

Study & Evaluation Scheme

Of

Master of Science in Optometry (M.Sc in Optometry)

[Applicable w.e.f. Academic Session - 2019-20 till revised]

[As per CBCS guidelines given by UGC]



TEERTHANKER MAHAVEER UNIVERSITY

N.H.-24, Delhi Road, Moradabad, Uttar Pradesh-

244001 Website: www.tmu.ac.in



M.Sc. in Optometry as per CBCS Syllabus (w.e.f. 2019-20)



TEERTHANKER MAHAVEER UNIVERSITY
(Established under Govt. of U.P. Act No. 30, 2008)
Delhi Road, Bagarpur, Moradabad (U.P.)

<u>Study & Evaluation Scheme</u>	
<u>SUMMARY</u>	
Institute Name	<i>Teerthanker Mahaveer University, College of Paramedical Sciences, Delhi Road, Moradabad</i>
Programme	<i>Master of science in Optometry (M.Sc. in Optometry)</i>
Duration	<i>Two Year Full time (4 semesters)</i>
Medium	<i>English</i>
Minimum Required Attendance	<i>75%</i>
<u>Credits</u>	
Maximum Credits	<i>97</i>

Eligibility for admissions:

A candidate seeking to take admission in M. Sc.in Optometry Programme must have passed bachelors degree of total 4 years duration in Optometry with one year of internship (included in 4 year only) recognized as equivalent by Teerthanker Mahaveer University, with not less than 50 % marks in aggregate.

Selection of eligible candidates:

Selection to the M. Sc.in Optometry Programme shall be on the basis of performance in written exam or interview conducted by Teerthanker Mahaveer University. Medical fitness certificate needs to be submitted by the candidate on the day of Admission.

Conduct and Discipline:

●	Candidates shall conduct themselves within and outside premises of the Institution in a manner defecting professional institution. As per the order of Honorable Supreme Court of India, ragging in any form is considered as a criminal offence and is banned. Any form of ragging will be severely dealt with.
●	As per the order of Honorable Supreme Court of India, ragging in any form is considered as a criminal offence and is banned. Any form of ragging will be severely dealt with.
●	The following acts of omission and /or commission shall constitute gross violation of the code of conduct and are liable to invoke disciplinary measures:
●	Ragging is strictly prohibited.
●	Lack of courtesy and decorum, indecent behavior anywhere within or outside the campus.
●	Possession, consumption or distribution of alcoholic drinks or any kind of hallucinogenic drugs.
●	Plagiarism of any nature.

Attendance and Monitoring progress of studies:

●	A candidate shall study in concerned department of the Institute for the entire period as a full-time student. No candidate is permitted to work in any other laboratory/college/hospital/pharmacy etc., while studying. No candidate should join any other programme of study or appear for any other degree examination conducted by this University or any other University in India or abroad during the period of registration.
●	A candidate who has put in a minimum of 75% of attendance in theory and practical separately and who has fulfilled other requirements of the programme shall be permitted to appear for University examination.
●	A candidate having shortage of attendance shall repeat the semester when it is offered next.

Dissertation work:

<ul style="list-style-type: none">●	<p>A candidate is required to carry out a research study in select area of his subject, under the supervision of a faculty guide. The results of such a study shall be submitted to the College/University in the form a dissertation as per the prescribed format and within the date stipulated by the University.</p>
<ul style="list-style-type: none">●	<p>The dissertation work is aimed at training a postgraduate candidate in research methodology and techniques. It includes identification of the problem, formulation of a hypothesis, review of literature, getting acquainted with recent advances, designing of a research study, collection of data, critical analysis, and comparison of results and drawing conclusions.</p>
<ul style="list-style-type: none">●	<p>Every candidate shall submit to the Department in the prescribed Performa, a synopsis containing particulars of proposed dissertation/ research project work within six to ten months from the date of commencement of the course on or before the date notified by the University. The synopsis shall be sent through the proper channel.</p>
<ul style="list-style-type: none">●	<p>Such synopsis will be reviewed and the College will register the dissertation/ research project topic. No change in the dissertation topic/ research project or guide shall be made without prior approval of the College.</p>
<ul style="list-style-type: none">●	<p>Guide: A Guide is appointed on the basis of teaching experience. However, a co-guide can be opted wherever required with prior permission of the Institute and University. The co-guide shall also be appointed on the basis of experience recognized by the University.</p>
<ul style="list-style-type: none">●	<p>In the event of registered Guide leaving the Institute or in the event of the death of the Guide, a change of Guide shall be permitted by the University, on the specific recommendation of the Institute.</p>
<ul style="list-style-type: none">●	<p>Ethical clearance: Ethical Clearance should be obtained for a study involving any procedure on human subject. The candidate should apply for the certificate to the Ethics Committee of the Institute/University, through the Guide and present the study before the Committee for clearance. A copy of the certificate should be attached along with the synopsis forwarded at the time of submission of synopsis. All such clearance should be sought before submission of final report.</p>

	<ul style="list-style-type: none"> • <u>Submission of synopsis:</u> Synopsis should be vetted by guide, HOD and departmental curriculum development cell and approved by the institutional ethics committee before submission to the university. The synopsis should be submitted as per the format on or before one month of second semester, or within the date notified by the University, whichever is earlier. Once the synopsis is approved and registered by the university no change in the topic or Guide shall be made without the prior approval of the University.
	<ul style="list-style-type: none"> • <u>Preparation of dissertation:</u> The written text of dissertation shall be as per the format, shall not exceed 100 pages (cover to cover). It should be neatly typed with 1.5 line spacing on one side of the paper (A4 size: 8.27” x 11.69”) and properly bound. Spiral binding should be avoided. E-submission of the dissertation is mandatory.
	<ul style="list-style-type: none"> • <u>Final submission of the dissertation:</u> The dissertation complete in all respects and duly certified by the Guide/Co-guide, Course Co-ordinator/ HOD/ Director should be submitted it to the Controller of Examinations/ College Examination Committee as per the date specified by the University, generally two months before commencement of University examinations. Plagiarism of final submitted report should be checked by University ethical and research committee.
	<p>The dissertation/ research project should be written under the following headings:</p> <ul style="list-style-type: none"> • <ul style="list-style-type: none"> ✓ Introduction ✓ Aims or objectives of study ✓ Review of literature ✓ Material and methods ✓ Results ✓ Discussion ✓ Conclusion ✓ Summary ✓ References ✓ Tables ✓ Annexure

Assessment:

	Internal	External	Total
Theory	40	60	100
Practical	50	50	100

Internal Evaluation (Theory papers):

Class Test-I	Class Test-II	Class Test-III	Attendance	Assignment /work book assignments & viva	Total
Best Two out of Three CTs					
10	10	10	10	10	40
Duration of Examination			External	Internal	
			3 Hours	1.5 Hours	

Internal Practical Evaluation (50 marks)

The internal evaluation would also be done by the Internal Examiner based on the experiment performed during the internal examination.

During Semester				On the day of Examination	
Experiment	File Work	Viva Voce	Attendance	Experiment	Viva Voce
5 Marks	10 Marks	10 Marks	10 Marks	5 Marks	10 Marks

External Practical Evaluation (50 marks)

The external evaluation would also be done by the External Examiner based on the experiment performed during the external examination.

