Basics of Clinical Skill Learning	3	-	-	-	**3**	45	-	-	-	**45**	100	-	**100**
CEC 002 L	Hospital Operation Management													
Total		**18**	**0**	**16**	**15**	**31**	**270**	**0**	**240**	**225**	**735**	**380**	**520**	**900**

OUTLINE OF COURSE CURRICULUM

M.Optometry

Semester III

Code No.	Core Subjects	Credits/Week					Hrs/Semester					Marks		
		Lecture (L)	Tutorial (T)	Practical (P)	Clinical Posing/ Rotation	Total Credits (C)	Lecture (L)	Tutorial (T)	Practical (P)	Clinical Posing/ Rotation	Total hrs.	Internal Assessment	Semester Exam	Total
Theory														
MOPTOM 110 L	Advanced Dispensing optics	3	-	-	-	3	45	-	-	-	45	20	80	100
MOPTOM 111 L	Advance Contact Lense II	2	1	-	-	3	30	-	-	-	30	20	80	100
MOPTOM 112 L	Visual Perception Neuroscience & Psychophysics	2	1	-	-	3	30	-	-	-	30	20	80	100
MOPTOM 113 L	Applied Vision Therapy	4	-	-	-	4	60	-	-	-	60	20	80	100
MOPTOM 114 CP	Optometry Directed Clinical Education-III	-	-	-	15	5	-	-	-	225	225	50	-	50
MOPTOM 115	Dissertation/Project*	10	-			5	-	-	-	-	-	50	-	50
Practical														
MOPTOM 110 P	Advanced Dispensing optics	-	-	2	-	1	-	-	30	-	30	10	40	50
MOPTOM 111 P	Advance Contact Lense II	-	-	2	-	1	-	-	30	-	30	10	40	50
MOPTOM 113 P	Applied Vision Therapy	-	-	2	-	1	-	-	30	-	30	10	40	50
Seminar														
MOPTOM 116	Seminars	-	-	-	-	1	-	-	-	-	-	50	-	50
Total		21	2	6	15	27	165	0	90	225	480	260	440	700

OUTLINE OF COURSE CURRICULUM

M.Optometry

Semester IV

Code No.	Core Subjects	Credits/Week					Hrs/Semester					Marks		
		Lecture (L)	Tutorial (T)	Practical (P)	Clinical Posing/ Rotation	Total Credits (C)	Lecture (L)	Tutorial (T)	Practical (P)	Clinical Posing/ Rotation	Total hrs.	Internal Assessment	Semester Exam	Total
Theory (General Elective)**														
GE 001 L	Pursuit of Inner self Excellence(POISE)	4	-	-	-	4	60	-	-	-	60	100	-	100
GE 002 L	Bioethics, Biosafety, IPR and Technology Transfer													
GE 003 L	Disaster Management and Mitigation Resources													
GE 004 L	Human Rights													
Practical														
MOPTOM 115	Dissertation / Project	-	-	36	-	18	-	-	-	-	-	-	200	200
MOPTOM 117	Educational Tour / Field Work/IV/Hospital Visit	-	-	-	-	2	-	-	-	-	-	50	-	50
Total		4	0	36	0	24	60	0	0	0	60	150	200	350

DIRECTOR'S MESSAGE

Dear Students,

Greetings!!!!!

I take this opportunity to welcome you on behalf of MGM family to the Masters Degree at MGM School of Biomedical Sciences (MGM SBS).

MGM School of Biomedical Sciences (MGM SBS) established in the year 2007, the MGM School of Biomedical Sciences envisaged building a progressive learning community and is committed to pursuit of excellence in higher education, total development of personality and shaping the students into sensitive, self-reliant citizens of the country imbued with the ideals of secularism and a scientific aptitude. We set global standards to make our students scientifically as well as ethically stronger. The college adopts the national qualification frame work for the post-graduate programs which has adopted Credit Base Choice System (CBCS) so that, we construct a value based system of education that encourages critical thinking and creativity, a research platform as opposed to rote learning.

The P.G (M.Sc.) courses offered are; Medical Anatomy, Medical Physiology, Medical Biochemistry, Medical Microbiology, Medical Pharmacology, Biotechnology, Genetics, Molecular Biology, Masters in Hospital administration and Biostatistics, M.Sc. Cardiac Care Technology, M.Sc. Medical Radiology and Imaging Technology, M. Optometry. Over time, the program has evolved, to meet the challenges of the ever changing field of biomedical education system.

With Best Wishes,

Director
MGM School of Biomedical Sciences

ABOUT MGM SCHOOL OF BIOMEDICAL SCIENCES

Mission

To improve the quality of life, both at individual and community levels by imparting quality medical education to tomorrow's doctors and medical scientists and by advancing knowledge in all fields of health sciences though meaningful and ethical research.

Vision

By the year 2020, MGM Institute of Health Sciences aims to be top-ranking Centre of Excellence in Medical Education and Research. Students graduating from the Institute will have the required skills to deliver quality health care to all sections of the society with compassion and benevolence, without prejudice or discrimination, at an affordable cost. As a research Centre, it shall focus on finding better, safer and affordable ways of diagnosing, treating and preventing diseases. In doing so, it will maintain the highest ethical standards.

About – School of Biomedical Sciences

MGM School of Biomedical Sciences is formed under the aegis of MGM IHS with the vision of offering basic Allied Science and Medical courses for students who aspire to pursue their career in the Allied Health Sciences, teaching as well as research.

School of Biomedical Sciences is dedicated to the providing the highest quality education in basic medical sciences by offering a dynamic study environment with well equipped labs. The school encompasses 21 courses each with its own distinct, specialized body of knowledge and skill. This includes 7 UG courses and 14 PG courses. The college at its growing years started with mere 100 students has recorded exponential growth and is now a full-fledged educational and research institution with the student strength reaching approximately 581 at present.

Our consistent theme throughout is to encourage students to become engaged, be active learners and to promote medical research so that ultimately they acquire knowledge, skills, and understanding so as to provide well qualified and trained professionals in Allied Health Sciences to improve the quality of life.

As there is increased need to deliver high quality, timely and easily accessible patient care system the collaborative efforts among physicians, nurses and allied health providers become ever more essential for an effective patient care. Thus the role of allied health professionals in ever-evolving medical system is very important in providing high-quality patient care.

Last but by no means least, School of Biomedical Sciences envisions to continuously grow and reform. Reformations are essential to any growing institution as it fulfills our bold aspirations of providing the best for the students, for us to serve long into the future and to get ourselves updated to changing and evolving trends in the health care systems.

Name of the Degree: M. Optometry

Duration of Study:

The duration of the study for M. Optometry will be of 2 years.

Program pattern:

- First Semester: July
- Second Semester: January
- Third Semester: July
- Fourth Semester: January

Eligibility Criteria:

Bachelor of Optometry or equivalent from a recognized university with minimum 5.5 CGPA

For any query visit the website: www.mgmsbsnm.edu.in

FIRST YEAR

M. Optometry

SEMESTER-I

Code No.	Core Subjects
Theory	
MOPTOM 101 L	Epidemiology Public health & Community Eye Health
MOPTOM 102 L	Ocular Diseases
MOPTOM 103 L	Anterior Segment Diagnostic
MOPTOM 104 CP	Optometry Directed Clinical Education-I
Practical	
MOPTOM 101 P	Epidemiology Public health & Community Eye Health
MOPTOM 103 P	Anterior Segment Diagnostic

Name of the Programme	**M. Optometry**
Name of the Course	**Epidemiology Public health & Community Eye Health**
Course Code	**MOPTOM 101 L**

Teaching Objective	•To get post graduate students to with the basics of Ocular Epidemiology and details on various eye diseases. It also introduces the students to the concepts of preventive measures and to inculcate the theoretical knowledge and clinical exposure of community optometry.
Learning Outcomes	• To have a thorough understanding of epidemiological concepts. • To have a thorough understanding of conducting of screening for specific eye conditions, and resultant implications through theoretical and practical exposure • To understand role of optometrists in community eye health

Sr. No.	Topics	No. of Hrs.
1	Prevalence, incidence and distribution of visual impairment	5
2	**Methodology**-Basics of Epidemiology study methods, Types of study designs, Screening for visual disorders.	5
3	**Causes for vision Impairment**-Childhood blindness, Refractive errors and presbyopia, Age related cataract, Low Vision, Diabetic retinopathy, Glaucoma, Age related Macular Degeneration, Vitamin A deficiency, Corneal and external diseases	5
4	**Prevention strategies**-Concept of Health and Disease ,Principles of Epidemiology and Epidemiological Methods, Screening for Eye Disease – Refractive errors, Low Vision, Cataract, Diabetic retinopathy, Glaucoma, Amblyopia, Squint etc.	5
5	**Blindness -**Causes, Prevalence, Prevention	3
6	Health Information and Basic Medical Statistics , Communication for Health Education , Health Planning and Management, Health care of community , How to plan and implement Vision2020	7
Total		**30 hrs**

MOPTOM 101 P - Epidemiology Public health & Community Eye Health

Sr.No.	Topics	No. of Hrs.
1	Reading of review papers on epidemiology	60
2	To organize an eye camp for screening for all leading causes of blindness	
Total		**60 hrs**

Reference books:

Epidemiology of eye diseases: Johnson and Gordon
Website: www.vision2020india.org and www.npcb.nic.in

Name of the Programme	**M. Optometry**
Name of the Course	**Ocular Diseases**
Course Code	**MOPTOM 102 L**

Teaching objective	•To develop an understanding of evidence based approach to Diagnosis, Clinical decision Making, Management and co management of anterior segment ocular diseases. Developing more reading ability of scientific journals for more evidence based management with recent understanding of diseases.
Learning outcomes	•A-Scan OCT UBM , •To be able to interpret glaucoma diagnostic reports OCT, HRT, Gonioscopy, and ONH evaluation.

