



MGM INSTITUTE OF HEALTH SCIENCES

(Deemed to be University u/s 3 of UGC Act, 1956)

Grade 'A' Accredited by NAAC

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CHOICE BASED CREDIT SYSTEM

(CBCS)

(with effect from 2025-26 Batches)

Curriculum for M. Optometry

Amended as per AC-51/2025, Dated 29/04/2025

Amended History

- 1.** Amended as per AC-51/2025, [Resolution No.3.1(Annexure-3.11)], [Resolution No.3.5, (Annexure-7); Dated 29/04/2025.

Resolution No. 3.1 of Academic Council (AC-51/2025):

Resolved to approve the CBCS syllabus, including Program Outcomes (POs), Course Outcomes (COs), and PO-CO Mapping for 15 two-year postgraduate programs under MGMSBS for Semesters I and II. These include: M.Sc. . Medical Biotechnology , M.Sc. Medical Genetics , M.Sc. Clinical Embryology , M.Sc. Clinical Nutrition , M.Sc. Medical Dialysis Technology , M.Sc. Molecular Biology , M.Sc. Medical Radiology & Imaging Technology , M.Sc. Cardiac Care Technology , M.Sc. Operation Theatre and Anaesthesia Technology , M.Sc. Emergency and Trauma Care, **M. Optometry**, Master in Hospital Administration, Master of Public Health, M.Sc. Health Informatics & M.Sc. Clinical Research to be effective from batch admitted in Academic Year 2025-26 onwards [ANNEXURE-3.1 to 3.30].



Annexure-3.11 of AC-51/2025

MGM SCHOOL OF BIOMEDICAL SCIENCES**(A constituent unit of MGM INSTITUTE OF HEALTH SCIENCES)**

(Deemed to be University u/s 3 of UGC Act 1956)

Grade “A⁺⁺” Accredited by NAAC

Sector 1, Kamothe, Navi Mumbai-410209, Tel.No.: 022-2743763, 27437632, 27432890

Email. sbsnm@mgmuhs.com/Website : www.mgmsbsnm.edu.in**CHOICE BASED CREDIT SYSTEM (CBCS)****(Academic Year 2025 - 26)****Curriculum for****M.Sc. Allied Health Sciences****M. Optometry****Semester I & II**

DIRECTOR'S MESSAGE

Welcome Message from the Director

Dear Postgraduate Students,

Welcome to **MGM School of Biomedical Sciences (MGMSBS)**, **MGMIHS**, a premier institution dedicated to advancing allied and health sciences education. As you embark on this transformative academic journey, you are joining a community that fosters excellence in research, clinical expertise, and innovation.

MGMIHS, accredited with NAAC 'A⁺⁺' Grade (CGPA 3.55, 2022) and recognized as a **Category I Institution by UGC**, offers an ecosystem that nurtures both academic and professional growth. With **NIRF (151-200 rank band) recognition**, **NABH-accredited hospitals**, **NABL-accredited diagnostic labs**, and **JCI accreditation for MGM New Bombay Hospital**, we uphold global benchmarks in education and healthcare.

At MGMSBS, our **15 postgraduate programs** are meticulously designed to align with the National Commission for Allied and Healthcare Professionals (**NCAHP**) standards, National Education Policy (**NEP**) 2020, and the National Credit Framework (**NCrF**). We have implemented the **Choice-Based Credit System (CBCS)** to provide academic flexibility while ensuring rigorous training in clinical and technical skills. Our state-of-the-art research laboratories, digital classrooms, and the Central Research Laboratory (CRL) foster an environment that encourages innovation and evidence-based learning.

Postgraduate education at MGMSBS goes beyond theoretical learning—our curriculum integrates **hands-on clinical training, interdisciplinary collaboration, and exposure to real-world healthcare challenges**. We emphasize **research-driven education**, encouraging students to actively participate in **scientific discoveries, publications, and international collaborations**.

Beyond academics, we believe in **holistic development**, with initiatives such as the **AARAMBH Science and Wellness Club**, which promotes **mental well-being, leadership, and professional networking**.

As you step into this **next phase of academic and professional growth**, we encourage you to explore new ideas, engage in impactful research, and contribute meaningfully to the **healthcare ecosystem**. We are confident that your journey at MGMSBS will shape you into **skilled, compassionate, and visionary professionals**, ready to lead in the ever-evolving healthcare landscape.

We look forward to witnessing your achievements and contributions!

Dr. Mansee Thakur

Director, MGM School of Biomedical Sciences
MGM Institute of Health Sciences, Navi Mumbai

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 through 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 23 courses each with its own distinct, specialized body of knowledge and skill. This includes 8 UG courses and 15 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 **800** 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. Reforms 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

M.OPOMETRY

Program Outcomes

Program Code	M.Optomerty
PO1	Knowledge Enhancement: A keen understanding of vision sciences and should demonstrate proficiency in advanced optometric management .
PO2	Skill Enhancement: Master the practical skill set required for optometric screening, diagnosis, management, and rehabilitation of various ocular conditions
PO3	Communication Skills: Develop Interpersonal competence in eye care services with patients and other professionals.
PO4	Critical Thinking & Trouble Shooting: Identify and analyze the complexity of a problem and use knowledge and skill to solve it.
PO5	Patient Care: Demonstrate proficiency in understanding and catering dedicated optometric eye care services to patients.
PO6	Community Eyecare: Organize and Participate in various outreach activities (Camps & Awareness Program) for providing optometric eye care services to the community.
PO7	Optometry Speciality & Entrepreneurship: Update clinical knowledge and develop specialized skill sets across various disciples of optometry with an entrepreneurial approach to start and manage a successful optometry practice.
PO8	Entusiasm for Research: Demonstrate a through understanding of research techniques analysis of scientific literature, able to conduct quality research work in order to contribute significantly in evidence-based practices of optometry.
PO9	Professional Ethics: Adhere to the ethical guidelines of integrity, objectivity, confidentiality, competency, behavior, and accountability in optometric clinical practice and research work.
PO10	Leadership & Team Work: Effectively manage clinical situations and exhibit visionary goal setting, conflict resolution, decision-making, problem-solving, and fostering Interdisciplinary collaborative practice.
PO11	Collaboration with Different Healthcare Professionals: Crucial for delivering high-quality patient care which includes enhanced communication, better resource utilization, innovation, problem-solving & communicating with different healthcare professionals for improved patient outcomes.
PO12	Holistic Development: Comprehensive development in the areas of self-awareness, Emotional intelligence, stress management, and Time management.