Experiment	File Work	Viva Voce	Total Experiment
30 Marks	10Marks	10 Marks	50 Marks

Dissertation/ Project Reports Evaluation (100 marks)

The dissertation evaluated at the time of university examination of IV semester by a panel of examiner (Internal and External) appointed by the University.

Internal	External	Total
50Marks	50 Marks	50 Marks

Dissertation/ Project Reports Internal Evaluation (50 marks)

The internal dissertation evaluation would be done by the Internal Examiner based on the thesis and collected data performed during the internal examination.

Progress Report	Viva Voce	Presentation	Total
20 Marks	10Marks	20 Marks	50 Marks

Dissertation/ Project Reports External Evaluation (50 marks)

The external dissertation evaluation would be done by the External Examiner based on the final thesis report submitted before the external examination.

Thesis	Viva Voce	Presentation	Total
20 Marks	10Marks	20 Marks	50 Marks

To qualify the course a student is required to secure a minimum of 45% marks in aggregate including the semester examination and teacher's continuous evaluation. (i.e. both internal and external). A candidate who secures less than 45% of marks in a course shall be deemed to have failed in that course. The student should have secured at least 50 CPI in aggregate to clear the semester.

Structure of Question paper (Theory external examination)

Question paper shall have two sections and examiner shall set questions specific to respective section. Section wise details shall be as mentioned under;

Section- 1:	Max. Marks in each theory paper will be of 60 marks. The question paper shall consist of 6 questions. Out of which first question shall be of short answer type (not exceeding 50 words) and will be compulsory. Question No. 1 shall contain 8 parts representing all units of the syllabus and students shall have to answer any five (weightage 2 marks each).
Section- 2:	Out of the remaining five questions, the long answer pattern will have internal choice with unit wise questions with internal choice in each unit. In units having numerical, weightage and information should be available both in the syllabus and the paper pattern. The weightage of Question No. 2 to 6 shall be 10 marks each.
<u>IMPORTANT NOTES</u>	
Note- 1:	<i>There must be at least one question from the entire syllabus to assess the specific element of the Higher Level of Learning (Thinking). Every question in this section must essentially assess at least one of the following aspects of learning: Applying, Analyzing, Evaluating and Creating/ Designing/ Developing.</i>
Note- 2:	<i>The question must be designed in such a way that it assesses the concerned CO in entirety. It means a question could have multiple parts depending upon the requirement of the Specific Course Outcome.</i>
Note- 3:	<i>Strictly avoid repetition of questions. Also Assure that there is at least one question assessing every CO. The copies of COs of this course & syllabus is attached for your reference</i>

Admission to the Next Semester: As per the university norms

Programme Structure: M.Sc in Optometry

A. Introduction:

The Ministry of Health and Family Welfare, accepted in its entirety the definition of an allied and healthcare professional based on the afore-mentioned report, though the same has evolved after multiple consultations and the recommended definition is now as follows-

‘Allied and healthcare professionals (AHPs) includes individuals involved with the delivery of health or healthcare related services, with qualification and competence in therapeutic, diagnostic, curative, preventive and/or rehabilitative interventions. They work in multidisciplinary health teams in varied healthcare settings including doctors (physicians and specialist), nurses and public health officials to promote, protect, treat and/or manage a person(‘s) physical, mental, social, emotional, environmental health and holistic well-being.’

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Since the past few years, many professional groups have been interacting and seeking guidance on all those who would qualify under the purview of “allied and healthcare professionals”. In the healthcare system, statutory bodies exist for clinicians, nurses, pharmacists and dental practitioners; but a regulatory structure for around 50 professions is absent in India. Currently, the Government is considering these professions (as listed Annex-1) under the ambit of the allied and healthcare system. However, this number is subject to changes and modifications over time, particularly considering how quickly new technologies and new clinical avenues are expanding globally, creating newer cadres of such professionals.

Scope and Need for Allied and Healthcare Professionals in the Indian Healthcare System

The quality of medical care has improved tremendously in the last few decades due to the advances in technology, thus creating fresh challenges in the field of healthcare. It is now widely recognized that health service delivery is a team effort involving both clinicians and non-clinicians, and is not the sole duty of physicians and nurses. Professionals that can competently handle sophisticated machinery and advanced protocols are now in high demand. In fact, diagnosis is now so dependent on technology, that allied and healthcare professionals (AHPs) are vital to successful treatment delivery.

Effective delivery of healthcare services depends largely on the nature of education, training and appropriate orientation towards community health of all categories of health personnel, and their capacity to function as an integrated team. For instance, in the UK, more than 84,000 AHPs, with a range of skills and expertise, play key roles within the National Health Service, working autonomously, in multi-professional teams in various settings. All of them are first-contact practitioners and work across a wide range of locations and sectors within acute, primary and community care. Australia’s health system is managed not just by their doctors and nurses, but also by the 90,000 university-trained, autonomous AHPs vital to the system.

As the Indian government aims for Universal Health Coverage, the lack of skilled human resource may prove to be the biggest impediment in its path to achieve targeted goals. The benefits of having AHPs in the healthcare system are still unexplored in India. Although an enormous amount of evidence suggests that the benefits of AHPs range from improving access to healthcare services to significant reduction in the cost of care, though the Indian healthcare system still revolves around the doctor-centric approach. The privatization of healthcare has also led to an ever-increasing out-of-pocket expenditure by the population. However, many examples assert the need of skilled allied and healthcare professionals in the system, such as in the case of stroke survivors, it is the support of AHPs that significantly enhance their rehabilitation and long-term treatment ensures return to normal life. AHPs also play a significant role to care for patients who struggle mentally and emotionally in the current challenging environment and require mental health support; and help them return to well-being. Children with communication difficulties, the elderly, cancer patients, patients with long term conditions such as diabetes

people with vision problems and amputees; the list of people and potential patients who benefit from AHPs is indefinite.

Thus, the breadth and scope of the allied and healthcare practice varies from one end to another, including areas of work listed below:

- ❖ Across the age span of human development from neonate to old age;
- ❖ With patients having complex and challenging problems resulting from systemic illnesses such as, in the case of diabetes, cardiac abnormalities/conditions and elderly care to name a few;
- ❖ Towards health promotion and disease prevention, as well as assessment, management and evaluation of interventions and protocols for treatment;
- ❖ In a broad range of settings from a patient's home to community, primary care centers, to tertiary care settings; and
- ❖ With an understanding of the healthcare issues associated with diverse socio-economies and cultural norms within the society.

B. MAINTENANCE OF LOG BOOK

a. Every Post Graduate student shall maintain a record of skills he /she has acquired during the two years and certified by the various Head of departments where he /she has under gone training including outside the institution.

b. The student should also participate in the teaching and training programs of Under Graduate students of paramedical courses, both in Theory and Practical from the first year onwards of the Post Graduate Degree course.

c. In addition the Head of the department should involve their post graduate students in Seminars, Journal clubs, group discussions and participation in work sops, CME program's national and international conferences organized by the Department, Institution and outside the institution in the state and outside the state.

d. Every Post Graduate student should be encouraged to present short title papers in conferences and improve on it and submit them for publication in indexed journals. Motivation by the Head of the Department of essential in this area to sharpen the skills of the Post Graduate students.

e. The Head of the Department should scrutinize the log book every two months and certify the work done.

f. At the end of the course the student should summarize the contents and get the log book certified by the Head of the Department and submit the log book at the time of the University Practical Examination.