Sr.No.	**Topics**	**No. of Hrs.**
1	**Refresher Course-**Refresher of anterior segment ocular diseases, diagnosis and therapeutics, Refresher of glaucoma diagnosis and therapeutics, Surgical treatment of anterior segment diseases	60
Total		**60hrs**

Reference books

- Clinical Ophthalmology: Jack J Kanski
- Diagnostics and imaging techniques in Ophthalmology: Dr. Amar Agarwal

Name of the Programme	**M. Optometry**
Name of the Course	**Anterior Segment Diagnostic**
Course Code	**MOPTOM 103 L**

Teaching Objective	•To develop an understanding of evidence based approach to Diagnosis, Clinical decision Making, Management and co management of anterior segment ocular diseases. Developing more reading ability of scientific journals for more evidence based management with recent understanding of diseases.
Learning Outcomes	•To be able to perform clinical decision making for Ocular abnormalities •To be able to perform and interpret corneal diagnostics including, Topography/Pentacam/Orbscan, Secular microscopy,Tachymetry, Abberometry, A-Scan OCT UBM , •To be able to interpret glaucoma diagnostic reports OCT, HRT, Gonioscopy, and ONH evaluation. •To be able to perform anterior segment photography and ophthalmic imaging •To be able to manage and co-manage therapeutics for anterior segment

Sr. No.	Topics	No. of Hrs.
1	**Anterior segment Diagnostics-**Specular Microscopy, Topography, Corneal Hysteresis,Orbscan, Pentacam,Pachymetry,Abberometry,AS OCT,HRT,GDx,ONH evaluation,Gonioscopy,Fluorosceinangiograohy,Refractive surgery, Cataract evaluation Anterior and posterior segment photography	60
Total		**60 hrs**

MOPTOM 103 P - Anterior Segment Diagnostic

Sr. No.	Topics	No. of Hrs.
1	Hands on training and Interpretation of all the above listed tests	**60**
Total		**60hrs**

Reference Books:

- Clinical Ophthalmology: Jack J Kanski
- Diagnostics and imaging techniques in Ophthalmology: Dr. Amar Agarwal

MOPTOM 104CP - Community orientation & clinical visit (including related practicals to the parent course) (Total -315hrs)

Optometry Directed Clinical Education I - Students will improve their skills in clinical procedures, then Progressive interacting with patients and professional personal are monitored as students practice optometry in supervised setting. Additional area includes problem solving and complications of various managements will be inculcated. Students will demonstrate competence in basic, intermediate and Advance procedures.

FIRST YEAR

M. Optometry

SEMESTER- II

Code No.	Core Subjects
Theory	
MOPTOM 105 L	Ocular Diseases and Diagnostics II
MOPTOM 106 L	Advanced Contact Lenses I
MOPTOM 107 L	Binocular Vision and Pediatric Optometry
MOPTOM 108 L	Low vision and Geriatric Optometry
MOPTOM 109 CP	Optometry Directed Clinical Education-II
CC 001 L	Research Methodology & Biostatistics (Core Course)
Practical	
MOPTOM 105 P	Ocular Diseases and Diagnostics II
MOPTOM 106 P	Advanced Contact Lenses I
MOPTOM 107 P	Binocular Vision and Pediatric Optometry
MOPTOM 108 P	Low vision and Geriatric Optometry
CC 001 P	Research Methodology & Biostatistics (Core Course)
Core Elective Course	
CEC 001 L	Basics of Clinical Skills Learning
CEC 002 L	Hospital Operation Management

Name of the Programme	**M. Optometry**
Name of the Course	**Ocular Diseases and Diagnostics II**
Course Code	**MOPTOM 105 L**

Teaching Objective	•To develop an understanding of evidence based approach to Diagnosis, Clinical decision Making, Management and co management of anterior segment ocular diseases. Developing more reading ability of scientific journals for more evidence based management with recent understanding of diseases.
Learning Outcomes	•To be able to perform electro diagnostic procedures and interpret electro diagnostic reports ,ERG, EOG and VEP •To be able to perform stereoscopic fundus photography •To be able to use Ocular photography as a tool for evidence based clinical decision making and progression analysis •To be able to perform posterior segment photography •To be able to manage and co-manage diseases and disorders of posterior segment

Sr. No.	Topics	No. of Hrs.
1	Refresher of posterior segment ocular diseases, diagnosis and therapeutics, Surgical treatment of posterior segment diseases	45
2	**Posterior segment Diagnostics-** ERG,EOG,VEP,OCT,Fundus photography	
3	Neuro optometric diseases and disorders	
Total		**45hrs**

Reference Books:

- Clinical Ophthalmology: Jack J Kanski
- Diagnostics and imaging techniques in Ophthalmology: Dr. Amar Agarwal

MOPTOM 105 P - Ocular Diseases and Diagnostics II

Sr. No.	Topics	No. of Hrs.
1	Hands on training and Interpretation of all the above listed tests	**30**
Total		**30hrs**

Reference Books:

- Clinical Ophthalmology: Jack J Kanski
- Diagnostics and imaging techniques in Ophthalmology: Dr. Amar Agarwal

Name of the Programme	M. Optometry
Name of the Course	Advanced Contact Lenses I
Course Code	MOPTOM 106 L

Teaching Objective	•To understand the corneal oxygen requirements and recommend the best suitable contact lens for a particular condition. Management of ocular complications with contact lenses. Understand contact lens fitting for compromised corneas and keratoconus. The student should also be able to understand the fitting philosophy of orthokeratology and myopia control.
Learning Outcomes	•To be able to understand corneal physiology and oxygen needs •To be able to diagnose and manage complications due to contact lenses •To be able to fit specialized contact lenses •To be able to manage Keratoconus with different lens designs •To be able fit Rose'K lenses •To be able fit Mini scleral lenses

Sr. No.	Topics	No. of Hrs.
1	Refresher of IACLE modules 1 & 2 Anatomy, physiology, and contact lens materials.	5
2	Cornea and Contact lens and its Oxygen requirements	3
3	Microbiology, lens care and maintenance	3
4	Dry eye diagnostics and management	4
5	**Specialty lens fittings-** Therapeutic, Keratoconus, OrthoKeratology, Mini Sclerals	15
Total		**30hrs**

MOPTOM 106 P - Advanced Contact Lenses I

Sr. No.	Topics	No. of Hrs.
1	Hands on training of all above listed contact lenses including **Specialty lens fittings-** Therapeutic, Keratoconus, OrthoKeratology, Mini Sclerals	**30**
Total		**30hrs**

Reference Books:

1. IACLE modules
2. Contact Lenses by Janet Stone and Philip

Name of the Programme	**M. Optometry**
Name of the Course	**Binocular Vision and Pediatric Optometry**
Course Code	**MOPTOM 107 L**

Teaching Objective	• Upon completion of the course, the student should be able to understand the, basic concept behind visual perception, binocular vision anomalies and management and co- management of strabismic, non-strabismic binocular vision disorders and amblyopia
Learning Outcomes	•To be able to diagnose and manage and co-manage binocular vision anomalies •To be able to co-manage visual perceptual anomalies •To be able to manage diplopia, suppression and ARC •To be able to manage amblyopia

Sr. No.	Topics	No. of Hrs.
1	**Refractive Development**- Early Refractive Development, Visually Guided control of Refractive State: Animal Studies, Infant Accommodation and Convergence	10
2	**Oculomotor Function**- Conjugate Eye Movements of Infants, Development of the Vestibuloocular and optokinetic reflexes.	10
3	**Spatial and Chromatic Vision**-Front-end Limitations to Infant Spatial vision: Examination of two analyses, Development of the Human Visual Field, Development of Scotopic Retinal Sensitivity, Infant Color vision, Orientation and Motion selective Mechanisms in Infants, Intrinsic Noise and Infant performance	10
4	**Binocular Vision**-Development of interocular vision in Infants, Stereopsis in Infants and its developmental relation to visual acuity, Sensorimotor Adaptation and Development of the Horopter,Two stages in the development of Binocular Vision and Eye Alignment	10
5	Retinal and cortical Development, Abnormal Visual Development, What next in Infant Research	10
6	**Clinical Applications:**Assessment of Child Vision and Refractive Error,Refractive Routines in the Examination of Children, Cycloplegic Refraction, Color Vision Assessment in Children, Dispensing for the Child patient,Pediatric Contact Lens Practice,Dyslexia and optometry Management, Electrodiagnostic Needs of Multiple Handicapped Children, Management Guidelines – Ametropia, ContantStrabismus,Management Guidelines – Amblyopia,Accommodation and Vergenceanomalies,Nystagmus, Common genetic problems in Pediatric optometry,Pediatric Ocular Diseases, Ocular Trauma in Children, Myopia control, Clinical uses of prism	10
Total		**60hrs**

MOPTOM 107 P - Binocular Vision and Pediatric Optometry

Sr. No.	Topics	
1	Hands on training and Interpretation of all the above tests for children	60
	Total	**60 hrs**

Reference Books:

1. Clinical management of binocular vision Mitchell Scheiman and Bruce Wick
2. Applied concepts in vision therapy: Leonard Press
3. Pediatric MOPometry: Jerome K Rosner

Name of the Programme	**M. Optometry**
Name of the Course	**Low vision and Geriatric Optometry**
Course Code	**MOPTOM 108 L**

Teaching Objective	• Upon completion of the course, the student should be able to understand the best suitable low vision and functional assistive device for a particular condition and rehabilitation. This course gives both in-depth theoretical knowledge and clinical exposure in low vision care. The outcomes of this course are: Thorough understanding of the causes of the low vision, its functional and psychosocial consequences. Help visually impaired individuals to utilize their residual visual skills optimally and rehabilitate.
Learning Outcomes	• To be able to diagnose and manage patients with vision impairment • To be able to perform specialized diagnostics , Rudimentary vision , Berkeley visual field test , Hand disc perimetry • To be able to train for eccentric viewing and steady eye techniques • To be able to diagnose and manage patients with vision impairment • To be able to perform specialized diagnostics for patients with low vision with multiple disabilities • To be able to train for eccentric viewing and steady eye techniques • To be able to rehabilitate patients with VI with vocational counseling and activities of daily living

Sr. No.	**Topics**	**No. of Hrs.**
1	Habilitation of Children and Youth with vision Impairment, Rehabilitation of working – age Adults with Vision Impairment, Rehabilitation of older Adults with Vision Impairment	8
2	Functional consequences of vision Impairment, Vision evaluation of Infants, Educational assessment of visual function in Infants and Children, Functional Evaluation of the Adult, Functional orientation and Mobility, Functional Assessment of Low Vision for Activities of Daily living	6
3	Psychosocial assessment of adults with vision impairment	6
4	Assistive Devices and Technology for Low Vision, Assistive Devices and Technology for Blind, Vision and Reading - Normal Vs Low Vision, Clinical Implications of color vision Deficiencies	5
5	Visual disorders of aging population and its low vision management and rehabilitation	5
Total		**30 hrs**

MOPTOM 108 P - Low vision and Geriatric Optometry

Sr. No.	Topics	
1	Hands on training and Interpretation of all the above tests for low vision care	**60**
Total		**60hrs**

Reference Books

1.The lighthouse handbook on vision impairment and Vision rehabilitation: Barbara Silverstone, Mary Ann Lang, Bruce Rosenthal, Faye.
2. Low vision Rehabilitation (SLACK Incorporated) by Mitchell Scheiman Stephon G Whittaker
3. Essentials of Low Vision Practice(Butterworth Heinemann) by Richard Brilliant
4. Clinical Low Vision Elenor E. Faye

MOPTOM 109CP - Community orientation & clinical visit (including related practicals to the parent course) (Total -225hrs)

Optometry Directed Clinical Education I - Students will improve their skills in clinical procedures, then Progressive interacting with patients and professional personal are monitored as students practice optometry in supervised setting. Additional area includes problem solving and complications of various managements will be inculcated. Students will demonstrate competence in basic, intermediate and Advance procedures.