Course Outcomes Semester I

MOPTOM 101 T & MOPTOM 103 P	Epidemiology Public Health & Community Eye Health	Mapped PO	Teaching- Learning Methodology	Assessment Tools
CO1	Develop a thorough understanding of epidemiological concepts, study design and its implications in research and to know the Concept of Health and Disease	PO1, PO4, PO6, PO7, PO8, PO9	Lecture, Group Discussion, E-learning	Internal Assessment, Seminar University Exam (Theory)
CO2	Demonstrate a better understanding of Health Information and Basic Medical Statistics, Communication for Health Education, Health Planning and Management, Health care of community	PO1, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO11	Lecture, Practical, Role play, Problem-Based Learning (PBL)	Internal Assessment, University Exam (Practical: Viva-Voce, Station Exercise)
CO3	Well-versed with the concept of visual impairment, its causes, national and global burden, Preventive strategies, screening program, Regulatory international and national bodies and their initiative.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8 PO9, PO11	Lecture, Industrial Visit, Group Discussion,	Internal Assessment, University Exam (Practical: Viva-Voce,)
CO4	Able to comprehend epidemiological research article and exhibit practical skills for organizing community outreach program.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8 PO9, PO10, PO11	Case-Study, Experimental	Internal Assessment, University Exam (Practical: Viva-Voce, Station Exercise)
MOPTO M 102 T & MOPTO M 104 P	Anterior Segment Diseases & Diagnostic	Mapped PO	Teaching- Learning Methodology	Assessment Tools
CO1	Develop a thorough understanding of anatomical considerations of anterior segment structures.	PO1, PO4, PO7, PO8	Lecture, Group Discussion, Assignment, videos	Internal Assessment, Seminar University Exam (Theory)
CO2	Able to understand the clinical presentation, formulate differential diagnosis of anterior segment anomalies	PO1, PO2, PO4, PO5, PO6, PO7, PO8 PO9, PO10, PO11	Quiz, Group Discussion, Flip Classroom	Internal Assessment, University Exam (Practical: Viva-Voce,)
CO3	Demonstrate competent skills in anterior segment evaluation.	PO1, PO2, PO3, PO4,	Practical, Demonstration, Problem Based	Internal Assessment, University Exam

		PO5, PO6, PO7, PO8 PO9, PO10, PO11	Learning, Clinical Postings.	(Practical: Station Exercise)
CC 001 T & CC 001 P	Research Methodology & Biostatistics (Core Course)	Mapped PO	Teaching-Learning Methodology	Assessment Tools
CO1	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.	PO1, PO3, PO4, PO7, PO8, PO9, PO11	Lecture, Group Discussion, E-learning	Internal Assessment, Seminar University Exam (Theory & Practical)
MOPTO M 105 CP	MOPTOM Directed Clinical Education-I	Mapped PO	Teaching-Learning Methodology	Assessment Tools
CO1	The primary focus is on developing students' clinical skills, diagnostic abilities, and patient care expertise through supervised training in the real-world clinical settings. Students should be able to demonstrate proficiency in comprehensive eye examinations, specialized optometric procedures, interpret clinical findings for formulating management strategies and to co-manage the conditions with a multidisciplinary approach utilizing critical discussion making and problem-solving skills while exhibiting professional and ethical behavior in clinical settings.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO9, PO10, PO11, PO12	Practical, Experimental Problem Based Learning, Workshops, Clinical Postings.	Internal Assessment, University Exam (Practical: Viva-Voce, Station Exercise, Clinical Case Study)

Semester II

MOPTO M 106 T & MOPTO M 110 P	Posterior Segment Diseases & Diagnostic	Mapped PO	Teaching-Learning Methodology	Assessment Tools
CO1	Develop a thorough understanding of anatomical considerations of posterior segment structures.	PO1, PO4, PO7, PO8	Lecture, Group Discussion, Assignment, videos	Internal Assessment, Seminar University Exam (Theory)
CO2	Able to understand the clinical presentation, formulate differential diagnosis of posterior segment anomalies.	PO1, PO2, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11	Quiz, Group Discussion, Flip Classroom	Internal Assessment, University Exam (Practical: Viva-Voce,)
CO3	Demonstrate competent skills in posterior segment evaluation.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11	Practical, Demonstration, Problem Based Learning, Clinical Postings.	Internal Assessment, University Exam (Practical: Station Exercise)
MOPTO M 107 T & MOPTO M 111 P	Advanced Contact Lenses	Mapped PO	Teaching-Learning Methodology	Assessment Tools
CO1	Have a thorough understanding of basic concepts of contact lenses and identify the potential contact lens patients	PO1, PO2, PO3, PO5, PO7, PO8, PO9, PO10, PO11	Lecture, Group Discussion, Assignment, Problem Based Learning	Internal Assessment, Seminar University Exam (Theory)
CO2	Demonstrate competent skills in RGP, Soft Contact Lens Fitting and Evaluation, Ordering, and verification of lenses.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11	Practical, Problem Based Learning, Workshops, Clinical Postings.	Internal Assessment, University Exam (Practical: Viva-Voce, Station Exercise)
CO3	Well-versed with the concept of contact lens care and maintenance and complications.	PO1, PO2, PO3, PO4, PO5, PO7, PO8, PO9, PO11	Lecture, Group Discussion, Assignment, video	Internal Assessment, University Exam (Practical: Viva-Voce,)
CO4	Able to train patients for contact lens use and have a thorough understanding of contact lens market availability	PO1, PO2, PO3, PO4, PO5, PO7, PO9, PO10, PO11	Practical, Problem Based Learning, Workshops, Clinical Postings.	Internal Assessment, University Exam (Practical: Viva-Voce.)