C. CLINICAL POSTING EVALUATION:

Students shall be deputed to Ophthalmology/Optomety Clinic wherein they shall undergo practical training of handling patients.

Each student is required to maintain a logbook of the training. Student's performance shall be evaluated on regular basis. The faculty shall submit the assessment records of each student posted in his/her section on monthly basis to the HOD. Marks will be awarded out of 100.

D. DISSERTATION/RESEARCH PROJECT:

Each candidate pursuing M.Sc. Optometry programme is required to carry out work on selected research project under the guidance of a recognized post graduate teacher. The results of such a work shall be submitted in the form of dissertation/ research project. The dissertation/ research project is aimed to train a graduate student in research methods and techniques. It includes identification of problem, formulation of a hypothesis, search and review of literature, getting acquainted with recent advances, designing of a research study, collection of data, critical analysis, and interpretation of results and drawing conclusions. Every candidate shall submit to the Department in the prescribed Performa, a synopsis containing particulars of proposed dissertation/ research project work within six to ten months from the date of commencement of the course on or before the date notified by the University. The synopsis shall be sent through the proper channel. Such synopsis will be reviewed and the College will register the dissertation/ research project topic. No change in the dissertation topic/ research project or guide shall be made without prior approval of the College.

The dissertation/ research project should be written under the following headings:

Introduction

Aims or objectives of study

Review of literature

Material and methods

Results

Discussion

Conclusion

Summary

References

Tables

Annexure

The written text of dissertation/ research project shall not be less than 50 pages and shall not exceed 150 pages excluding references, tables, questionnaires and another annexure. It should be neatly typed in double line spacing on one side of paper (A4 size, 8.27" X

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11.69") and bound properly. Spiral binding should be avoided. A declaration by the candidate for having done the work should also be included, and the guide, head of the department and head of the institution shall certify the dissertation/ research project.

Four copies of Dissertation/ research project shall be submitted to the university, through proper channel, along with a soft copy (CD).

It shall be assessed by two examiners appointed by the university, one internal and one external. If there are corrections in the dissertation / research project suggested by the examiner(s), the candidate may make such corrections and may be allowed to re-submit in time.

Msc in Optometry: Two Years (4 -Semester) CBCS Programme			
Basic Structure: Distribution of Courses			
S.No.	Type of Course	Credit Hours	Total Credits
1	Discipline Specific Course (DSC)	6 Courses of 4 Credit (Total Credit Hrs. 6x4) = 24	41
		1 Course of 5 Credit (Total Credit Hrs. 1x5) = 5	
		2 Courses of 6Credit (Total Credit Hrs. 2x6) = 12	
2	Skill-Enhancement Course (SEC)	10 Courses of 1 Credit (Total Credit Hrs. 10x1) = 10	40
		3 Courses of 6 Credit (Total Credit Hrs. 3x6) = 18	
		1 Course of 12 Credit (Total Credit Hrs. 1x12) = 12	
3	Core Course (CC)	3 Courses of 4 Credit (Total Credit Hrs. 3x4) = 12	12
4	Compulsory Specified Course (CSC)	1 Course of 4 Credit (Total Credit Hrs.1X4) =4	4
TOTAL CREDITS			97

Contact hours include work related to Lecture, Tutorial and Practical (LTP), where our institution will have flexibility to decide course wise requirements.

E. CHOICE BASED CREDIT SYSTEM (CBCS)

Choice Based Credit System (CBCS) is a versatile and flexible option for each student to achieve his target number of credits as specified by the UGC and adopted by our University.

The following is the course module designed for the Msc in Optometry programme:

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- ✓ **Discipline Specific Course (DSC):** Discipline Specific courses of Msc in Optometry programme will provide a holistic approach to clinical or practical education, giving students an overview of the field, a basis to build and specialize upon. These courses are the strong foundation to establish Optometry knowledge and provide broad multi-disciplined knowledge can be studied further in depth during the elective phase.

The Discipline Specific courses will provide more practical-based knowledge, case-based lessons and collaborative learning models. It will train the students to analyze, decide, and lead-rather than merely know-while creating a common student experience that can foster deep understanding, develop decision-making ability and contribute to the hospital and community at large.

A wide range of Discipline Specific courses provides detail knowledge in the Ocular Anatomy & Physiology, Spectacle lenses dispensing, Ocular Diseases, Contact lenses, Binocular Vision, etc.

Department offers Discipline Specific courses from semester-I to Semester III with varying credits depending upon the importance of the course in the field of Optometry as already described in above table.

- ✓ **Core Course (CC):** Core courses of Msc in Optometry programme are compulsory courses that are required to be studied by the students as a core requirement which acts as supporting course for better understanding of the Discipline Specific Course. Department offers Core Courses in Semester I & IV like Epidemiology & Community Eye Care, Education & Teaching Methodology and Professional Practice management.

✓ **Skill Enhancement Course (SEC):** This course is designed to provide value-based and/or skill-based knowledge. Department offers SECs from I Semester to IV Semester. Each SEC will carry different credits.

✓ **Compulsory Specified Course (CSC):** This is a compulsory course that does not have any choice and will be of 4 credits. Each student of Msc in Optometry programme has to compulsorily pass the CSC course.

F. PROGRAMME SPECIFIC OUTCOMES (PSOS)

The learning and abilities or skills that a student would have developed by the end of Two-year M.Sc. in Optometry programme

PSO1.	Understanding the basic as well as advance concepts & theories related to applied science, ocular anatomy & physiology, Contact lens, Binocular vision, Low vision
PSO2.	Applying the concepts & theories, techniques & Procedures used in optometry.
PSO3.	Applying quality assurance, safety measures and maintenance of ophthalmic instruments

PSO4.	Analyzing eye environmental factors & selecting the relevant optical mode of correction & Evaluating different optical correction technique
PSO6.	Evaluating & determining tools, technique, methods, tests used in optometry
PSO7.	Designing & planning of new techniques, procedure for patient and clinic management.
PSO8.	Designing & planning the latest mode of educating the optometry students

G. Pedagogy & Unique practices adopted: “Pedagogy is the method and practice of teaching, especially for teaching an academic subject or theoretical concept”. In addition to conventional time-tested lecture method, the institute will **emphasize on experiential learning.**

1. Role Play & Simulation: Role-play and simulation are forms of experiential learning. Learners take on different roles, assuming a profile of a character or personality, and interact and participate in diverse and complex learning settings. Role-play and simulation function as learning tools for teams and groups or individuals as they "play" online or face-to-face. They alter the power ratios in teaching and learning relationships between students and educators, as students learn through their explorations and the viewpoints of the character or personality they are articulating in the environment. This student-centered space can enable learner-oriented assessment, where the design of the task is created for active student learning. Therefore, role-play& simulation exercises such as virtual share trading, marketing simulation etc. are being promoted for the practical-based experiential learning of our students.