Name of the Programme	**M.Optometry**
Name of the Course	**Research Methodology & Biostatistics (Core Course)**
Course Code	**CC 001 L**

Teaching Objective	The course is intended to give an overview of research and statistical models commonly used in medical and bio-medical sciences. The goal is to impart an intuitive understanding and working knowledge of research designs and statistical analysis. The strategy would be to simplify, analyse the treatment of statistical inference and to focus primarily on how to specify and interpret the outcome of research.
Learning Outcomes	Student will be able to understand develop statistical models, research designs with the understating of background theory of various commonly used statistical techniques as well as analysis interpretation & reporting of results and use of statistical software.

Sr. No.	Topics	No. of Hrs.
A	**Research Methodology:**	
1	Scientific Methods of Research: Definition of Research, Assumptions, Operations and Aims of Scientific Research. Research Process, Significance and Criteria of Good Research , Research Methods versus Methodology, Different Steps in Writing Report, Technique of Interpretation, Precaution in interpretation, Significance of Report Writing, Layout of the Research Report	5
2	Research Designs: Observational Studies: Descriptive, explanatory, and exploratory, Experimental Studies: Pre-test design, post-test design, Follow-up or longitudinal design, Cohort Studies, Case Control Studies, Cross sectional studies, Intervention studies, Panel Studies.	5
3	Sampling Designs: Census and Sample Survey, Implications of a Sample Design, Steps in Sampling Design Criteria of Selecting a Sampling Procedure, Characteristics of a Good Sample Design, Different Types of Sample Designs (Probability sampling and non probability sampling), How to Select a Random Sample?, Systematic sampling, Stratified sampling, Cluster sampling, Area sampling, Multi-stage sampling, Sampling with probability proportional to size, Sequential sampling.	5
4	Measurement in research: Measurement Scales, Sources of Error in Measurement, Tests of Sound Measurement, Technique of Developing Measurement Tools, Scaling Meaning of Scaling, Scale Classification Bases, Important Scaling Techniques, Scale Construction Techniques, Possible sources of error in measurement, Tests of sound measurement	5
5	Methods of Data Collection: Types of data, Collection of Primary Data, Observation Method, Interview Method, Collection of Primary Data	5
6	Sampling Fundamentals : Need and importance for Sampling, Central Limit Theorem, Sampling Theory, Concept of Standard Error, Estimation, Estimating the Population Mean Estimating Population Proportion, Sample Size and its Determination, Determination of Sample Size through the Approach Based on Precision Rate and Confidence Level.	5
B	**Biostatistics**	

7	Data Presentation: Types of numerical data: Nominal, Ordinal, Ranked, Discrete and continuous. Tables: Frequency distributions, Relative frequency, Graph: Bar charts, Histograms, Frequency polygons, one way scatter plots, Box plots, two way scatter plots, line graphs	3
8	Measures of Central Tendency and Dispersion: Mean, Median, Mode Range, Inter quartile range, variance and Standard Deviation, Coefficient of variation, grouped mean and grouped standard deviation (including merits and demerits).	3
9	Testing of Hypotheses: Definition, Basic Concepts, Procedure for Hypothesis Testing, Measuring the Power of a Hypothesis Test, Normal distribution, data transformation Important Parametric Tests, Hypothesis Testing of Means, Hypothesis Testing for Differences between Means, Hypothesis Testing for Comparing Two Related Samples, Hypothesis Testing of Proportions, Hypothesis Testing for Difference between Proportions, Hypothesis Testing for Comparing a Variance to Some Hypothesized Population Variance, Testing the Equality of Variances of Two Normal Populations.	6
10	Chi-square Test: Chi-square as a Non-parametric Test, Conditions for the Application Chi-square test, Steps Involved in Applying Chi-square Test, Alternative Formula, Yates' Correction, and Coefficient by Contingency.	2
11	Measures of Relationship: Need and meaning, Correlation and Simple Regression Analysis	2
12	Analysis of Variance and Covariance: Analysis of Variance (ANOVA):Concept and technique of ANOVA, One-way ANOVA, Two-way ANOVA, ANOVA in Latin-Square Design Analysis of Co-variance (ANOCOVA), ANOCOVA Technique.	4
13	Nonparametric or Distribution-free Tests: Important Nonparametric or Distribution-free Test Sign test, Wilcoxon signed-Rank Test, Wilcoxon Rank Sum Test: Mann-Whitney U test Kruskal Walli's test, Friedman's test, and Spearman Correlation test.	3
14	Vital Health Statistics: Measurement of Population: rate, crude rate, specific rate, Measurement of fertility: specific fertility rate, Total fertility rate, Reproduction rate, Gross Reproduction Rate, Net Reproduction Rate, Measures related to mortality: Crude Death Rate (CDR), Age-specific death Rate, Infant and child mortality rate, Measures related to morbidity.	4
15	Computer Application Use of Computer in data analysis and research, Use of Software and Statistical package. Introduction to SPSS. Importing data from excel, access, tab and comma separated files. Entering data, labeling a variable, coding and recoding a categorical and continuous variable. Converting data from string to numeric variables, sorting & filtering, merging, appending data sets. Frequencies, descriptive statistics, cross tabulations. Diagrammatic presentation include histogram, bar chart, pie chart, scatter diagram, box plot, line chart. Parametric test of hypothesis-one sample, Independent and paired sample t test, one way ANOVA& post HOC test. Testing for normality, Chi-square test with measures of association. Pearson correlation. Non parametric test.	3
Total		**60 hrs**

CC 001 P – Research Methodology & Biostatistics

Sr. No.	Topics	No. of Hrs
A	**Research Methodology**	
1	Sampling Designs	4
2	Measurement in research	5
3	Methods of Data Collection	3
4	Sampling Fundamentals	3
B	**Biostatistics**	
5	Data Presentation	4
6	Measures of Central Tendency and Dispersion	4
7	Testing of Hypotheses	12
8	Chi-square Test	2
9	Measures of Relationship	3
10	Analysis of Variance and Covariance	4
11	Nonparametric or Distribution-free Tests	4
12	Vital Health Statistics: Measurement of Population	6
13	Computer Application Using Statistical Software	6
Total		**60 hrs**

CORE ELECTIVE COURSES

Name of the Programme	**M. Optometry**
Name of the Course	**Basics of Clinical Skill Learning**
Course Code	**CEC 001 L**

Teaching Objective	• To Understand the basic ideas on how to check for Vital Signs of the Patient • In this course the Student will learn how to handle the patients and their positioning • They will also learn on the Basics of Nasal-Gastric Tube • The Students will learn on Administration of IV, IV and Medication • Also they will know about Cleanliness in the Asepsis
Learning Outcomes	• After successful accomplishment of the course, the students would be able to Measure Vital Signs, do basic physical Examination of the patients, NG tube basics, Administration of Medicines • The students will learn about Asepsis, and the Cleanliness related to asepsis and on mobility of the patients

Sr. No.	Topics	No. of Hrs.
1	**MEASURING VITAL SIGNS:** Temperature: Axillaries Temperature, Pulse: Sites of pulse, Measurement, Respiratory, Blood Pressure, Pain: Pain Scale	5
2	**PHYSICAL EXAMINATION:** Observation, Auscultation(Chest), Palpation, Percussion, History Taking	10
3	**FEEDING: ENTRAL FEEDING, NG TUBE:** Measurement, Procedure, Care, Removal of Nasal-Gastric Tube, Nasal-Gastric Tube Feeding, and Parenteral Nutrition.	10
4	**ADMINISTRATIONS:** Oral, Intravenous, Intramuscular, Subcutaneous, Recapping of Syringe, Loading of Drugs, Calculation of Drugs, Venipuncture, IV Infusion, Cannula, Attachment of IV infusion Set, Fluid Collection, Heparin Lock, Maintenance of IV set, Performing Nebulizer Therapy, Inhaler, Oxygen Therapy (Nasal, prongs, nasal Catheter, Venturi Mask, face mask)	10
5	**ASEPSIS:** Hand wash Techniques,(Medical, Surgical) Universal Precaution, Protecting Equipment: Using Sterile Gloves, Opening a Sterile package and Establishing a Sterile Field, Sterile Dressing Changes, Surgical Attire ,Wound Dressing, Suture Removal, Cleaning and Application of Sterile Dressing, Wearing and Removal of personal protective Equipment	5
6	**MOBILITY AND SUPPORT:** Moving and Positioning, range of Motion exercises (Active & Passive) Assisting for Transfer, Application of Restraints	5
Total		**45 hrs**

Name of the Programme	**M.Optometry**
Name of the Course	**Hospital Operation Management**
Course Code	**CEC 002 L**

Teaching Objective	• To promote scientific management of hospital and advancement of health care systems so as to make it rational, responsive and cost efficient • To promote the development of high quality of hospital care in the community and the country. • It has to provide a satisfactory environment to the patient and also to the doctors for clinical research.
Learning Outcomes	• Understand and apply resource management concepts (personnel, finance, and material resources) and the processes and strategies needed in specific hospital sectors • Communicate effectively and develop their leadership and teambuilding abilities • Apply modern change management and innovation management concepts to optimize structures • Analyze existing hospital service policies and enhance their alignment within the local and national context