MOPTO M 108 T & MOPTO M 112 P	Binocular Vision and Pediatric Optometry	Mapped PO	Teaching-Learning Methodology	Assessment Tools
CO1	Develop a thorough understanding regarding anatomical and physiological aspect of visual development.	PO1, PO2, PO4, PO8	Group Discussion, Assignment, videos	Internal Assessment, Seminar University Exam (Theory)
CO2	Able to understand the clinical presentation, formulate differential diagnosis of Pediatric Ocular Diseases.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8 PO9, PO10, PO11	Practical, Demonstration, videos	Internal Assessment, University Exam (Practical: Viva-Voce, Station Exercise)
CO3	Demonstrate competent skills in evaluating binocular vision parameters and identifying its anomalies.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8 PO9, PO10, PO11	Practical, Problem Based Learning, Workshops, Clinical Postings.	Internal Assessment, University Exam (Practical: Viva-Voce)
CO4	Have a thorough understandings of Management guidelines for above anomalies.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8 PO9, PO10, PO11	Seminars, Workshops, Case Study,	Internal Assessment, University Exam (Practical: Viva-Voce,)
MOPTO M 109 T & MOPTO M 113 P	Low Vision and Rehabilitation	Mapped PO	Teaching-Learning Methodology	Assessment Tools
CO1	Have a thorough understanding of basic concepts of Low vision and identify the potential low vision patient.	PO1, PO2, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12	Lecture, Group Discussion, Seminar	Internal Assessment, Seminar University Exam (Theory)
CO2	Well-versed with the legal aspect of Low Vision.	PO1, PO3, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12	Lecture, Flip Classroom, Quiz, Seminar	Internal Assessment, University Exam (Practical: Viva-Voce)
CO3	Able to understand the clinical presentation and efficiently evaluate and analyze a Low vision case.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8 PO9, PO10, PO11	Lecture, Guest Lecture, Workshop, Case Study	Internal Assessment, University Exam (Practical: Viva-Voce)
CO4	Demonstrate competent skills in providing rehabilitation training.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8 PO9, PO10, PO11, PO12	Practical, Problem Based Learning, Workshops, Clinical Postings, Industrial visit	Internal Assessment, University Exam (Practical: Viva-Voce, Station Exercise, Clinical Case Study)

MOPTO M 114 CP	MOPTOM Directed Clinical Education-II	Mapped PO	Teaching-Learning Methodology	Assessment Tools
CO1	The primary focus is on developing students' clinical skills, diagnostic abilities, and patient care expertise through supervised training in the real-world clinical settings. Students should be able to demonstrate proficiency in comprehensive eye examinations, specialized optometric procedures, interpret clinical findings for formulating management strategies and to co-manage the conditions with a multidisciplinary approach utilizing critical decision making and problem-solving skills while exhibiting professional and ethical behavior in clinical settings.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO9, PO10, PO11, PO12	Practical, Experimental Problem Based Learning, Workshops, Clinical Postings.	Internal Assessment, University Exam (Practical: Viva-Voce, Station Exercise, Clinical Case Study)
SEC 001 T	Innovation and Entrepreneurship	Mapped PO	Teaching-Learning Methodology	Assessment Tools
CO1	Students will grasp the concepts of innovation, its ecosystem, and the role of various stakeholders such as government policies, startups, and innovation hubs.	PO1, PO3, PO4, PO5, PO7, PO8, PO9, PO10, PO11	Lecture, Group Discussion, E-learning	Internal Assessment, Seminar University Exam (Theory)
CO2	Cultivating an entrepreneurial mindset and leadership qualities necessary for driving innovation and leading ventures.	PO1, PO3, PO4, PO7, PO8, PO9, PO10, PO11, PO12	Lecture, Group Discussion, E-learning	Internal Assessment, Seminar University Exam (Theory)
CO3	Understanding the intersection of technology and innovation and leveraging emerging technologies for entrepreneurial ventures.	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12	Lecture, Group Discussion, E-learning	Internal Assessment, Seminar University Exam (Theory)
SEC 002 T	Science Communication: Research Productivity and Data Analytics using Open-Source Software (NPTEL)	Mapped PO	Teaching-Learning Methodology	Assessment Tools
CO1	Develop clear and concise scientific reports, presentations, and visualizations.	PO1, PO3, PO4, PO8	E-Learning	NPTEL Exam (MCQS, Assignment)
CO2	Apply open-source tools for research documentation and publication.	PO1, PO8, PO8, PO9, PO11	E-Learning	NPTEL Exam (MCQS, Assignment)
CO3	Understand the principles of Open Science and its impact on research dissemination.	PO1, PO4, PO8, PO9	E-Learning	NPTEL Exam (MCQS, Assignment)

OUTLINE OF COURSE CURRICULUM														
M.Optometry														
Semester I														
Code No.	Core Course	Credits/Week					Hrs/Semester					Marks		
		Lecture (L)	Tutorial (T)	Practical (P)	Clinical Posing/ Rotation (CP)	Total Credits (C)	Lecture (L)	Tutorial (T)	Practical (P)	Clinical Posing/ Rotation (CP)	Total (hrs.)	Internal Assement (IA)	Semester End Exam (SEE)	Total
Discipline Specific Core Theory														
MOPTOM 101 T	Epidemiology Public Health & Community Eye Health	2	-	-	-	2	30	-	-	-	30	20	80	100
MOPTOM 102 T	Anterior Segment Diseases & Dignostic	4	-	-	-	4	60	-	-	-	60	20	80	100
CC 001 T	Research Methodology & Biostatistics (Core Course)	3	-	-	-	3	45	-	-	-	45	.	50	50
Discipline Specific Core Practical														
MOPTOM 103 P	Epidemiology Public Health & Community Eye Health	-	-	4	-	2	-	-	60	-	60	10	40	50
MOPTOM 104 P	Anterior Segment Diseases & Dignostic	-	-	4	-	2	-	-	60	-	60	10	40	50
MOPTOM 105 CP	MOPTOM Directed Clinical Education-I	-	-	-	15	5	-	-	-	225	225	-	50	50
CC 001 P	Research Methodology & Biostatistics (Core Course)	-	-	4	-	2	-	-	60	-	60	.	50	50
Total		9	0	12	15	20	135	0	180	225	540	60	390	450