2. Video Based Learning (VBL) & Learning through Movies (LTM): These days technology has taken a front seat and classrooms are well equipped with equipment and gadgets. Video-based learning has become an indispensable part of learning. Similarly, students can learn various concepts through movies. In fact, many teachers give examples from movies during their discourses. Making students learn few important theoretical concepts through VBL & LTM is a good idea and method. The learning becomes really interesting and easy as videos add life to concepts and make the learning engaging and effective. Therefore, our institute is promoting VBL & LTM, wherever possible.

3. Special Guest Lectures (SGL)&Extra Moral Lectures (EML): Some topics/concepts need extra attention and efforts as they either may be high in difficulty level or requires experts from specific industry/domain to make things/concepts clear for a better understanding from the perspective of the industry. Hence, to cater to the present needs of industry we organize such lectures, as part of lecture-series and invite prominent personalities from academia and industry from time to time to deliver their vital inputs and insights.

4. Special assistance programme for slow learners: Special classes are arranged for slow learners. They are assisted patiently and consistently. Motivation is one of the most essential requirements to help them continue learning. Proper acknowledgement and praise help the overall development of such student.

5. Orientation programme: Two-week programme is arranged to introduce students to college services which will support their educational and personal goals. To facilitate initial academic advisement, course selection and registration, creating an atmosphere that minimizes anxiety, promotes positive attitude and stimulates excitement for learning. It also helps knowledge of scope, information regarding academic and student service resources and programme. It provides a welcoming atmosphere for students to meet faculty, staff and continuing students, as well as other new students.

6. Mentoring scheme: Every student is provided with a faculty mentor to help him/her in their personal & academic issues. The mentor maintains a register along with the mentor mentee booklet provided to all students. In that book all the details of student are filled and every month 2 times they meet with their mentor. Mentor filled the details of meeting in every student's register and tries to solve the issue and after solving the issue it is updated in the register.

7. Industry Focused programme: Establishing collaborations with various industry partners to deliver the programme on sharing basis. The specific courses/contents are to be delivered by industry experts to provide practice-based insight to the students.

8. Career & Personal Counseling We have training and placement cell for career and personal counseling of the students. The training & placement cell make necessary arrangement for the interview of the students for internship as well as final placement of the students.

9. Extra-curricular Activities: organizing & participation in extracurricular activities will be mandatory to help students develop confidence & face audience boldly. It brings out their leadership qualities along with planning & organizing skills. Students undertake various cultural, sports and other competitive activities within and outside then campus. This helps them build their wholesome personality.

10. Participation in Workshops, Seminars & writing & Presenting Papers We are encouraging our students to participate in these types of activities. Most of our students are participating in these types of activities.

11. Formation of Student Clubs, Membership & Organizing & Participating events We have student club and our students are taking part in many events like youth festival and other activities those are performed in our Universities as well as in other Universities.

12. Capability Enhancement & Development Schemes: We are running some schemes like soft skill development, remedial coaching, yoga and meditation and personal counseling to enhance the capability and holistic development of the students.

13. Library Visit & Utilization of E-Learning Resources: The students are encouraged to visit the college library and university central library and utilize the resources like books, journals, e-journals, etc. to enhance and upgrade their knowledge. For this we have provision of Library schedule in our time table so student can use that time to ready different books and use E learn in library. We have well developed and organized library in our college as well as central library in the university campus.

Study & Evaluation Scheme

M.Sc in Optometry - I Semester

S.NO.	CATEGORY	COURSE CODE	COURSE NAME	PERIODS			CREDITS	EVALUATION SCHEME		
				L	T	P		INTERNAL	EXTERNAL	TOTAL
1	DSC-1	MCO101	Visual & Applied Optics	4	-	-	4	40	60	100
2	CC-1	MCO102	Epidemiology & Community Eye care	4	-	-	4	40	60	100
3	CSC-1	MCO103	Research Methodology & Biostatistics	4	-	-	4	40	60	100
4	DSC-2	MCO104	Ocular Diseases and Diagnostics I	6	-	-	6	40	60	100
5	SEC-1	MCO151	Visual & Applied Optics Lab	-	-	2	1	50	50	100
6	SEC-2	MCO152	Ocular Diseases and Diagnostics Lab	-	-	2	1	50	50	100
7	SEC-3	MCO153	Clinic Posting (General)	-	-	12	6	50	50	100
Total				18		16	26	310	390	700

Study & Evaluation Scheme
M.Sc in Optometry - II Semester

S.NO.	CATEGORY	COURSE CODE	COURSE NAME	PERIODS			CREDIT S	EVALUATION SCHEME		
				L	T	P		INTERNAL	EXTERNAL	TOTAL
1	DSC-3	MCO201	Ocular Diseases and Diagnostics II	4	-	-	4	40	60	100
2	DSC -4	MCO202	Advanced Contact lens I	4	-	-	4	40	60	100
3	DSC -5	MCO203	Pediatric Optometry & Binocular vision	4	-	-	4	40	60	100
4	DSC -6	MCO204	Low Vision and Geriatric optometry	4	-	-	4	40	60	100
5	SEC-4	MCO251	Ocular Diseases and Diagnostics II Lab	-	-	2	1	50	50	100
6	SEC-5	MCO252	Advanced Contact lens I Lab	-	-	2	1	50	50	100
7	SEC-6	MCO253	Pediatric Optometry & Binocular vision Lab	-	-	2	1	50	50	100
8	SEC -7	MCO254	Low Vision and Geriatric optometry Lab	-	-	2	1	50	50	100
9	SEC -8	MCO255	Clinic Posting (General)	-	-	12	6	50	50	100
Total				16		20	26	270	490	900

Study & Evaluation Scheme
M.Sc in Optometry - III Semester

S.NO.	CATEGORY	COURSE CODE	COURSE NAME	PERIODS			CREDITS	EVALUATION SCHEME		
				L	T	P		INTERNAL	EXTERNAL	TOTAL
1	DSC-7	MCO301	Advanced contact lens II	5	-	-	5	40	60	100
2	DSC -8	MCO302	Low vision care and Rehabilitation	4	-	-	4	40	60	100
3	DSC -9	MCO303	Vision Therapy	6	-	-	6	40	60	100
4	SEC-9	MCO351	Advanced contact lens II Lab	-	-	2	1	50	50	100
5	SEC-10	MCO352	Low vision care and rehabilitation Lab	-	-	2	1	50	50	100
6	SEC-11	MCO353	Vision Therapy Lab	-	-	2	1	50	50	100
7	SEC-12	MCO354	Clinic Posting	-	-	12	6	50	50	100
Total				15	-	18	24	320	380	700

Study & Evaluation Scheme
M.Sc in Optometry - IV Semester

S.NO.	CATEGORY	COURSE CODE	COURSE NAME	PERIODS			CREDITS	EVALUATION SCHEME		
				L	T	P		INTERNAL	EXTERNAL	TOTAL
1	CC-2	MCO 401	Education and Teaching Methodology	4	-	-	4	40	60	100
2	CC-3	MCO 402	Professional Practice management	4	-	-	4	40	60	100
3	SEC-13	MCO 451	Education and Teaching Methodology Lab	-	-	2	1	50	50	100
4	SEC-14	MCO 452	Research Project (Dissertation)	-	-	24	12	50	50	100
Total				8		26	21	180	220	400