Sr. No.	**Topics**	**No. of Hrs.**
1	**MEDICO-LEGAL CASES:** Introduction, Laws associated with Medico-Legal Cases, Three Core Contents in Medico-legal cases w.r.t Doctors, Patient & Profession,	5
2	**CONSIDERATIONS OF ETHICS:** Consent, Confidentiality, Mental Health, End of life and Organ Transportation, Research & Clinical Trials	10
3	**HOSPITAL INFORMATION SYSTEM(HIS):** Hospital Information System Management, software applications in registration, billing, investigations, reporting, medical records management, Security and ethical challenges	10
4	**EQUIPMENT OPERATIONS MANAGEMENT:** Hospital equipment repair and maintenance, types of maintenance, job orders, equipment maintenance log books, AMCS	10
5	**ROLE OF MEDICAL RECORDS IN HEALTH CARE MANAGEMENT:** Computers for Medical records, Developments of computerized medical record information processing system(EMR's), Computer stored (Vs) Manual hand written record, Advantages of EMR (Vs) Manual	10
	Total	**45 hrs**

SECOND YEAR
M. Optometry
Second Year
SEMESTER- III

Code No.	Core Subjects
Theory	
MOPTOM 110 L	Advanced Dispensing Optics
MOPTOM 111 L	Advanced Contact Lenses II
MOPTOM 112 L	Visual Perception, Neuroscience and Psychophysics
MOPTOM 113 L	Applied Vision Therapy
MOPTOM 114 CP	Optometry Directed Clinical Education-III
MOPTOM 115	Dissertation/Project*
Practical	
MOPTOM 110 P	Advanced Dispensing Optics
MOPTOM 111 P	Advanced Contact Lenses II
MOPTOM 113 P	Applied Vision Therapy
Seminar	
MOPTOM 116	Seminars

Name of the Programme	**M. Optometry**
Name of the Course	**Advanced Dispensing Optics**
Course Code	**MOPTOM 110 L**

Teaching Objective	This course deals with understanding the theory behind Special purpose spectacle lenses and frames, their materials, types, advantages and disadvantages, calculations involved, when and how to prescribe. It will impart construction, design application and development of lenses, particularly of the methods of calculating their power and effect. In addition deals with role of optometrists in optical set-up
Learning Outcomes	Upon completion, students should be able to design and dispense appropriate eyewear for a variety of patients.

Sr. No.	**Topics**	**No. of Hrs.**
1	Introduction to advanced dispensing	2
2	Facial anatomy and frame fitting Special measurements for fitting special lenses – SV, bifocal, prisms, multifocal Types of Human faces and cosmetic dispensing	4
3	International standardization for spectacle and guidelines for safety standards for spectacles ,industrial safety wear	4
4	Special lenses: lenses for use under water, recumbent prisms, Fresnel lenses, Fresnel prisms, Chavasse lenses, Frosted lenses, Lenses for occlusion, Trigeminal spectacles, Ptosis spectacles, Adaptive lenses Occupational multifoacal/bifocal lenses	6
5	Prescribing for low vision	6
6	Functional dispensing – according to various age groups and occupations	6
	Dispensing counter organization	2
7	Special purpose frames and accessories – Swimming goggles spectacles, safety goggles, masks, recumbent spectacles, Special purpose frames for specific sports etc.	15
Total		**45 hrs**

MOPTOM 110 P- Advance Dispensing Optics

Sr. No.	Topics	No. of Hrs.
1	Lens Verification – Lensometer, Thickness gauge, Lens Marking, Centration	5
2	Facial and other measurements for occupational and functional spectacles	5
3	Occupational and special functional use single vision and Bifocal measurements and dispensing	3
4	Occupational and special functional use Progressive lens measurements and dispensing	4
5	Dispensing prisms	2
6	Frame adjustments and modifications	4
7	Spotting of lens k. Blocking of lens l. Edging – Patternless Edger	4
8	Guest lectures a. Company representatives and independent practitioners	3
Total		**30 hrs**

Reference books:

1. Jalie MO: Ophthalmic lens and Dispensing, 3rd edition, Butterworth –Heinemann, 2008
2. Troy E. Fannin, Theodore Grosvenor: Clinical Optics, 2nd edition, Butterworth – Heinemann, 1996
3. C W Brooks, IM Borish: System for Ophthalmic Dispensing, 3rdedition, Butterworth - Heinemann, 2007
4. Michael P Keating: Geometric, Phisical & Visual Optics, 2nd edition, Butterworth – Heinemann, 2002

Name of the Programme	M. Optometry
Name of the Course	Advanced Contact Lenses II
Course Code	MOPTOM 111 L

Teaching Objective	Upon completion of the course, the student should be able to understand the corneal oxygen requirements and recommend the best suitable contact lens for a particular condition. Management of ocular complications with contact lenses. Understand contact lens fitting for compromised corneas and keratoconus. The student should also be able to understand the fitting philosophy of orthokeratology and myopia control.
Learning Outcomes	To be able to fit specialized contact lenses Keratoconus , Rose' K lenses, Mini scleral lenses Hybrid lenses, Orthokeratology, Scleral lenses: Dry eyes, SJS, Post PK, Post C3R, Post LASIK ectasia. Ability to fit custom made ocular prosthesis, Ability to fit pediatric contact lenses

Sr. No.	Topics	No. of Hrs.
1	Extended and Continuous wear Lenses	2
2	Pediatric contact lens fitting	2
3	Contact lens management for various irregular corneal conditions & ocular surface disorders	4
4	Scleral contact lenses	2
5	Tinted contact lenses-cosmetic & prosthetic	2
6	Therapeutic contact lens	2
7	Contact lens management in Presbyopia	2
8	Orthokeratology	2
9	Myopia control and contact lens	2
10	Recent development in contact lens practice	2
11	Evidence based practice in contact lens	2
12	Contact lens care & maintenance	2
13	Contact Lens complications & management	2
14	Legal issues and contact lenses	2
Total		**30hrs**

MOPTOM 111 P - Advanced Contact Lenses II

Sr. No.	Topics	No. of Hrs.
1	Hands on training of all above listed contact lenses including **Specialty lens fittings**	**30**
Total		**30hrs**

Reference Books:

1. New IAECL modules (Vol. 1 to 5) by International Association of Contact Lens Educators, Australia
2. Contact Lens practice- Nathan Efron
3. Clinical Contact Lens Practice- Edward. S. Bennet, Barry, A. Weissman
4. Contact Lenses- Anthony J. Phillips, Lynne Speedwell
5. Contact Lenses- Anthony. J. Philips, Janet Stone
6. Contact Lens Complications- Nathan Efron

Name of the Programme	M. Optometry
Name of the Course	Visual Perception, Neuroscience and Psychophysics
Course Code	MOPTOM 112 L

Teaching Objective	This course attempts to shed light on the various facets of vision including spatial vision, motion and color. Upon completion of this course students should understand the functional anatomy and neurophysiology of the visual system, and how neural activity results in visual perception and in behaviour that depend on vision.
Learning Outcomes	• To be able to diagnose and manage patients with neuro- optometric disorders. • To be able to provide therapy for rehabilitation and treatment.

Sr. No.	Topics	No. of Hrs.
1.	Introduction to vision - physiological optics and photoreceptor mosaic - Organization of retina and photo transduction - fundamentals of visual psychophysics	2
2	Introduction to neurobiology - Neuroanatomy of the brain: Principles of organization - Fundamentals of single cell electrophysiology: Action Potential, Membrane potential - Electrophysiology (tutorial)	2
3	- Neurotransmitters - Neurochemistry of the brain - Electrophysiology (tutorial)	2
4	Main visual pathway - Organization of lateral geniculate nucleus - Spatial vision - Spatial vision/ Contrast sensitivity	2
5	Organization of primary visual cortex -Regulation of sensitivity and adaptation -Dark and Light Adaptation	2
6	Depth Perception -Binocular vision and rivalry -Stereoacuity/Binocular vision (Tutorial)	2
7	Extra striate cortical pathways (from V1) -Motion pathways in vision -Temporal sensitivity	2
8	Chromatic vision -Organization of color in the visual brain -Demonstration of color	2
9	Atypical visual pathways and blindsight -Clinical electrophysiology : Evoked potentials -Electrophysiology: ERG/VEP	2

10	Visual attention -Principles of imaging the brain -Visual Illusions	2
11	Developing the brain: Lessons from Evolution -Visual development and Embryology -Clinical case reports	2
12	Primary Visual Pathway disorders -Bionic vision: how does a computer see Clinical case reports	2
13	Extra striate visual disorders Eye movements Clinical case reports	2
14	Neural control of eye movements Pupillary pathway Clinical case reports	2
15	Review	2
Total		**30hrs**

Reference books:

1.Sensation and Perception by Bruce Goldstein

2.Visual Perception a clinical orientation by Steven Schwartz

3. Visual Neuroscience (Vol. I and II) by Leo Chalupa and Warner

Name of the Programme	M. Optometry
Name of the Course	Applied Vision Therapy
Course Code	MOPTOM 113 L

Teaching Objective	The course is designed to help expand the student's knowledge base in all aspects of behavioural vision care. Advanced competency is expected in the following principles and procedures for each clinical condition
Learning Outcomes	Principles and Procedures – The student should be able to define and explain: 1. The unique qualities, scientific, and clinical principles of each clinical condition. 2. The epidemiological and demographic characteristics of each clinical condition. 3. The characteristic history, signs and symptoms for each clinical condition. 4. How to assess each clinical condition, including specific test protocols and their interpretation. 5. The differential diagnosis for each clinical condition. 6. The specific treatment and management of each clinical condition including: 6.1 Prognostic indicators 6.2 Treatment options 6.3 Duration and frequency of treatment 6.4 Treatment philosophy and goals 6.5 Specific lens treatment and therapy procedures including rationale for treatment 6.6 Ergonomics and visual hygiene 6.7 Outcomes to determine successful completion of treatment 6.8 Frequency of follow-up care and patient instructions 6.9 Referral criteria (medical, neurological, educational, etc.)