OUTLINE OF COURSE CURRICULUM														
M.Optometry														
Semester II														
Code No.	Core Course	Credits/Week					Hrs/Semester					Marks		
		Lecture (L)	Tutorial (T)	Practical (P)	Clinical Posing/ Rotation (CP)	Total Credits (C)	Lecture (L)	Tutorial (T)	Practical (P)	Clinical Posing/ Rotation (CP)	Total (hrs.)	Internal Assement (IA)	Semester End Exam (SEE)	Total
Discipline Specific Core Theory														
MOPTOM 106 T	Posterior Segment Diseases & Dignostic	3	-	-	-	3	45	-	-	-	45	20	80	100
MOPTOM 107 T	Advanced Contact Lenses	2	-	-	-	2	30	-	-	-	30	20	80	100
MOPTOM 108 T	Binocular Vision and Pediatric Optometry	2	-	-	-	2	30	-	-	-	30	20	80	100
MOPTOM 109 T	Low Vision and Rehabilitation	2	-	-	-	2	30	-	-	-	30	20	80	100
Discipline Specific Core Practical														
MOPTOM 110 P	Posterior Segment Diseases & Dignostic	-	-	2	-	1	-	-	30	-	30	10	40	50
MOPTOM 111 P	Advanced Contact Lenses	-	-	2	-	1	-	-	30	-	30	10	40	50
MOPTOM 112 P	Binocular Vision and Pediatric Optometry	-	-	2	-	1	-	-	30	-	30	10	40	50
MOPTOM 113 P	Low Vision and Rehabilitation	-	-	2	-	1	-	-	30	-	30	10	40	50
MOPTOM 114 CP	MOPTOM Directed Clinical Education-II	-	-	-	15	5	-	-	-	225	225	-	50	50
Skill Enhancement Course														
SEC 001 T	Innovation and Entrepreneurship	3	-	-	-	3	45	-	-	-	45	-	100	100
SEC 002 T	Science Communication: Research Productivity and Data Analytics using Open Source Software (NPTEL)													
Total		12	0	8	15	21	180	0	120	225	525	120	630	750

FIRST YEAR

M. Optometry

SEMESTER-I

Code No.	Core Subjects
Discipline Specific Core Theory	
MOPTOM 101 T	Epidemiology Public Health & Community Eye Health
MOPTOM 102 T	Anterior Segment Diseases & Diagnostic
CC 001 T	Research Methodology & Biostatistics (Core Course)
Discipline Specific Core Practical	
MOPTOM 103 P	Epidemiology Public Health & Community Eye Health
MOPTOM 104 P	Anterior Segment Diseases & Diagnostic
MOPTOM 105 CP	MOPTOM Directed Clinical Education-I
CC 001 P	Research Methodology & Biostatistics (Core Course)

Name of the Program	M. Optometry
Semester	Semester I
Name of the Subject	Epidemiology Public Health & Community Eye Health
Subject Code	MOPTOM 101 T

Teaching Objective	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	Epidemiology -Basics of Epidemiology study methods, Types of study designs, Concept of Health and Disease ,Principles of Epidemiology and Epidemiological Methods	5
2	Public Health: Health Information and Basic Medical Statistics, Communication for Health Education , Health Planning and Management, Health care of community	7
3	Community Eye Health: Prevalence, incidence and distribution of visual impairment, Regulatory international and national bodies and their initiatives to reduce the burden of visual impairment. Causes and prevention for vision Impairment- Blindness, 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 Prevention strategies- Screening for Eye Disease, Refractive errors, Low Vision, Cataract, Diabetic retinopathy, Glaucoma, Amblyopia, Squint etc. Telehealth.	18
Total		30 hrs

MOPTOM 103 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 Program	M. Optometry
Semester	Semester I
Name of the Course	Anterior Segment Diseases & Diagnostics
Course Code	MOPTOM 102 T

Teaching objective	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> To be able to perform clinical decision making for Ocular abnormalities To be able to perform and interpret corneal diagnostics including, Topography/Pentacam/Orbiscan, Secular microscopy, Pachymetry, Abberometry, UBM 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	Orbit: Applied anatomy, Orbital Inflammation (Periostitis, Orbital cellulitis, Thrombosis of the cavernous sinus), Thyroid eye disease, Orbital blowout fractures.	8
2	Lids: Applied anatomy, Anomaly, clinical features, investigations & management, Chalazion, Other eyelid cyst, Basal cell carcinoma, Squamous cell carcinoma, External hordeolum, Herpes zoster ophthalmicus, Herpes simplex, Blepharitis, Ectropion, Entropion, Trichiasis, Blepharospasm, Symblepharon, Distichiasis, Ptosis.	8
3	Lacrimal System: Applied anatomy, Anomaly, clinical features, investigations & management. Dacryoadenitis, Dry eye (Sjogren's Syndrome), Dacryocystitis, Epiphora	8
4	Conjunctiva: Applied anatomy, Bacterial conjunctivitis, Viral conjunctivitis, Allergic conjunctivitis, Degenerative conditions(Pinguecula, Pterygium, Concretions) , Symptomatic conditions(Hyperaemia, Chemosis, Ecchymosis, Xerosis, Discoloration)	8
5	Cornea: Applied anatomy, Degenerative Changes(Arcus senilis, Arcus juvenilis, Band-shaped keratopathy), Inflammation (keratitis), Infections Affecting the Cornea (Bacterial ulcers and purulent keratitis, Fungal corneal ulcers, Viral infections of the cornea, Parasitic infestations) Ectatic Conditions, Corneal Dystrophies (Epithelial and subepithelial dystrophies, Bowman layer dystrophies, Stromal corneal dystrophies, Endothelial corneal dystrophies)	8
6	Uveal Tract and Sclera: Applied anatomy, Classification of uveitis, Episcleritis and scleritis, Clinical examination of Uveitis and Scleritis	8
7	Anterior segment Diagnostics -Specular Microscopy, Topography, Corneal Hysteresis, Orbiscan, Pentacam, Pachymetry, Abberometry. UBM	12
Total		60 hrs