Course Code: MCO101	Discipline Specific Course (DSC) -1 M.Sc in Optometry - Semester-I VISUAL & APPLIED OPTICS	L-4 T-0 P-0 C-4
Course Outcomes:	On completion of the course, the students will be:	
CO1.	Understanding the concept emmetropia & ammetropia	
CO2.	Applying the various concepts of ophthalmic lens dispensing	
CO3.	Applying the concepts of Spectacle frame selection	
CO4.	Understanding basics & advance technique of pediatric dispensing	
CO5.	Applying the concepts of dispensing spectacle in special children	
Course Content:		
Unit-1:	Schematic and reduced eyes and their properties; Optical constants of the eye and their measurement. Purkinje images. Corneal curvature and thickness. Keratometry and pachometry. Indices of aqueous and vitreous; Optical Defects of the Eye- Shape of Cornea, Shape & RI of the lens, Optical axis, Visual axis (angle alpha, Fixation axis (angle gamma), Aberration of the Optical system of eye, Depth of focus, Diffraction & resolving power.	6 Hours
Unit-2:	Emmetropia, Emmetropization and ametropia, Axial versus spherical ametropia, Theories of Myopia, Myopia control Prog. Accommodation- possible mechanism of accommodation-Schiener disc experiment- theories of accommodation- modern theory- changes in the lens during accommodation- the amplitude of accommodation- the measurement of the amplitude n of accommodation- depth of field, luminance and blur tolerance- amplitude of accommodation versus age, Accomodative and vergence disorder. Presbyopia- near vision addition- estimate of addition-unequal near vision addition- effect of changing the spectacle distance – hypermetropia and accommodation.	8 Hours
Unit-3:	Spectacle frame: Current frame materials- a) Plastics b) Metals Frame types: Combination of frames-Half-eye frames, Mounts, Nylon-cord frame, Special purpose frames. Frame measurements: The boxing system, The datum system, Comparison of the two systems, Lens position, Segment specification	6 Hours

Unit-4:	<p>Frame Selection: Fashion, Function, Feel, Conflicting needs, Price, Standard alignment, Frame availability in Indian market</p> <p>Lens Selection: Ground rule for selection, Selection criteria, Facial Measurement, The PD, Visual axes, Measuring inter papillary distance using PD ruler, Common difficulties in measuring PDs, measuring monocular PD, Measuring near PD, Lenticular, Atoric, HI Index, Aspherical, Absorptive lenses, Coating</p> <p>Measuring heights: Single vision, Multi focal, bi-focal, Progressive</p>	8 Hours
Unit-5:	<p>Pediatric Dispensing: The changing image of spectacle, Age differences. Frame Selection-</p> <p>Technical Criteria, Fashion criteria, some tips on selection Lens Selection Technical Criteria-Communicating with kids, kids' corner, Facial measurement of the kids-PDs, Centers, Bi-focals, Dealing with problems: Dealing with clients, Common client problems, dealing with professional colleagues, Dealing with the laboratories, Soft skills and professional communication with Patient and Customers.</p> <p>Special needs dispensing: Occupational dispensing, Hazards in the work place, Occupational health safety legislation, Visual Ergonomics, Visual hygiene</p> <p>Sports and Industrial eye protection: Standards covering eye protection, Lens materials & impact resistance, Frame & eye protection.</p>	6 Hours
<u>Text Books:</u>	1. System for Ophthalmic Dispensing -Irvin Borish	
<u>Reference Books:</u>	<ol style="list-style-type: none"> 1. . M P Keating: Geometric, Physical and Visual optics, 2nd edition, Butterworth-Heinemann, USA, 2002 2. HL Rubin: Optics for clinicians, 2nd edition, Triad publishing company. Florida, 1974. 3. H Obstfeld: Optic in Vision- Foundations of visual optics & associated computations, 2nd edition, Butterworth, UK, 1982. 4. WJ Benjamin: Borish's clinical refraction, 2nd edition, Butterworth Heinemann, Missouri, USA, 2006 	

E- Learning site	https://cybersight.org/online-learning/ https://www.aao.org/education-course https://abdocollege.org.uk/news/become-a-dispensing-optician-2/	
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Course Code: MCO102	Core Course (CC) -1 M.Sc in Optometry - Semester-I EPIDEMIOLOGY AND COMMUNITY EYE CARE	L-4 T-0 P-0 C-4
Course Outcomes:	On completion of the course, the students will be:	
CO1.	Understanding the concept of Epidemiology.	
CO2.	Applying concept of optometric Evaluation procedure.	
CO3.	Understanding the concept of Health planning management, policies and education	
CO4.	Utilizing the concept of Community health care services and implementation of vision 2020.	
CO5.	Analyzing the data as well as basic concept of evaluation of patient for clinical and research purpose.	
Course Content:		
Unit-1:	Prevalence, incidence and distribution of visual impairment; Methodology: Basics of Epidemiology study methods, Types of study designs; Screening for visual disorders; Childhood blindness Refractive errors and presbyopia	6 Hours
Unit-2:	Age related cataract; Low Vision; Diabetic retinopathy Glaucoma	8 Hours
Unit-3:	Age related Macular Degeneration; Vitamin A deficiency; Corneal and external diseases; Prevention strategies	6 Hours
Unit-4:	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.	8 Hours
Unit-5:	Health Information and Basic Medical Statistics; Communication for Health Education; Health Planning and Management; Health care of community; How to plan and implement Vision2020	6 Hours
Text Books:	Epidemiology of eye diseases: Johnson and Gordon	
Reference Books:	1. MC Gupta, Mahajan BK, Murthy GVS, 3rd edition. Text Book of Community Medicine, Jaypee Brothers, New Delhi, 2002.	
E- Learning site	https://www.aao.org/headline/alert-important-coronavirus-context	

Course Code: MCO103	Compulsory Specific Course (CSC) -1 M.Sc in Optometry - Semester-I BIostatistics and Research Methodology	L-4 T-0 P-0 C-4
Course Outcomes:	On completion of the course, the students will be:	
CO1.	Understanding basic of research types	
CO2.	Understanding the various methods of research	
CO3.	Ability to write research proposal.	
CO4.	Applying the concept for writing the research articles	
CO5.	Applying the concept in evaluating the research material	
Course Content:		
Unit-1:	Research Methodology – Definition of research, Characteristics of research, Steps involved in research process, Types of Research methods and methodology, Terminology used in quality control such as sensitivity, specificity, accuracy, precision, positive and negative predictive value.	6 Hours
Unit-2:	Statistics, data, population, samples, parameters; Representation of Data: Tabular, Graphical, Measures of central tendency, Arithmetic mean, mode, median; Measures of dispersion, Range, mean deviation, variation, standard deviation, Standard error, Chi-square test	8 Hours
Unit-3:	Introduction and significance of Student's t-distribution: test for single mean, difference of means and paired t- test, F-distribution, one-way and two-way analysis of variance (ANOVA). Small sample test based on t-test, Z- test and F test; Confidence Interval; Distribution-free test	6 Hours
Unit-4:	Global Perspective in the field of Clinical Laboratory Science, Development, Training, Types of Laboratory, Concept of Lab Design, Organizational Set up of NABL, CAP	8 Hours
Unit-5:	Total Quality Management System General Requirements for Standardization & Calibration of Clinical Laboratories: Introduction, Scope & Need of standardization, Quality Management requirement: testing & Calibration Procedures, Total Quality Assurance, Quality Control Charts & Systems. Quality Audit: Internal & External Audit, Accreditation & Certification NABL, ISO, CAP	6 Hours