Sr. No.	Topics	No. of Hrs.
1	Principles and Models of Vision therapy (VT)	2
2	Visual development	4
3	Perception and Information Processing 3.1 Neurological / Psychological Ambient / focal systems. Visual perceptual midline , Parvo cellular / Magno cellular function , Perceptual Style (central, peripheral), Impact of colored filters , Attention 3.2 Intersensory and Sensorimotor Integration: Visual-auditory, Visual-vestibular, Visual-oral, Visual-motor, Visual-tactual 3.3 Performance indicators: Laterality and directionality, Visual requirements for academic success, Bilaterality, Gross and fine motor ability, Form perception/visual analysis, Spatial awareness, Visualization Visual memory, Visual sequential memory, Form constancy, Visual speed and visual span, Visual sequencing 3.4 Refractive conditions and visual skills: Developmental influence on refraction &emmetropization, Aniseikonia, Myopia, Astigmatism, Hyperopia	10

	3.5 Ocular Motor Function: Eye movements and reading, Pursuit dysfunctions, Nystagmus, Saccadic Dysfunctions 3.6 Accommodation: Role in myopia development, Role in computer-related asthenopia	
4	Vision Therapy Concepts to Consider 4.1 Peripheral awareness: focal / ambient roles 4.2 Significant findings which are good or poor prognostic indicators of vision therapy and lens application 4.3 Development, rehabilitation, prevention, enhancement 4.4 Behavioral lens application 4.5 Yoked prism rationale for treatment and application 4.6 The relationship between the visual and vestibular systems 4.7 SILO/SOLI 4.8 Visual stress and its impact on the visual system 4.9 Role of posture in vision development, comfort and performance 4.10 Disruptive therapy: Discuss this type of therapy and how it can be used as a clinical therapeutic tool. 4.11 Relationship of speech-auditory to vision 4.12 How television, reading, video gaming might restrict movement, computer work, nutrition, etc., impact vision? 4.13 Perceptual Style, e.g., spatial/temporal, central/peripheral	10
4	Non strabismic binocular vision disorders and VT	6
5	Oculomotor dysfunction and VT	2
5	Amblyopia and VT	5
6	Sports vision therapy	4
7	Developmental, acquired Visual information processing disorders and VT	8
8	Behavioral disorders and VT	5
9	Practice management and protocols in VT	2
10	Evidence based practice in VT	2
Total		**60 hrs**

MOPTOM 113 P- Applied Vision Therapy

Sr. No.	Topics	No. of Hrs.
1	Assessment of accommodative parameters	2
2	assessment of vergence parameters	2
3	sensory evaluation	2
4	Motor evaluation	2
5	Vison therapy for NSBVA	2
6	Assessment and therapy of Oculomotor function	2
7	Computerized vision therapy	2
8	Assessment of visual perceptual disorders	2
9	Sport vision skill assessment and SVT	4
10	Therapy for visual perceptual disorders	5
11	Neuro-Optometric evaluation	5
Total		**30 hrs**

Reference books:

1. Clinical Management of Binocular Vision: Heterophoric, Accommodative, and Eye Movement Disorders- Mitchell Scheiman, Bruce Wick
2. Applied concepts in vision therapy: Leonard J Press
3. Paediatric Optometry - William Harvey, Bernard Gilmartin
4. Pickwell's Binocular Vision Anomalies- Bruce JW Evans
5. Binocular Vision and Ocular Motility: Theory and Management of Strabismus -Gunter K. Von Noorden
6. Optometric Management of Learning-related Vision Problems - Mitchell Scheiman, Michael W. Rouse
7. Sports Vision. Vision care for the enhancement of sports performance: Graham Erickson
8. Clinical Orthooptics – Dr. Fiona Rowe

MOPTOM 114 CP Directed Clinical Education – III Total : 225 hrs

CLINICAL OPTOMETRY III (STUDENTSHIP) Students will improve their skills in clinical procedures, then Progressive interacting with patients and professional personal are monitored as students practice optometry in supervised setting. Additional area includes problem solving and complications of various managements will be inculcated. Students will demonstrate competence in basic, intermediate and Advance procedures.

Name of the Programme	M. Optometry
Course Code	MOPTOM 115
Name of the Course	Dissertation/Project*

***The Dissertation work will begin from 3rd Semester, and will continue through the 4th Semester.**

Name of the Programme	M. Optometry
Course Code	MOPTOM 116
Name of the Course	Seminar

For Seminar/Presentations there will be a maximum of 50 marks. Seminar / presentations will be evaluated by the teachers of the dept. The marks obtained in the same will be kept confidentially with the Head of the Dept. and will be submitted along with the internal assessment marks.

SECOND YEAR
M. Optometry
SEMESTER-IV

Code No.	Core Subjects
Theory	
General Elective**	
GE 001 L	Pursuit of Inner Self Excellence (POISE)
GE 002 L	Bioethics, Biosafety, IPR & Technology transfer
GE 003 L	Disaster Management and Mitigation Resources
GE 004 L	Human Rights
MOPTOM 115	Dissertation / Project
Practical	
MOPTOM 117	Educational Tour / Field Work/IV/Hospital Visit

*(a) **Dissertation / Project Course** commences in III Semester

(b) **Educational Tour / Field Work/ IV/ Hospital Visit** Course may be carried out in any Semester or all Semesters but evaluated and Grade Points are to be added in 4th Semester.

(Elective): Any one subject is to be chosen from the following (Subjects offered may change from time to time depending on the availability of expertise)

**Elective courses may or may not have practical and/or field work.

▲ Multidisciplinary / Interdisciplinary

Educational Tour / Field Work/ IV/ Hospital Visit:

Industrial visit has its own importance in building a career of a student which is pursuing a professional degree. Objections of industrial visit are to provide students an insight regarding internal working of reputed hospitals and labs. Industrial visits provides students an opportunity to learn practically thoughts interactions, working methods and employment practices as theoretical knowledge is not enough for making a competent and skilful professionals.

ACADEMIC SYLLABUS FOR SEMESTER - IV
ELECTIVE COURSE

Name of the Programme	**M. Optometry**
Course Code	**GE 001 L**
Name of the Course	**PURSUIT OF INNER SELF EXCELLENCE (POISE)**

Course objective	1. To inculcate moral values in students – Self-Discipline , Time Management, Develop attitude of Service with humility, Empathy, Compassion, brotherhood, Respect for teachers, colleagues & society members. 2. Develop Effective means of communication & presentation skills in students 3. To develop wisdom in students for deciding their career based on their areas of interest and inner skills. 4. Introduce techniques for Relaxation, Meditation & Connecting with innerself. 5. Rejuvenation Techniques which can be used by students to distress themselves 6. To improve performance of students during various assignments, projects, elocutions, events, quiz, interviews.
Course outcomes	1. Students will become self dependent, more decisive and develop intuitive ability for their study and career related matter. 2. Students ability to present their ideas will be developed. 3. Enhanced communication skills, public speaking & improved Presentation ability. 4. Students will be able to explore their inner potential and inner ability to become a successful researcher or technician & hence become more focused. 5. Students will observe significant reduction in stress level. 6. With the development of personal attributes like Empathy, Compassion, Service, Love &brotherhood , students will serve the society and industry in better way with teamwork and thus grow professionally.

Unit no.	Topics	No. of Hrs
1	**Spiritual Values for human excellence :** The value of human integration; Compassion, universal love and brotherhood (Universal Prayer) ; Heart based living ; Silence and its values, Peace and non-violence in thought, word and deed ; Ancient treasure of values - Shatsampatti , Patanjali'sAshtanga Yoga ,Vedic education - The role of the Acharya , values drawn from various cultures and religious practices - Ubuntu, Buddism, etc.; Why spirituality? Concept – significance ; Thought culture	**15**
2	**Ways and Means :** Correlation between the values and the subjects ;Different teaching techniques to impart value education; Introduction to Brighter Minds initiative; Principles of Communication; Inspiration from the lives of Masters for spiritual values - Role of the living Master	**15**
3	**Integrating spiritual values and life:** Relevance of VBSE (Value Based Spiritual Education) in contemporary life ; Significant spiritual values ; Spiritual destiny ; Principles of Self-management; Designing destiny	**15**

4	**Experiencing through the heart for self-transformation (Heartfulness Meditation):** Who am I? ; Introduction to Relaxation; Why, what and how HFN Meditation?; Journal writing for Self-Observation ; Why, what and how HFN Rejuvenation (Cleaning)? ; Why, what and how HFN connect to Self (Prayer)?; Pursuit of inner self excellence ; Collective Consciousness-concept of *egregore effect;*	**15**
Total		**60hrs**

Reference Books:

1. www.pdfdrive.net
2. www.khanacademy.org
3. www.acadeicearths.org
4. www.edx.org
5. www.open2study.com
6. www.academicjournals.org

Name of the Programme	**M. Optometry**
Course Code	**GE 002 L**
Name of the Course	**BIOETHICS, BIOSAFETY, IPR & TECHNOLOGY TRANSFER**

Course objective	The students will gain structural knowledge on: 1. To list the routes of exposure for a pathogen to a human being . 2. To demonstrate and assess the proper use of PPE, best practices, biological containment, and be prepared to safely conduct research 3. To identify the role of the Biosafety Professional in Biomedical Research Laboratories 4. To appreciate the importance of assertion in interpersonal communication and be introduced to some key assertion strategies 5. To understand the interpersonal nature of giving feedback, receiving criticism and resolving conflicts. 6. To establish attentive listening as an assertion strategy
Course outcomes	Students will learn to: 1. Effectively manage the health and safety aspects of a biological laboratory. 2. Give reliable, professional and informed advice and information to colleagues and managers. 3. Help to ensure that their institution complies with relevant legislation, liaise effectively with enforcing authorities and be aware of the penalties for failing to comply. 4. Build a context of understanding through communication. 5. Mediate between other conflicting parties. 6. Exhibit de-escalatory behaviors in situations of conflict. 7. Demonstrate acknowledgment and validation of the feelings, opinions, and contributions of others.