MOPTOM 104 P - Anterior Segment Diseases & Diagnostics

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

Books:**Text book:**

- A K Khurana: Comprehensive Ophthalmology, 4th edition, New age international (p) Ltd. Publishers, New Delhi, 2007

Reference books:

- Stephen J. Miller : Parsons Diseases of the Eye, 18th edition, Churchill Livingstone, 1990
- Jack J. Kanski Clinical Ophthalmology: A Systematic Approach, 6th edition, Butterworth - Heinemann, 2007

Name of the Program	M. Optometry
Semester	Semester I
Name of the Subject	Research Methodology & Biostatistics (Core Course)
Subject Code	CC 001 T

Teaching Objective	<ul style="list-style-type: none"> 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, analyze the treatment of statistical inference and to focus primarily on how to specify and interpret the outcome of research.
Learning Outcomes	<ul style="list-style-type: none"> 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	Topic	No. of Hrs.
A	Research Methodology:	23
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	4
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.	5
3	Sampling Designs: Census and Sample Survey, Need and importance for Sampling, Implications of a Sample Design, Different Types of Sample Designs (Probability sampling and non-probability sampling), Systematic sampling, Stratified sampling, Cluster sampling, Multi-stage sampling, Sampling with probability proportional to size, Sequential sampling.	5
4	Measurement in research: Measurement Scales, Sources of Error in Measurement,	3
5	Methods of Data Collection: Types of data, Collection of Primary Data, Observation Method, Interview Method	4
6	Research Ethics and plagiarism	2
B	Biostatistics	22
7	Data Presentation: Types of numerical data: Nominal, Ordinal, Ranked, Discrete and continuous. Tables: Frequency distributions, Relative frequency, Graph: Bar charts, Histograms, Frequency polygons, 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, power of test, Normal distribution, Parametric Tests including Z-test, t-test, and ANOVA	4
10	Chi-square Test: Chi-square as a Non-parametric Test, Applications.	2

11	Measures of Relationship: Correlation and Simple Regression Analysis	3
12	Non-parametric test: Sign test, Wilcoxon signed-Rank Test, Wilcoxon Rank Sum Test: Mann-Whitney U test, Kruskal Walli's test, Friedman's test, and Spearman Rank correlation test.	3
13	Vital Health Statistics: rate, crude rate, age specific rate, Measurement of fertility, Rate, Measures of mortality.	4
Total		45 hrs

CC 001 P–Research Methodology & Biostatistics

Sr. No.	Topics	No. of Hrs.
A	Research Methodology	
1	Research Article Presentation (Seminar)	5
B	Biostatistics	
2	Data Presentation	4
3	Measures of Central Tendency and Dispersion	6
4	Testing of Hypotheses	16
5	Chi-square Test	4
6	Measures of Relationship	6
7	Analysis of Variance	5
8	Non parametric or Distribution-free Tests	8
9	Computer Application Using Statistical Software including SPSS	6
Total		60 hrs

Reference Books:

1. Daniel WW. Biostatistics: A foundation for analysis in the health sciences. 10th ed. Wiley; 2013.
2. Gupta SC, Kapoor VK. Fundamentals of mathematical statistics. Sultan Chand & Sons; 2020 Sep.
3. Kothari CR, Garg G. Research methodology: Methods and techniques. 2019.
4. Mahajan BK. Methods in biostatistics for medical students and research workers. 7th ed. Jaypee Brothers Medical Publishers; 2010.
5. Murthy MN. Sampling theory and methods. Statistical Publishing Society; 1967.
6. Singh YK. Fundamental of research methodology and statistics. New Age International; 2006.

Resolution No. 3.5 of Academic Council (AC-51/2025):

Resolved to approve the submitted list of recommended books for M.Sc. Clinical Nutrition and the course on **Biostatistics and Research Methodology** [ANNEXURE-7].

Annexure-7 of AC-51/2025

Biostatistics & Research Methodology Books List

Subject	Book Name	Author
Biostatistics & Research Methodology	Biostatistics: A Foundation for Analysis in the Health Sciences (10th ed.)	Daniel WW.
	Biostatistical Analysis (5th ed.)	Zar JH.
	Research Methodology: Methods and Techniques	Kothari CR, Garg G.
	Methods in Biostatistics for Medical Students and Research Workers (7th ed.)	Mahajan BK.
	Sampling Theory and Methods	Murthy MN.
	Fundamentals of Research Methodology and Statistics	Singh YK.
	Fundamentals of Biostatistics (8th ed.)	Rosner B.
	An Introduction to Medical Statistics (4th ed.)	Bland M.

MOPTOM 105 CP: MOPTOM Directed Clinical Education-I

Course Outcomes	<ul style="list-style-type: none">• The primary focus is on developing students' clinical skills, diagnostic abilities, and patient care expertise through supervised training in the real-world clinical settings. Students should be able to demonstrate proficiency in comprehensive eye examinations, specialized optometric procedures, interpret clinical findings for formulating management strategies and to co-manage the conditions with a multidisciplinary approach utilizing critical discussion making and problem-solving skills while exhibiting professional and ethical behavior in clinical settings.
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Community orientation & clinical visit (including related practical's to the parent course)

The primary focus is on developing students' clinical skills, diagnostic abilities, and patient care expertise through supervised training in the real-world clinical settings. Students should be able to demonstrate proficiency in comprehensive eye examinations, specialized optometric procedures, interpret clinical findings for formulating management strategies and to co-manage the conditions with a multidisciplinary approach utilizing critical decision making and problem-solving skills while exhibiting professional and ethical behavior in clinical settings. (**Total - 225 hrs.**)