<u>Text Books:</u>	1. Methods in Biostatistics by B.KMahajan	
<u>Reference Books:</u>	1. Probability and Statistics byMurray 2. Epidemiology of Eye Diseases, by Gordon andDrawin 3. Research Methodology by SMIsrani	
E- Learning site	https://www.aao.org/headline/alert-important-coronavirus-context	

Course Code: MCO104	Discipline Specific Course (DSC) -2 M.Sc in Optometry - Semester-I OCULAR DISEASES AND DIAGNOSTICS – I	L-6 T-0 P-0 C-6
Course Outcomes:	On completion of the course, the students will be:	
CO1.	Understanding the concept of different Ocular diseases of anterior segment of Eye	
CO2.	Applying the concept of anatomy & Physiology of Eye while understanding the Pathology of different ocular diseases	
CO3.	Utilizing the concept of clinical features of the diseases for the differential diagnosis of the anterior segment diseases	
CO4.	Analyzing the concept of clinical features of the diseases for the management of anterior segment diseases	
CO5.	Applying the concept of different Ocular diseases of anterior segment of Eye	
Course Content:		
Unit-1:	Refresher of anterior segment ocular diseases; Congenital anomalies Inflammatory disorders; Degenerative conditions; Dystrophies Structural Deformities; Oedema, Cysts and Tumors	6 Hours
Unit-2:	Refresher of glaucoma diagnosis and management	8 Hours
Unit-3:	Pre- and Post-operative management of anterior segment diseases.	6 Hours
Unit-4:	Anterior segment Diagnostics; Tonometry; HVF; Pentacam	8 Hours
Unit-5:	Pachymetry, OCT, Gonioscopy, Cataract evaluation, Slit Lamp	6 Hours
Text Books:	Clinical Ophthalmology: Jack J Kanski	
Reference Books:	1. Diagnostics and imaging techniques in Ophthalmology: Amar Agarwal	
E- Learning site	https://cybersight.org/online-learning/ https://www.aao.org/education-course	

Note: Course outcome of following practical are covered in their respective theory courses

<p>Course Code: MCO151</p>	<p align="center">Skill Enhancement Course (SEC) -1 M.Sc in Optometry - Semester-I VISUAL & APPLIED OPTICS PRACTICAL</p>	<p>L-0 T-0 P-2 C-1</p>
<p>Course Content:</p>	<ol style="list-style-type: none"> 1.Find out the meridian & optical center of ophthalmic lens 2.Neutralization – manual & help of lensometer 3.Identification of lens-spherical, cylindrical & sphero-cylindrical lenses 4.Lens-surfacing & edging, cutting & marking of single vision bifocal progressive 5.Frame measurement: The boxing system, the datum system. Comparison of the two systems, Lens position, segment specification 6.Frame selection: Fashion, function & standard alignment 7.Lens selection: Ground rule for selection, selection criteria. 8.Facial measurements: The PD, Visual axes, & measuring interpupillary distance using P.D ruler. 9.Common difficulties in measuring P.D, measuring monocular P.D, measuring near C.D. 10.Measuring heights: - single vision, bifocal, multifocal, progressive 11.Geriatric & Pediatric dispensing 	

Note: Course outcome of following practical are covered in their respective theory courses

<p>Course Code: MCO152</p>	<p>Skill Enhancement Course (SEC) -2 M.Sc in Optometry - Semester-I OCULAR DISEASES AND DIAGNOSTICS – I PRACTICAL</p>	<p>L-0 T-0 P-2 C-1</p>
<p>Course Content:</p>		
	<p>1.1 Tonometry 1.2 HVF 1.3 Pentacam 1.4 Pachymetry 1.5 OCT 1.6 Gonioscopy 1.7 Cataract evaluation 1.8 Slit Lamp</p>	

Note: Course outcome of following practical are covered in their respective theory courses

<p>Course Code: MCO153</p>	<p>Skill Enhancement Course (SEC) -3 M.Sc in Optometry - Semester-I CLINICS POSTING (GENERAL)</p>	<p>L-0 T-0 P-12 C-6</p>
<p>Course Content:</p>		
	<p>The logbook has to be maintained and case sheets of each subject in the semester with complete management and follow up are mandatory for submission at the end of the semester.</p> <p>The log book needs to be signed by the supervisor during every visit. No case record will be considered without the supervisor's signature.</p>	

Course Code: MCO201	Discipline Specific Course (DSC) -3 M.Sc in Optometry - Semester-II OCULAR DISEASES AND DIAGNOSTICS – II	L-4 T-0 P-0 C-4
Course Outcomes:	On completion of the course, the students will be:	
CO1.	Understanding the concept of different Ocular diseases of posterior segment of Eye	
CO2.	Applying the concept of anatomy & Physiology of Eye while understanding the Pathology of different ocular diseases	
CO3.	Utilizing the concept of clinical features of the diseases for the differential diagnosis of the ocular diseases	
CO4.	Analyzing the concept of clinical features of the diseases for the management of ocular diseases	
CO5.	Applying the concept of different Ocular diseases of posterior segment of Eye	
Course Content:		
Unit-1:	Refresher of posterior segment ocular diseases including; Congenital anomalies; Inflammatory disorders; Degenerative conditions & Dystrophies; Structural Deformities; Oedema, Cysts and Tumors	6 Hours
Unit-2:	Diagnosis and therapeutics for Post. Segment disease	8 Hours
Unit-3:	Surgical treatment of posterior segment diseases	6 Hours
Unit-4:	Posterior segment Diagnostics: ERG, EOG, VEP, OCT, Fundus photography	8 Hours
Unit-5:	Neuro optometric diseases and disorders	6 Hours
Text Books:	1. Clinical Ophthalmology: Jack J Kanski	
Reference Books:	1. Diagnostics and imaging techniques in Ophthalmology: Amar Agarwal	
E- Learning site	https://cybersight.org/online-learning/ https://www.aao.org/education-course	