Unit no.	Topics	No of Hrs
1	**Ethics***:* Benefits of Ethics, ELSI of Bioscience, recombinant therapeutic products for human health care, genetic modifications and food consumption, release of genetically engineered organisms, applications of human genetic rDNA research, human embryonic stem cell research.	**15**
2	**Patenting:** Patent and Trademark, Bioscience products and processes, Intellectual property rights, Plant breeders rights, trademarks, industrial designs, copyright biotechnology in developing countries. Biosafety and its implementation, Quality *control in* Biotechnology.	**15**
	Introduction to quality assurance, accreditation & SOP writing : Concept of ISO standards and certification , National regulatory body for accreditation, Quality parameters, GMP & GLP, Standard operating procedures, Application of QA in field of genetics, Data management of clinical and testing laboratory	**15**
3	**Funding of biotech business** (Financing alternatives, funding, funding for Bioscience/ Medical Health Sector in India, Exit strategy, licensing strategies, valuation), support mechanisms for entrepreneurship (Bio-entrepreneurship efforts in India, difficulties in India experienced, organizations supporting growth, areas of scope, funding agencies in India, policy initiatives), Role of knowledge centers and R&D (knowledge centers like universities and research institutions, role of technology and up gradation)	**15**
Total		**60hrs**

Reference Books:

1. www.pdfdrive.net
2. www.khanacademy.org
3. www.acadeicearths.org
4. www.edx.org
5. www.open2study.com
6. www.academicjournals.org

Name of the Programme	**M. Optometry**
Course Code	**GE 003 L**
Name of the Course	**DISASTER MANAGEMENT AND MITIGATION RESOURCES**

Course objective	The course will uplift about: 1. Understand and appreciate the specific contributions of the Red Cross/Red Crescent movement to the practice and conceptual understanding of disaster management and humanitarian response and their significance in the current context. 2. Recognize issues, debates and challenges arising from the nexus between paradigm of development and disasters. 3. Critically evaluate disaster risk reduction and humanitarian response policy and practice from multiple perspectives. 4. Respond to disaster risk reduction initiatives and disasters in an effective, humane and sustainable manner.
Course outcomes	At the successful completion of course the student will gain: 1. knowledge and understanding of the disaster phenomenon, its different contextual aspects, impacts and public health consequences. 2. Knowledge and understanding of the International Strategy for Disaster Reduction (UN-ISDR) and to increase skills and abilities for implementing the Disaster Risk Reduction (DRR) Strategy. 3. Ensure skills and abilities to analyse potential effects of disasters and of the strategies and methods to deliver public health response to avert these effects.

Unit no.	Topics	No of Hrs.
1	**Introduction:** Definition of Disaster, hazard, global and Indian scenario, general perspective, importance of study in human life, Direct and indirect effects of disasters, long term effects of disasters. Introduction to global warming and climate change.	08
2	**Natural Disaster and Manmade disasters:**Natural Disaster: Meaning and nature of natural disaster, Flood, Flash flood, drought, cloud burst, Earthquake, Landslides, Avalanches, Volcanic eruptions, Mudflow, Cyclone, Storm, Storm Surge, climate change, global warming, sea level rise, ozone depletion Manmade Disasters: Chemical, Industrial, Nuclear and Fire Hazards. Role of growing population and subsequent industrialization, urbanization and changing lifestyle of human beings in frequent occurrences of manmade disasters.	15
3	**Disaster Management, Policy and Administration:** Disaster management: meaning, concept, importance, objective of disaster management policy, disaster risks in India, Paradigm shift in disaster management. Policy and administration: Importance and principles of disaster management policies, command and co-ordination of in disaster management, rescue operations-how to start with and how to proceed in due course of time, study of flowchart showing the entire process.	12
4	**Financing Relief Measures:**Ways to raise finance for relief expenditure, role of government agencies and NGO's in this process, Legal aspects related to finance raising as well as overall management of disasters. Various NGO's and the works they have carried out in the past on the occurrence of various disasters, Ways to approach these teams. International relief aid agencies and their role in extreme events.	13
5	**Preventive and Mitigation Measures:**Pre-disaster, during disaster and post-disaster measures in some events in general structural mapping: Risk mapping, assessment and analysis, sea walls and embankments, Bio shield, shelters, early warning and communication Non Structural Mitigation: Community based disaster preparedness, risk transfer and risk financing, capacity development and training, awareness and education, contingency plans. Do's and don'ts in case of disasters and effective implementation of relief aids.	12
Total		**60hrs**

Reference Books:

1. ShailendraK.Singh : Safety & Risk Management, Mittal Publishers
2. J.H.Diwan : Safety, Security & Risk Management,APH
3. Stephen Ayers &Garmvik: Text Book of Critical Care, Holbook and Shoemaker
4. www.pdfdrive.net
5. www.khanacademy.org
6. www.acadeicearths.org
7. www.edx.org
8. www.open2study.com
9. www.academicjournals.org

Name of the Programme	**M.Optometry**
Course Code	**GE 004 L**
Name of the Course	**HUMAN RIGHTS**

Course objective	Students will comprehend on: 1. A branch of public international law, and relevant juridical mechanisms at global as well as regional levels, 2. Human rights as an object of study in history, philosophy and the social sciences, as well as a practical reality in national and international politics. 3. Different forms of promoting and implementing human rights, domestically as well as on the international level. 4. The role of human rights in contemporary issues relating to terrorism, religion, ethnicity, gender and development. 5. Cholarly values such as transparency, impartiality, clarity, reliance and the importance of sound reasoning and empirical inference.
Course outcomes	Student will be able to virtue: 1. identify, contextualise and use information about the human rights situation in a given country 2. critically appraise source material, including cases from human rights committees and tribunals and reports and summary records from treaty bodies 3. analyse a country's situation or an international situation in terms of human rights and formulate human rights-based initiatives and policies 4. Promote human rights through legal as well as non-legal means. 5. Participate in legal, political and other debates involving human rights in a knowledgeable and constructive way

Unit no.	Topics	No. of Hrs
1	*Background*: Introduction, Meaning, Nature and Scope, Development of Human Rights, Theories of Rights, Types of Rights	08
2	*Human rights at various level* : Human Rights at Global Level UNO, Human Rights – UDHR 1948 – UN Conventions on Human Rights: International Covenant on civil and Political Rights 1966, International Convent on Economic, Social and Cultural Right, Racial Discrimination -1966 International, Instruments: U.N. Commission for Human Rights, European Convention on Human Rights.	15
3	*Human rights in India* : Development of Human Rights in India, Human Rights and the Constitution of India, Protection of Human Rights Act 1993- National Human Rights Commission, State Human Rights Commission, Composition Powers and Functions, National Commission for Minorities, SC/ST and Woman	12
4	*Human Rights Violations*: Human Rights Violations against Women, Human Rights Violations against Children, 35 Human Rights Violations against Minorities SC/ST and Trans-genders, Preventive Measures.	13
5	*Political issues*: Political Economic and Health Issues, Poverty, Unemployment, Corruption and Human Rights, Terrorism and Human Rights, Environment and Human Rights, Health and Human Rights	12
Total		**60hrs**

Reference Books:

1. JagannathMohanty Teaching of Human sRights New Trends and Innovations Deep & Deep Publications Pvt. Ltd. New Delhi2009
2. Ram Ahuja: Violence Against Women Rawat Publications JewaharNager Jaipur.1998.
3. SivagamiParmasivam Human Rights Salem 2008
4. Hingorani R.C.: Human Rights in India: Oxford and IBA New Delhi.

Name of the Programme	M. Optometry
Course Code	MOPTOM 115
Name of the Course	DISSERTATION / PROJECT WORK

1. Dissertation/Project work should be carried out as an individual Dissertation and actual bench work.
2. The students will carry independent project work under the supervision of the staff of Department on an advanced topic assigned to him/her. Inhouse projects are encouraged. Students may be allowed to carry out the project work in other Departmental laboratories /Research institutes /Industries as per the availability of Infrastructure.
3. Co guides from the other institutions may be allowed.
4. The Dissertation/Project work will begin from 3rd Semester, and will continue through the 4th Semester.
5. The Dissertation/Project report (also work book shall be presented at the time of presentation and viva voce) will be submitted at the end of the 4th Semester and evaluated.
6. Five copies of the project report shall be submitted to the Director, SBS.
7. For the conduct of the End Semester Examination and evaluation of Dissertation/Project work the University will appoint External Examiners.
8. Since the dissertation is by research, Dissertation/Project work carries a total of 250 marks and evaluation will be carried out by both internal and external evaluators.
9. The student has to defend his/her Dissertation/Project Work in a seminar which will be evaluated by a internal and external experts appointed by the University.
10. The assignment of marks for Project/Dissertation is as follows:

    Part I-

    Topic Selection, Review of Literature, Novelty of works-50 marks

    Part-II-

    a. Continuous Internal Assessment, Novelty, Overall Lab Work Culture - 100 Marks

    b. Dissertation/Project work book: 50 Marks

    c. Viva-Voce: 50 Marks

d. However, a student in 4th semester will have to opt for general elective course from other related disciplines in addition to his Dissertation/Project work in the parent department.

MONITORING LEARNING PROGRESS

It is essential to monitor the learning progress of each candidate through continuous appraisal and regular assessment. It not only also helps teachers to evaluate students, but also students to evaluate themselves. The monitoring be done by the staff of the department based on participation of students in various teaching / learning activities. It may be structured and assessment be done using checklists that assess various aspects. Model Checklists are attached

The learning out comes to be assessed should include:

i) **Journal Review Meeting (Journal Club):** The ability to do literature search, in depth study, presentation skills, and use of audio- visual aids are to be assessed. The assessment is made by faculty members and peers attending the meeting using a checklist (see Model Checklist – I)

ii) **Seminars / Symposia**: The topics should be assigned to the student well in advance to facilitate in depth study. The ability to do literature search, in depth study, presentation skills and use of audio- visual aids are to be assessed using a checklist (see Model Checklist-II)

iii) **Teaching skills**: Candidates should be encouraged to teach undergraduate medical students and paramedical students, if any. This performance should be based on assessment by the faculty members of the department and from feedback from the undergraduate students (See Model checklist III,)

iv) **Work diary / Log Book**- Every candidate shall maintain a work diary and record his/her participation in the training programmes conducted by the department such as journal, reviews, seminars, etc. Special mention may be made of the presentations by the candidate as well as details of experiments or laboratory procedures, if any conducted by the candidate.

v) **Records**: Records, log books and marks obtained in tests will be maintained by the Head of the Department.