FIRST YEAR

M. Optometry

SEMESTER- II

Code No.	Core Subjects
Discipline Specific Core Theory	
MOPTOM 106 T	Posterior Segment Diseases and Diagnostics
MOPTOM 107 T	Advanced Contact Lenses
MOPTOM 108 T	Binocular Vision and Pediatric Optometry
MOPTOM 109 T	Low Vision and Rehabilitation
Discipline Specific Core Practical	
MOPTOM 110 P	Posterior Segment Diseases and Diagnostics
MOPTOM 111 P	Advanced Contact Lenses
MOPTOM 112 P	Binocular Vision and Pediatric Optometry
MOPTOM 113 P	Low Vision and Rehabilitation
MOPTOM 114 CP	MOPTOM Directed Clinical Education-II
Skill Enhancement Course	
SEC 001 T	Innovation and Entrepreneurship
SEC 002 T	Science Communication: Research Productivity and Data Analytics using Open Source Software (NPTEL)

Name of the Program	M. Optometry
Semester	Semester I
Name of the Course	Posterior Segment Diseases and Diagnostics
Course Code	MOPTOM 106 T

Teaching Objective	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	Retina and Vitreous: Applied anatomy & Physiology, Diabetic retinopathy, Hypertensive retinopathy, Retinal venous occlusive disease, Retinal arterial occlusive disease, Ocular ischemic syndrome, Sick cell retinopathy, Retinopathy of prematurity, ARMD, Central serous chorioretinopathy, Cystoid macular oedema, Microcystic macular oedema, CRAO, CRVO, BRAO, BRVO, Retinal detachment (Peripheral lesions predisposing to retinal, Posterior vitreous detachment, Retinal breaks, Rhegmatogenous retinal detachment, Tractional retinal detachment, Exudative retinal detachment	8
2	Vitreous: Vitreous Detachment, Vitreous hemorrhage, Vitreous cyst, Vitreoretinal Degeneration	4
3	Lens: Applied Anatomy and Physiology, Clinical examination, Classification of cataract, Congenital and Developmental cataract, Management of cataract, Complications of cataract surgery	6
4	Neuro optometric diseases and disorders: Applied Anatomy of visual pathway, Lesions of the visual pathway, Pupillary reflexes and abnormalities, Optic neuritis, Anterior Ischemic optic neuropathy, Papilledema, Optic atrophy, Cranial nerve palsy (CN III, IV, VI & VII palsy)	6
5	Glaucoma: Applied anatomy and physiology of anterior segment, Clinical Examination, Definitions and classification of glaucoma, Pathogenesis of glaucomatous ocular damage. Management: common medications, laser intervention and surgical techniques	6
6	Posterior segment Diagnostics- ERG, EOG, VEP, OCT, Fundus photography, HRT, GDx, Perimetry, Gonioscopy and ONH evaluation	15
Total		45 hrs

MOPTOM 110 P – Posterior Segment Diseases and Diagnostics

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

Reference Books:

- Clinical Ophthalmology: Jack J Kanski
- Parsons' Diseases of the Eye.
- Diagnostics and imaging techniques in Ophthalmology: Dr. Amar Agarwal

Name of the Program	M. Optometry
Semester	Semester I
Name of the Subject	Advanced Contact Lenses
Subject Code	MOPTOM 107 T

Teaching Objective	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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

Sr. No.	Topics	No. of Hrs.
1	Refresher of IACLE modules 1 & 2: Anatomy, physiology, contact lens materials & its properties	5
2	Cornea and Contact lens and its Oxygen requirements	2
3	RGP & Soft Contact Lens: Pre-Fitting examination –steps, significance, recording of results	3
4	RGP & Soft Contact Lens: Post-fitting examination - steps, significance, recording of results & fitting types	2
5	Correction of Astigmatism with RGP contact lens & soft contact lens	2
6	Introduction to various Contact lens management modalities for irregular corneal conditions	2
7	Contact lens management in Presbyopia	2
8	Therapeutic Contact lens	2
9	Extended and Continuous wear Lenses	2
8	Pediatric contact lens fitting	2
9	Tinted contact lenses: Application in aesthetics	2
10	RGP & Soft Contact Lens: Care & maintenance	2
11	RGP & Soft Contact Lens: Complications & management	2
	Total	30 hrs

MOPTOM 111 P - Advanced Contact Lenses

Sr. No.	Topics	No. of Hrs.
1	Identifying the potential contact lens patient & training them for contact lens use. Availability of RGP & Soft contact lenses in clinical practices.	5
2	RGP & Soft Contact lenses: Spherical & Toric Fitting, Care & maintenance, ordering & verification	20
3	Availability of RGP & Soft contact lenses in clinical practices.	5
Total		30hrs

Reference Books:

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

Name of the Program	M. Optometry
Semester	Semester II
Name of the Subject	Binocular Vision and Pediatric Optometry
Subject Code	MOPTOM 108 T

Teaching Objective	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	5
2	Oculomotor Function- Conjugate Eye Movements of Infants, Development of the Vestibuloocular and optokinetic reflexes.	5
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	5
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	5
5	Retinal and cortical Development, Abnormal Visual Development, What next in Infant Research	5
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, Contant Strabismus, Management Guidelines – Amblyopia, Accommodation and Vergence anomalies, Nystagmus, Common genetic problems in Pediatric optometry, Pediatric Ocular Diseases, Ocular Trauma in Children, Myopia control, Clinical uses of prism	5
Total		30 hrs

MOPTOM 112 P - Binocular Vision and Pediatric Optometry

Sr. No.	Topics	No. of Hrs.
1	Hands on training and Interpretation of all the above tests for children	30
Total		30 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 Program	M. Optometry
Semester	Semester I
Name of the Subject	Low Vision and Rehabilitation
Subject Code	MOPTOM 109 T