Course Code: MCO202	Discipline Specific Course (DSC) -4 M.Sc in Optometry - Semester-II ADVANCED CONTACT LENSES – I	L-4 T-0 P-0 C-4
Course Outcomes:	On completion of the course, the students will be:	
CO1.	Understanding about contact lens history, introduction, design & relation with structure of eye	
CO2.	Understanding about RGP contact lens material & their property their parameter	
CO3.	Understanding about RGP contact lens manufacturing techniques & fitting of RGP lenses	
CO4.	Understanding and know about care maintenance and do's & don't of RGP contact lens	
CO5.	Analyzing the complication and their management of RGP contact lenses	
Course Content:		
Unit-1:	Anatomy and Physiology of the Cornea and related Structures; Contact Lens Materials	6 Hours
Unit-2:	Microbiology, Lens Care and Maintenance; Tears and contact lenses; Optics and Lens Design	8 Hours
Unit-3:	Clinical Instrumentation in contact lens practice; Rigid Gas Permeable corneal lens fitting	6 Hours
Unit-4:	Soft contact lens fitting; Toric Contact lens fitting; Lens care regimen; Contact lens standards	8 Hours
Unit-5:	Lens checking: Soft and Rigid Contact lens complications Special types of Contact lenses – diagnosis, surgery, protective, therapeutic, sports, partially sighted	6 Hours
Text Books:	1. Contact lenses – Stone and Philips	
Reference Books:	1. IACLE modules	
E- Learning site	https://iacle.org/ https://www.clspectrum.com/ https://www.bausch.com/ecp/for-your-practice/training-tools https://www.jnjvisionpro.ca/education-centre	

Course Code: MCO203	Discipline Specific Course (DSC) -5 M.Sc in Optometry - Semester-II PEDIATRIC OPTOMETRY AND BINOCULAR VISION	L-4 T-0 P-0 C-4
Course Outcomes:	On completion of the course, the students will be:	
CO1.	Understanding the classification of strabismus	
CO2.	Understanding the concept of recording history in strabismus patients	
CO3.	Understanding the clinical features of convergent & divergent Strabismus, vertical & paralytic Strabismus	
CO4.	Applying the concept of pediatric refraction	
CO5.	Applying the concepts of diagnosis of pediatric anomalies	
Course Content:		
Unit-1:	Refractive Development: Early Refractive Development Visually Guided control of Refractive State: Animal Studies Infant Accommodation and Convergence Oculomotor Function: Conjugate Eye Movements of Infants Development of the Vestibuloocular and Optokinetic reflexes	6 Hours
Unit-2:	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 Colorvision Orientation and Motion selective Mechanisms in Infants Intrinsic Noise and Infant performance	8 Hours
Unit-3:	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 Retinal and cortical Development Abnormal Visual Development	6 Hours

	What next in Infant Research	
Unit-4:	<p>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</p>	8 Hours
Unit-5:	<p>Management Guidelines –Amblyopia Accommodation and Vergence anomalies Nystagmus Common genetic problems in Paediatric optometry Pediatric Ocular Diseases Ocular Trauma in Children Myopia control Clinical uses of prism</p>	6 Hours
<u>Text Books:</u>	1. Clinical management of binocular vision Mitchell Scheiman and Bruce Wick	
<u>Reference Books:</u>	<p>1. Applied concepts in vision therapy: Leonard Press 2. Pediatric optometry: Jerome K Rosner</p>	
E- Learning site	<p>https://cybersight.org/portfolio/lecture-binocular-vision-part-iii-managing-binocular-vision-disorders/ https://www.aao.org/Assets/0c711d7f-503f-4cd9-b4ac-92d6ec31a718/636343503854270000/strabismus-binocular-vision-and-ocular-motility-vnoorden-pdf?inline=1</p>	

Course Code: MCO204	Discipline Specific Course (DSC) -6 M.Sc in Optometry - Semester-II LOW VISION CARE AND GERIATRIC OPTOMETRY	L-4 T-0 P-0 C-4
Course Outcomes:	On completion of the course, the students will be:	
CO1.	Understanding the basic definition and classification of Low Vision	
CO2.	Analyzing the various causes of Low Vision	
CO3.	Understanding how to do examination of a low vision Patient,	
CO4.	Applying various optical and non-optical devices for visual rehabilitation of a low vision Patient.	
CO5.	Understanding the legal aspects of Low Vision in India, as well as applying case studies to for visual rehabilitation of a low vision Patient.	
Course Content:		
Unit-1:	<p>Visual Disorders – Medical Perspective The Epidemiology of Vision Impairment Vision Impairment in the pediatric population Ocular Diseases: Age – Related Cataract, Glaucoma, ARMD, Diabetic retinopathy, Corneal Disorders, Ocular Trauma Sensory Neuro-ophthalmology and Vision Impairment Refractive Disorders Visual Disorders – The Functional Perspective Low Vision and Psychophysics Visual Functioning in Pediatric Populations with Low Vision Perceptual correlates of Optical Disorders Functional aspects of Neural Visual Disorders of the eye and Brain Visual Disorders and Performance of specific Tasks requiring vision</p>	6 Hours
Unit-2:	<p>Visual Disorders – The 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 Interactions of Vision Impairment with other Disabilities and sensory Impairments. Children with Multiple Impairments Dual Vision and Hearing Impairment</p>	8 Hours

	<p>Diabetes Mellitus and Vision Impairment Vision Problems associated with Multiple Sclerosis Vision Impairment related to Acquired Brain Injury Vision and Dementia Low Vision and HIV infection</p>	
Unit-3:	<p>The Environment and Vision Impairment: Towards Universal Design Indian Disabilities act Children's Environments Environments of Older people Outdoor environments Lighting to enhance visual capabilities Signage and way finding Accessible Environments through Technology</p>	6 Hours
Unit-4:	<p>Vision Rehabilitation: In Western Countries, In Asia Personnel preparation in Vision Rehabilitation Psychological and social factors in visual Adaptation and Rehabilitation The Role of psychosocial Factors in adaptation to vision Impairment and Habilitation outcomes for Children and Youth</p>	8 Hours
Unit-5:	<p>The 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 lifespan The person – Environment perspective of vision impairment Associated Depression, Disability and rehabilitation Methodological strategies and issues in social research on vision Impairment and rehabilitation</p>	6 Hours
<u>Text Books:</u>	1.Richard L. Brilliant: Essentials of Low Vision Practice, Butterworth-Heinemann,1999	
<u>Reference Books:</u>	1.Helen Farral: optometric Management of Visual Handicap, Blackwell Scientific publications,1991	

	2.A J Jackson, J S Wolffsohn: Low Vision Manual, Butterworth Heinemann,2007	
E- Learning site	https://lowvision.preventblindness.org/vision-related-web-sites/	

Note: Course outcome of following practical are covered in their respective theory courses

<p>Course Code: MCO251</p>	<p>Skill Enhancement Course (SEC) -4 M.Sc in Optometry - Semester-II OCULAR DISEASES AND DIAGNOSTICS –II PRACTICAL</p>	<p>L-0 T-0 P-2 C-1</p>
<p>Course Content:</p>		
	<ul style="list-style-type: none"> • ERG • EOG • VEP • OCT • Fundus photography 	

Note: Course outcome of following practical are covered in their respective theory courses

Course Code: MCO252	Skill Enhancement Course (SEC) -5 M.Sc in Optometry - Semester-II ADVANCED CONTACT LENSES – I PRACTICAL	L-0 T-0 P-2 C-1
Course Content:		
	<ul style="list-style-type: none">• Rigid Gas Permeable corneal lens fitting• Soft contact lens fitting• Toric Contact lens fitting	

Note: Course outcome of following practical are covered in their respective theory courses

<p><u>Course Code:</u> MCO253</p>	<p style="text-align: center;">Skill Enhancement Course (SEC) -6 M.Sc in Optometry - Semester-II PEDIATRIC OPTOMETRY AND BINOCULAR VISION PRACTICAL</p>	<p>L-0 T-0 P-2 C-1</p>
<p>Course Content:</p>		
	<ul style="list-style-type: none"> • 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, Constant Strabismus • Management Guidelines –Amblyopia 	

Note: Course outcome of following practical are covered in their respective theory courses

Course Code: MCO254	Skill Enhancement Course (SEC) -7 M.Sc in Optometry - Semester-II LOW VISION CARE AND GERIATRIC OPTOMETRY PRACTICAL	L-0 T-0 P-2 C-1
Course Content:		
	1. Case history. 2. Assessment. 3. Application of devices. 4. Rehabilitation.	