Checklist - I

Model Checklist for Evaluation of Journal Review Presentations

Name of the student:_____ Date:_____

Name of the Faculty/ Observer:_____

S No.	Items for observation during presentation		Below average	Average	Good	Very Good
		0	1	2	3	4
1	Article chosen was					
2	Extent of understanding of scope & objectives of the paper by the candidate					
3	Whether cross- references have been consulted					
4	Whether other relevant references have been Consulted					
5	Ability to respond to questions on the paper /subject					
6	Audio-visuals aids used					
7	Ability to defend the paper					
8	Clarity of presentation					
9	Any other observation					
	Total score					

Checklist - II
Model Checklist for Evaluation of the Seminar Presentations

Name of the student:_____ Date:_____

Name of the Faculty/ Observer:_____

S No.	Items for observation during presentation		Below average	Average	Good	Very Good
		0	1	2	3	4
1	Article chosen was					
2	Extent of understanding of scope & objectives of the paper by the candidate					
3	Whether cross- references have been consulted					
4	Whether other relevant references have been Consulted					
5	Ability to respond to questions on the paper /subject					
6	Audio-visuals aids used					
7	Ability to defend the paper					
8	Clarity of presentation					
9	Any other observation					
	Total score					

Checklist - III
Model Checklist for Evaluation of Teaching Skill

Name of the student: _____ Date: _____

Name of the Faculty/ Observer: _____

S. No.		Strong Point	Weak point
1	Communication of the purpose of the talk		
2	Evokes audience interest in the subject		
3	The introduction		
4	The sequence of ideas		
5	The use of practical examples and /or illustrations		
6	Speaking style (enjoyable, monotonous, etc., specify)		
7	Summary of the main points at the end		
8	Ask questions		
9	Answer questions asked by the audience		
10	Rapport of speaker with his audience		
11	Effectiveness of the talk		
12	Uses of AV aids appropriately		

Checklist - IV
Model Check list for Dissertation / Project Work Presentations

Name of the student:_____ Date:_____

S No.	Points to be covered		Below average	Average	Good	Very Good
		0	1	2	3	4
1	Interest shown in selecting topic					
2	Appropriate review					
3	Discussion with guide and other faculty					
4	Quality of protocol					
5	Preparation of proforma					
	Total score					

Checklist - V

Continuous Evaluation of dissertation / project work by Guide/ Co-Guide

Name of the student:_____ Date:_____

Name of the faculty/ Observer:_____

S No.	Points to be covered		Below average	Average	Good	Very Good
		0	1	2	3	4
1	Interest shown in selecting topic					
2	Appropriate review					
3	Discussion with guide and other faculty					
4	Quality of protocol					
5	Preparation of proforma					
	Total score					

Checklist – VI

Continuous Evaluation of Directed Clinical Education (Clinical Posting) by Faculty in charge
Name of the student: _____ Date:_____

Semester: _____ Name of the faculty/Observer:_____

Core Competencies	Grade
Students will begin to develop critical thinking abilities utilizing the allied health personnel roles of communicator and caregiver. Students will learn principles of professional allied health personnel practice and provide direct care to individuals within a medical surgical setting while recognizing the diverse uniqueness of individuals with health alterations.	Write a grade 1-4 in the boxes below
I. Clinical Teaching	
a. Demonstrate beginning competency in technical skills.	
II. Independent Work by Student guided by faculty	
a. Develop effective communication skills (verbally and through charting) with patients, team members, and family	
b. Identify relevant data for communication in pre and post conferences	
c. Identify intra and inter-professional team member roles and scopes of practice. Establish appropriate relationships with team members.	
d. Identify need for help when appropriate to situation. Delegates level specific skills to appropriate team member.	
III. Hands on practical work by students	
a. Navigate and document clear and concise responses to care in the electronic health record for patient, where appropriate for clinical setting	
b. Protect confidentiality of electronic health records data, information, and knowledge of technology in an ethical manner	
IV. Independent work by student	
a. Maintain a positive attitude and interact with inter-professional team members, faculty, and fellow students in a positive, professional manner. Accept constructive feedback and develop plan of action for improvement.	
b. Demonstrate expected behaviours and complete tasks in a timely manner. Arrive to clinical experiences at assigned times. Maintain professional behaviour and appearance.	
c. Accept individual responsibility and accountability for nursing interventions, outcomes, and other actions. Engage in self evaluation & assumes responsibility for learning.	

***Clinical evaluation tool guidelines for full descriptions of grades 1-4.**
4-exceeds expectations (range of marks –40-50 marks)
3-meets expectations (range of marks –30-40 marks)
2-below expectations (range of marks –25-30 marks)
1-does not meet expectations (range of marks –no marks)

Name of the Programme	**M. Optometry**
Course Code	**MOPTOM 117**
Name of the Course	**EDUCATIONAL TOUR /FIELD WORK/IV/HOSPITAL VISIT**

Resolution No. 4.13 of BOM-55/2018: Resolved as follows:-

(i) Slow learners must be re-designated as potential learners.

(ii) Students scoring less than 35% marks in a particular subjects/course in the 1st formative exam are to be listed as potential learners. These learners must be constantly encouraged to perform better with the help of various remedial measures.

(iii) Students scoring more than 75% marks in a particular subjects/course in the 1st formative exam are to be listed as advanced learners. These learners must be constantly encouraged to participate in various scholarly activities.

All PG Courses
admitted in AY 2018-19
SBS

Resolution No. 4.4.1.3 of BOM-55/2018: Resolved to approve the revised syllabus of 'Research Methodology and Biostatistics" subject for all the PG courses (including 3 years) and to shift it in 2nd semester with effective from the batch admitted in the Academic Year 2018-19 onwards under MGM School of Biomedical Sciences. **[Annexure-13]**

Gmail

Mansee Thakur <mansibiotech79@gmail.com>

Annexure-13

To compulsorily include in the BOS agenda

1 message

Registrar <registrar@mgmuhs.com> 6 September 2018 at 14:17
To: drravindrai@gmail.com, inamdar123456@gmail.com, ipseetamohanty@yahoo.co.in, jaishreeghanekar@gmail.com, drspravin22@gmail.com, dr_spravin@hotmail.com, sudhirkul1979@gmail.com, mansibiotech79@gmail.com, sbsnm@mgmuhs.com, rajani.kanade@gmail.com, mgmschoolofphysiotherapy@gmail.com, prabhadasila@gmail.com, mgmnewbombaycollegeofnursing@gmail.com, gashroff2006@gmail.com, rupalgshroff@yahoo.com, manjushreeb@yahoo.com, drshobhasalve@gmail.com, spdubhashi@gmail.com, jayantkarbhase@gmail.com, veenashatolkar@gmail.com, sharathcrisp@gmail.com, mgmlpth@themgmgroup.com, anuradhamhaske@hotmail.com, principalconabad@gmail.com
Cc: registrarmgmihs@gmail.com, mgmihsaurangabad@gmail.com, dr.rajeshkadam07@gmail.com, aradmin@mgmuhs.com

Dear Sir/Madam,

Please find attached herewith request from Dr. Rita Abbi, Professor, Biostatistics regarding Modification in the syllabus of 'Research Methodology and Biostatistics' subject and Proposal to make this subject compulsory in all the PG courses. You are requested go through this and include it in your agenda for forthcoming BOS in September, 2018.

Thanks and regards,

Dr. Rajesh B. Goel

Registrar

MGM Institute of Health Sciences, Navi Mumbai

(Deemed University u/s 3 of UGC act, 1956)

3rd Floor, MGM Educational Campus,

Plot No. 1 & 2, Sector -1, Kamothe,

Navi Mumbai - 410 209

Tel.: 022 - 27432471 / 27432994

Fax: 022 - 27431094

Email: registrar@mgmuhs.com

Website: www.mgmuhs.com

Modification in the syllabus of Research Methodology and Biosta.pdf
2261K

MGM SCHOOL OF BIOMEDICAL SCIENCES, NAVI MUMBAI

(A constituent unit of MGM INSTITUTE OF HEALTH SCIENCES)
(Deemed University u/s 3 of UGC Act 1956)
Grade "A" Accredited by NAAC
Sector 1, Kamothe Navi Mumbai-410209, Tel.No.:022-27437631,27432890
Email. sbsnm@mgmuhs.com / Website : www.mgmsbsnm.edu.in

To,
The Director
MGM School of Biomedical Sciences
Kamothe,
Navi Mumbai – 410 209

7-6-2018

Subject: Modification in the syllabus of 'Research Methodology and Biostatistics' Subject and Proposal to make this subject compulsory in all the PG courses

Dear Madam,

Research Methodology and Biostatistics subject is a significant tool for academic research. It has been observed that majority of post graduate courses have this subject as a part of their course work. There is a need to modify the curriculum of 'Research Methodology and Biostatistics subject' due to the following reasons:

1. While going through the Research Methodology and Biostatistics syllabus it was found that in some courses more weightage was given to computer hardware e.g. History and development of computers(old pattern) which may not be needed now as we have witnessed the revolution in Information Technology. Students should be taught latest technology and software.
2. Secondly, in most of the syllabi 'Vital Statistic' is missing which is an important topic for healthcare field. Some of the essential topics like 'Normal distribution' etc are missing.
3. By streamlining the syllabus it will save teacher's teaching time, paper setting time. Moreover, Exam section need not call multiple examiners for the same subject, this will be economical for exam section.

This subject is well recognized as an essential tool in medical research, clinical decision making, and health management. It is recommended to streamline the syllabus and make **Research Methodology and Biostatistics' compulsory in all the post graduate courses of School Biomedical Sciences.** The modified syllabus is enclosed.
This is for your kind perusal and necessary action please.

With regards,

Dr. Rita Abbi
Professor, Biostatistics

Copy for information to
Registrar MGMIHS Navi Mumbai;
Hon'ble Vice Chancellor, MGMIHS Navi Mumbai
Hon'ble Medical Director, MGM Medical College

BOS → Faculty → Academic Council.