Teaching Objective	<ul style="list-style-type: none"> ▪ 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	<ul style="list-style-type: none"> ▪ 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	Low vision: Definition, Epidemiology, classification, causes, disease process and Models of Low vision services.	4
2	Evaluation of low vision patients: History taking, Clinical evaluation, Functional assessment, 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	4
3	Low vision devices: Optical, non-optical, electronics, Assistive Devices and Advance Technology for low vision and blind, Optics of low vision devices, magnification types & calculation, management of field loss.	6
4	Visual Disorders - Psychosocial Perspective: Developmental perspectives – Youth, Vision Impairment and Cognition, Spatial orientation and Mobility of people with vision impairments, Social skills Issues in vision impairment, Communication and language: Issues and concerns, Developmental perspectives on Aging and vision loss, Vision and cognitive Functioning in old age.	4
5	Rehabilitation & Counselling: Training of low vision devices, Role of psychosocial Factors in adaptation to vision Impairment and Habilitation outcomes for Children and Youth, Role of psychosocial Factors in adaptation to vision Impairment and Habilitation outcomes for Adults and Older adults, Social support and adjustment to vision Impairment across the life span, the person – Environment perspective of vision impairment. Associated Depression, Disability and rehabilitation.	6

	Counselling of low vision patients.	
6	Low vision aids dispensing & prescribing aspects	2
7	Legal aspects of Low vision in India	2
8	Case Analysis	2
Total		30 hrs

MOPTOM 113 P - Low Vision and Rehabilitation

Sr. No.	Topics	No. of Hrs.
1	Hands on training and Interpretation of all the above tests for low vision care	15
2	Determining & Training of Low Aid Devices	15
Total		30 hrs

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 114 CP: MOPTOM Directed Clinical Education-II

Course Outcomes	<ul style="list-style-type: none">• The primary focus is on developing students' clinical skills, diagnostic abilities, and patient care expertise through supervised training in the real-world clinical settings. Students should be able to demonstrate proficiency in comprehensive eye examinations, specialized optometric procedures, interpret clinical findings for formulating management strategies and to co-manage the conditions with a multidisciplinary approach utilizing critical decision making and problem-solving skills while exhibiting professional and ethical behavior in clinical settings.
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Community orientation & clinical visit (including related practical's to the parent course)

The primary focus is on developing students' clinical skills, diagnostic abilities, and patient care expertise through supervised training in the real-world clinical settings. Students should be able to demonstrate proficiency in comprehensive eye examinations, specialized optometric procedures, interpret clinical findings for formulating management strategies and to co-manage the conditions with a multidisciplinary approach utilizing critical decision making and problem-solving skills while exhibiting professional and ethical behavior in clinical settings. **(Total -225 hrs.)**

SKILL ENHANCEMENT COURSES

Name of the Program	M. Optometry
Semester	Semester II
Name of the Subject	Innovation and Entrepreneurship
Subject Code	SEC 001 T

Course Outcome	<ul style="list-style-type: none"> • Students will grasp the concepts of innovation, its ecosystem, and the role of various stakeholders such as government policies, startups, and innovation hubs. • Cultivating an entrepreneurial mindset and leadership qualities necessary for driving innovation and leading ventures. • Understanding the intersection of technology and innovation and leveraging emerging technologies for entrepreneurial ventures.
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Sr. No.	Topics	No. of Hrs.
1	Innovation and Innovation Eco-System, The Policy Framework, Startup Landscape and Innovation Hubs, - Digital India and Make in India, - Linking Innovation with Intellectual Property Rights, Raising Finance for Startups in India, Innovation in Indian Context, Writing a business plan	15
2	Creativity and Research, Converting Researches to Innovation: Innovation Types and Models, Product Development, IPR and its Commercialisation, Support System to Develop Culture of Research and Innovation, Commercialisation of research and innovation, Fund raising – Research and Innovation, Envisioning Innovation and Scenario Building	15
3	Introduction to Innovation in Entrepreneurship, Idea Generation and Validation, Design Thinking in Entrepreneurship, Business Model Innovation, Technology and Innovation, Funding Innovation, Entrepreneurial Mindset, Leadership & Intellectual Property, Scaling and Growth Strategies, sustainability & Social Innovation	15
Total		45 hrs

Name of the Program	M. Optometry
Semester	Semester II
Name of the Subject	Science Communication: Research Productivity and Data Analytics using Open Source Software (NPTEL)
Subject Code	SEC 002 T

Course Outcomes	<ul style="list-style-type: none"> • Develop clear and concise scientific reports, presentations, and visualizations. • Apply open-source tools for research documentation and publication. • Understand the principles of Open Science and its impact on research dissemination.
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Sr. No.	Topics	No. of Hrs.
1	Science Communication: <ul style="list-style-type: none"> • Introduction to Science Communication • Channels of Science Communication • Open Science and Open Access • Open Research Data and Open Peer Review 	3
2	Academic Visibility and Research Impact: <ul style="list-style-type: none"> • Overview of Tools for Maximizing Academic Visibility and Impact of Research Output • Understanding Research Metrics: Author, Journal and Article Level Metrics 	3
3	Data Sources and Extraction : <ul style="list-style-type: none"> • Abstract and Citation Database: Scopus • Abstract and Citation Database: Web of Science • Health Science Database: PubMed, • Free Academic Search Engine: Google Scholar , 	4
4	Working with R: Installation of R and RStudio, Basic Operations, data types, etc. <ul style="list-style-type: none"> • Installation of R • Installation of RStudio • Object and Different types • .Vector and Data Frame • Lists, Matrices, Factor, Array • Packages and Help 	4
5	Introduction and application of bibliometrics and laws of scientometrics in mapping of science communications: <ul style="list-style-type: none"> • Science Communication and Different Metrics • Lotka's Law • Bradford's Law • Zipf's Law • and animals 	4

6	Descriptive Analysis: Publication and Citation related metrics: <ul style="list-style-type: none"> • Descriptive Analysis – I • Descriptive Analysis – II • Descriptive Analysis – III • Analysis of Bradford and Lotka Law 	4
7	Science Mapping: Co-citation, bibliographic coupling, co-authorship, PageRank, etc. <ul style="list-style-type: none"> • Science Mapping – I • Science Mapping - II 	4
8	Data Visualization <ul style="list-style-type: none"> • Data visualization: an overview, history, and skills for researchers • Data visualization: types, tools, and technologies • Visualization of scientific research with VOSviewer and CiteSpace 	4
9	Text Mining: Topic Modelling of research productivity <ul style="list-style-type: none"> • Text Mining – Introduction • Regular Expression • Text Pre-processing • Topic Modeling 	4
10	Best Practices in Academic Rankings in reference to Times Higher Education (THE), QS, Sanghai (ARWU) and National Institutional Ranking Framework (NIRF) Ranking	4
11	Ethical Guidelines, Academic Integrity in Science Communication <ul style="list-style-type: none"> • Academic Integrity and Ethical Guidelines in Science Communication: Ensuring Credibility and Honesty • IPR/Copyright Issues and Practices in Print & Digital Environment • Predatory Publishing: issues, challenges, and the road ahead 	4
12	Case Studies <ul style="list-style-type: none"> • Case Study - I (Domain) • Case Study – II (Author) • Case Study – III (Journal & Institution) 	3
Total		45 hrs

Books and references

1. Andrés, A. (2009). Measuring academic research: How to undertake a bibliometric study. Elsevier.
2. Gingras, Y. (2016). Bibliometrics and research evaluation: Uses and abuses. MIT Press.
3. Ball, R. (2017). An introduction to bibliometrics: New development and trends. Chandos Publishing.
4. Cronin, B., & Sugimoto, C. R. (Eds.). (2014). Beyond bibliometrics: Harnessing multidimensional indicators of scholarly impact. MIT press.
5. Teator, P. (2011). R Cookbook: Proven recipes for data analysis, statistics, and graphics. "O'Reilly Media, Inc."
6. Ahmi, A. (2022). Bibliometric Analysis using R for Non-Coders: A practical handbook in conducting bibliometric analysis studies using Biblioshiny for Bibliometrix R package.
7. Tattersall, A. (Ed.). (2016). Altmetrics: A practical guide for librarians, researchers, and academics. Facet Publishing.

***Note:** Attain the NPTEL Course with title and course code as “**Science Communication: Research Productivity and Data Analytics using Open Source Software (Course Code: noc25-hs70) (NPTEL)**”.

Scheme of University Examination Theory for PG Program:

General structure / patterns for setting up question papers for Theory / Practical courses, their evaluation weightages for PG programs of MGMSBS are given in the following tables

Marks scheme for the University exam:

Final theory marks will be 100 marks (80 marks University Theory exam + 20 Marks Internal assessment).

Question		Marks distribution	Marks allotted per section	Marks
Sec: A	MCQ	10 x 1 M = 10	10	10
Sec: B	SAQ	3/4x 5 M = 15	15	35
Sec: B	LAQ	2/3 x 10 M = 10	20	
Sec: C	SAQ	3/4x 5 M = 15	15	35
Sec: C	LAQ	2/3x 10 M = 10	20	
Total				80 Marks

Marks Scheme for the University Examination (50 Marks)

Final theory marks will be 50 marks University Theory exam pattern Research Methodology & Biostatistics (Core course)

Question	Question No.	Question Type	Marks Distribution	Marks
Sec: A	1.	LAQ (2 out of 3)	2 X 10 Marks = 20	20
Sec: B	2.	SAQ (6 out of 8)	6 X 05 Marks = 30	30
Total				50 Marks

Marks Scheme for the University Examination (100 Marks)

Final theory marks will be 100 marks University Theory exam pattern Elective Course

Question	Question No.	Question Type	Marks Distribution	Marks
Sec: A	1.	LAQ (10 out of 12)	10 X 10 Marks = 100	100
Total				100 Marks

Practical exam pattern: Total 40 marks with following breakup:

Exercise	Description	Marks
Q No 1	Practical exercise - 1	1 x15=15 M
Q No 2	Station exercise	2x5M=10 M
Q No 3	VIVA	10 M
Q No 4	Journal	5M
Total		40 Marks

Practical exam pattern Research Methodology & Biostatistics (Core course)**Total 50-mark distribution:**

Exercise	Description	Marks
Q No 1	Practical/Problem-Solving: These questions can assess statistical analysis, research design, hypothesis testing, or interpretation of data etc.	2 × 10 marks each) = 20 marks
Q No 2	Identification of study designs, Critical appraisal of research papers, Application of biostatistical tools, Sampling techniques etc.	(4 × 5 marks each) = 20 marks
Q No 3	Viva Voce (Oral Examination) Assessing conceptual clarity, application of research methodology, and statistical reasoning.	10 marks
Total		50 Marks

Practical to be conducted at respective departments and marks submitted jointly by the parent department to the university.

Breakup of theory IA calculation for 20 marks

Description	Marks
Internal exam (at department)	15 marks
Seminar	5 marks
Total	20 Marks

Breakup of practical IA calculation:

Description	Marks
Internal exam (at department)	10 marks
Viva	5 marks
Journal	5 marks
Total	20 Marks

Note –20 marks to be converted to 10 marks weightage for submission to the university.

Model Checklist for Evaluation of the Clinical Directed Posting (PG)

Name of the student: _____ Date: _____

Program: _____

Semester: _____ Name of the Internal faculty/Observer: _____

Name of the External Faculty/Observer: _____

Core Competencies		
	Marks allotted	Marks obtained
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.		
Clinical Teaching		
a. Demonstrate beginning competency in technical skills.	10	
Independent Work by Student guided by faculty		
a. Develop effective communication skills (verbally and through charting) with patients, team members, and family	2.5	
b. Identify intra and inter-professional team member roles and scopes of practice. Establish appropriate relationships with team members.	2.5	
Hands on practical work by students		
a. Protect confidentiality of electronic/manual health records data, information, and knowledge of technology in an ethical manner	05	
Independent work by student		
a. Demonstrate expected behaviors and complete tasks in a timely manner. Arrive to clinical experiences at assigned times. Maintain professional behavior and appearance.	05	
Log book	10	
Viva	10	
Attendance	05	
Total	50 Marks	

Sign of Internal Examiner: _____

Sign of External Examiner: _____



MGM INSTITUTE OF HEALTH SCIENCES

(Deemed to be University u/s 3 of UGC Act, 1956)

Grade 'A' Accredited by NAAC

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