MGM Institute Of Health Sciences
INWARD NO. 5720
DATE: 25/6/18
REF:

MGM INSTITUTE OF HEALTH SCIENCES

M. Sc. Students

Syllabus for Research Methodology and Biostatistics

		No. of Hours	
	I. Research Methodology:	Theory	Practical
1	**Scientific Methods of Research :** Definition of Research, Assumptions, Operations and Aims of Scientific Research. Research Process, Significance and Criteria of Good Research , Research Methods versus Methodology, Different Steps in Writing Report, Technique of Interpretation, Precaution in interpretation, Significance of Report Writing, Layout of the Research Report	5	—
2	**Research Designs:** Observational Studies: Descriptive, explanatory, and exploratory, Experimental Studies: Pre-test design, post-test design, Follow-up or longitudinal design, Cohort Studies, Case Control Studies, Cross sectional studies, Intervention studies, Panel Studies.	5	—
3	Sampling Designs : Census and Sample Survey, Implications of a Sample Design, Steps in Sampling Design Criteria of Selecting a Sampling Procedure, Characteristics of a Good Sample Design, Different Types of Sample Designs (Probability sampling and non probability sampling), How to Select a Random Sample?, Systematic sampling, Stratified sampling, Cluster sampling, Area sampling, Multi-stage sampling, Sampling with probability proportional to size, Sequential sampling.	5	4
4	**Measurement in research:** Measurement Scales, Sources of Error in Measurement, Tests of Sound Measurement, Technique of Developing Measurement Tools, Scaling Meaning of Scaling, Scale Classification Bases, Important Scaling Techniques, Scale Construction Techniques, Possible sources of error in measurement, Tests of sound measurement	5	5
5	**Methods of Data Collection:** Types of data, Collection of Primary Data, Observation Method, Interview Method, Collection of Primary Data	5	3
6	**Sampling Fundamentals :** Need and importance for Sampling, Central Limit Theorem, Sampling Theory, Concept of Standard Error, Estimation, Estimating the Population Mean Estimating Population Proportion, Sample Size and its Determination, Determination of Sample Size through the Approach Based on Precision Rate and Confidence Level.	5	3
	II. Biostatistics		
1	**Data Presentation** : Types of numerical data: Nominal, Ordinal, Ranked, Discrete and continuous. Tables: Frequency distributions, Relative frequency, Graph: Bar charts, Histograms, Frequency polygons, one way scatter plots, Box plots, two way scatter plots, line graphs	3	4
2	**Measures of Central Tendency and Dispersion** : Mean, Median, Mode Range, Inter quartile range, variance and Standard Deviation, Coefficient of variation, grouped mean and grouped standard deviation (including merits and demerits).	3	4

3	**Testing of Hypotheses**: Definition, Basic Concepts, Procedure for Hypothesis Testing, Measuring the Power of a Hypothesis Test, Normal distribution, data transformationImportant Parametric Tests, Hypothesis Testing of Means, Hypothesis Testing for Differences between Means, Hypothesis Testing for Comparing Two Related Samples, Hypothesis Testing of Proportions, Hypothesis Testing for Difference between Proportions, Hypothesis Testing for Comparing a Variance to Some Hypothesized Population Variance, Testing the Equality of Variances of Two Normal Populations.	6	
4	**Chi-square Test:** Chi-square as a Non-parametric Test, Conditions for the Application Chi-square test, Steps Involved in Applying Chi-square Test, Alternative Formula, Yates' Correction, and Coefficient by Contingency.	2	2
5	**Measures of Relationship**: Need and meaning, Correlation and Simple Regression Analysis	2	3
6	**Analysis of Variance and Covariance**: Analysis of Variance (ANOVA):Concept and technique of ANOVA, One-way ANOVA, Two-way ANOVA, ANOVA in Latin-Square Design Analysis of Co-variance (ANOCOVA), ANOCOVA Technique.	4	4
7	**Nonparametric or Distribution-free Tests:** Important Nonparametric or Distribution-free Test Sign test, Wilcoxon signed-Rank Test, Wilcoxon Rank Sum Test: Mann-Whitney U test Kruskal Walli's test, Friedman's test, and Spearman Correlation test.	3	4
8	**Vital Health Statistics:** Measurement of Population: rate, crude rate, specific rate, *Measurement of fertility* : specific fertility rate, Total fertility rate, *Reproduction rate,* Gross Reproduction Rate, Net Reproduction Rate, Measures related to mortality: Crude Death Rate (CDR) , Age-specific death Rate, Infant and child mortality rate, Measures related to morbidity.	4	6
9	**Computer Application** Use of Computer in data analysis and research, Use of Software and Statistical package. Introduction to SPSS. Importing data from excel, access, tab and comma separated files. Entering data, labeling a variable, coding and recoding a categorical and continuous variable. Converting data from string to numeric variables, sorting & filtering, merging, appending data sets. Frequencies, descriptive statistics, cross tabulations. Diagrammatic presentation include histogram, bar chart, pie chart, scatter diagram, box plot, line chart. Parametric test of hypothesis-one sample, Independent and paired sample t test, one way ANOVA& post HOC test. Testing for normality,Chi-square test with measures of association. Pearson correlation. Non parametric test	3	6
	Total hours	60	60

Resolution No. 3.1.4.2 of BOM-57/2019:

i. Resolved to include "Gender Sensitization" into UG (from new batch 2019-2020) and PG (from existing batches) curricula. **[Annexure-21]**

ii. Resolved to align the module of "Gender Sensitization" with MCI CBME pattern for MBBS students.

iii. Resolved that Dr. Swati Shiradkar, Prof., Dept. of OBGY., MGM Medical College, Aurangabad will coordinate this activity at both campuses.

Annexure - 21

Gender sensitization for UG (2nd , 3rd , 8th semesters) and PG (3 hours)

INCLUSION OF " GENDER SENSATIZATION" IN CURRICULUM

Introduction :

The health care provider should have a healthy gender attitude, so that discrimination, stigmatization, bias while providing health care will be avoided. The health care provider should also be aware of certain medico legal issues related with sex & gender.

Society particularly youth & adolescents need medically accurate, culturally & agewise appropriate knowledge about sex, gender & sexuality. So we can train the trainers for the same. It is need of the hour to prevent sexual harassment & abuse .

To fulfill these objectives, some suggestions are there for approval of BOS.

Outline

1)For undergraduates :- Three sessions of two hours each, one in 2nd term, one in 3rd term & one in 8th term.

2)For Faculties and postgraduates :- One session of two hrs .

3)For those want to be trainers or interested for their ownself, value added course, which is optional about sex, gender, sexuality & related issues.

Responsibility

ICC of MGM, MCHA , with necessary support from IQAC & respective departments.

Details of undergraduate sessions

1)First session in 2nd term

Aim – To make Students aware about the concept of sexuality & gender**.**

To check accuracy of knowledge they have,

To make them comfortable with their own gender identify & related issues.

To make them aware about ICC & it is functioning.

Mode – Brain storming , Interactive power point presentation experience sharing.

Duration – Around two hours

Evaluation – Feedback from participants.

2)Second session in 3rd / 4th term

Aim – To ensure healthy gender attitude in these students as now they start interacting with patients.

To ensure that the maintain dignity privacy while interacting with patients and relatives, particularly gender related.

To make them aware about importance of confidentiality related with gender issues.

To encourage them to note gender related issues affecting health care & seek solutions.

Mode – focused group discussions on case studies, Role plays & discussion.

Duration – Around two hours.

Evaluation – Feedback from participants.

Third session in 8th term.

Aim – To understand effect of gender attitudes on health care in various subjects.

To develop healthy gender attitude while dealing with these issues.

Mode – Suggested PBL by departments individually. (In collaboration with ICC till faculty sensitization is complete)

Evaluation – Feedback

****

FOR POSTGRADUATES

Session of 2-3 hrs preferably in induction program.

Aim – To introduce medically accurate concept of gender, sex, gender role & sex role.

To ensure healthy gender attitude at workplace.

To understand gender associated concepts on health related issues & avoid such bias wile providing health care.

To make them aware about ICC & it's functioning.

Mode – Interactive PPT

Role plays & discussion

Duration – 2 to 3 hrs

Evaluation – Feedback.

FOR FACULTIES

Session of 2 hours may be during combined activities.

Aim – To ensure clarity of concept abut gender & sex.

To discuss effect of these concept on health related issues.

To identify such gender & sex related issues in indivual subject specialties.

To discuss methodology like PBL for under graduate students when whey are in 7^{th}-8^{th} semester.

Mode – Role play

Focused group discussion

Case studies

Evaluation – Feed back.

******

Sdp-Pimple/joshi-obgy

Resolution No. 3.2.1.6.a of BOM-57/2019: Resolved to allot 50 marks for Internal Assessment in Industrial Visit for all the batches under CBCS pattern - M.Sc. (2 year) & MHA program.

Resolution No. 3.2.1.6.d of BOM-57/2019: Resolved that in "Rules & Regulation of Exam for PG Student (CBCS)" to keep "10 marks for Viva instead of 5 marks and no marks for journal" in the final university exam for PG students (M.Sc. 02 years CBCS pattern) admitted from Academic Year 2019-20 onwards.

Resolution No. 3.2.1.6.e of BOM-57/2019: Resolved to approve the List of books (PG) for M.Sc. Clinical Nutrition and List of books (UG & PG) for Optometry program. **[Annexure-27 & 28]**

Annexure–28

List Of the book for Optometry Course

Sr no	Name of the book	Course	Type of Book
1	A text book of Optics	B Optometry	Text book
2	Geometric, Physical and Visual Optics	B Optometry	Reference Book
3	Clinical visual Optics	B Optometry	Text book
4	Sports Vision: Vision Care for the Enhancement of Sports Performance	B Optometry	Text book
5	Environmental & Occupational Optometry	B Optometry	Reference Book
6	Theory and Practice of Optics and Refraction	B Optometry	Text book
7	System for Ophthalmic Dispensing	B Optometry	Text book
8	Optometric Instrumentations	B Optometry	Text book
9	Geometrical and Visual Optics: A Clinical Introduction	B Optometry/ M Optometry	Text book
10	Borish's clinical refraction	B Optometry/ M Optometry	Text book
11	Primary Care Optometry	B Optometry/ M Optometry	Text book
12	Clinical Procedures in Primary Eye Care	B Optometry/ M Optometry	Reference Book
13	Ophthalmic lens and Dispensing	B Optometry	Text book
14	Clinical Optics	B Optometry	Text book
15	Contact Lenses	B Optometry / M Optometry	Text book
16	Clinical Management of Binocular Vision: Heterophoric, Accommodative, and Eye Movement Disorders	M Optometry	Text book
17	Essentials of Low Vision Practice	M Optometry	Text book