Note: Course outcome of following practical are covered in their respective theory courses

<p>Course Code: MCO255</p>	<p>Skill Enhancement Course (SEC) -8 M.Sc in Optometry - Semester-II CLINICS POSTING (GENERAL)</p>	<p>L-0 T-0 P-12 C-6</p>
<p>Course Content:</p>		
	<p>The logbook has to be maintained and case sheets of each subject in the semester with complete management and follow up are mandatory for submission at the end of the semester.</p> <p>The log book needs to be signed by the supervisor during every visit. No case record will be considered without the supervisor's signature.</p>	

Course Code: MCO301	Discipline Specific Course (DSC) -7 M.Sc in Optometry - Semester-III ADVANCED CONTACT LENSES – II	L-5 T-0 P-0 C-5
Course Outcomes:	On completion of the course, the students will be:	
CO1.	Understanding the corneal oxygen requirements and recommend the best suitable contact lens for a particular condition.	
CO2.	Understanding ocular complications with contact lenses.	
CO3.	Understanding contact lens fitting for compromised corneas and keratoconus.	
CO4.	Understanding the fitting philosophy of orthokeratology.	
CO5.	Understanding the fitting philosophy of myopia control.	
Course Content:		
Unit-1:	Extended and Continuous wear Lenses Sclera Contact lenses Bifocal and multifocal contact lenses Orthokeratology Keratoconus Post keratoplasty contact lens fitting	6 Hours
Unit-2:	Post refractive surgery contact lens fitting Pediatic contact lens fitting Cosmetic and prosthetic contact lens fitting Contact lens for abnormal ocular conditions	8 Hours
Unit-3:	Contact lens and Myopia control	6 Hours
Unit-4:	Legal issues and contact lenses Contact lens manufacturing	8 Hours
Unit-5:	Modifications procedures Impairment and rehabilitation	6 Hours
Text Books:	1. CONTACT LENSES – STONE AND PHILIPS	
Reference Books:	IACLE MODULES	

E- Learning site	https://iacle.org/ https://www.clspectrum.com/ https://www.bausch.com/ecp/for-your-practice/training-tools https://www.jnjvisionpro.ca/education-centre	
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Course Code: MCO302	Discipline Specific Course (DSC) -8 M.Sc in Optometry - Semester-III LOW VISION CARE AND REHABILITATION	L-4 T-0 P-0 C-4
Course Outcomes:	On completion of the course, the students will be:	
CO1.	Understanding the rehabilitation process of children and adults with vision impairment	
CO2.	Understanding the educational needs of school going children with vision impairment	
CO3.	Utilizing assistive devices for low vision patients	
CO4.	Analyzing the importance of color vision in low vision patients	
Course Content:		
Unit-1:	Habilitation of Children and Youth with vision Impairment Rehabilitation of working –age Adults with Vision Impairment Rehabilitation of older Adults with Vision Impairment Functional consequences of vision Impairment Vision evaluation of Infants	6 Hours
Unit-2:	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	8 Hours
Unit-3:	Psychosocial assessment of adults with vision impairment Assistive Devices and Technology for Low Vision	6 Hours
Unit-4:	Assistive Devices and Technology for Blind Vision and Reading - Normal Vs Low Vision	8 Hours
Unit-5:	Clinical Implications of color vision Deficiencies	6 Hours
Text Books:	1. The lighthouse handbook on vision impairment and Vision rehabilitation: Barbara Silverstone, Mary Ann Lang, Bruce Rosenthal, Faye.	
Reference Books:	ICEE MODULES	
E- Learning site	https://lowvision.preventblindness.org/vision-related-web-sites/	

Course Code: MCO303	Discipline Specific Course (DSC) -9 M.Sc in Optometry - Semester-III VISION THERAPY	L-6 T-0 P-0 C-6
Course Outcomes:	On completion of the course, the students will be:	
CO1.	Applying the concepts to classify different types of strabismus	
CO2.	Applying the concepts to diagnosed the different neurological disorder leading to the visual disorder	
CO3.	Applying the appropriate method to diagnosed the visual disorders	
CO4.	Applying the concepts for proper management of visual disorders	
CO5.	Creating & panning the proper vision therapy session as per needs	
Course Content:		
Unit-1:	Clinical Conditions; Strabismus and Amblyopia; Anisometric / Isometric, Refractive Amblyopia, Strabismic Amblyopia Hysterical Amblyopia, Form Deprivation Amblyopia; Differential diagnoses in childhood visual acuity loss; Strabismus, Esotropia- Infantile, Accommodative, Acquired, Microtropia, Sensory Convergence Excess, Divergence Insufficiency, Non-accommodative, Sensory Adaptations	6 Hours
Unit-2:	Exotropia: Divergence Excess, Convergence Insufficiency, Basic Exotropia, Congenital, Sensory, Vertical Deviations, Non comitant Deviations (AV Syndrome; Duane's Retraction Syndrome; Brown's Syndrome; III, IV, VI nerve palsy, etc.) Differential diagnoses in strabismus Special clinical considerations Anomalous Correspondence, Eccentric Fixation, Suppression, Motor Ranges, Stereopsis, Horror fusionalis /intractable diplopia	8 Hours
Unit-3:	Perception and Information Processing, Neurological /Psychological Ambient / focal systems, Visual perceptual midline, Parvo cellular / Magno cellular function, Perceptual Style (central, peripheral), Impact of colored filters, Attention, Intersensory and Sensorimotor Integration, Visual-auditory, Visual-vestibular, Visual-oral, Visual-motor, Visual-tactual, 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	6 Hours
Unit-4:	Refractive conditions and visual skills, Refractive Conditions	8 Hours

	<p>Developmental influence on refraction & emmetropization Aniseikonia, Myopia, Astigmatism, Hyperopia, Ocular Motor Function, Eye movements and reading, Pursuit dysfunctions, Nystagmus, Saccadic Dysfunctions, Accommodation, Role in myopia development, Role in computer-related asthenopia, Fusion in Non-Strabismic Conditions, Fixation disparity, Motor fusion Sensory fusion</p>	
Unit-5:	<p>Special clinical conditions, Acquired brain injury (traumatic brain injury {TBI} and stroke), Developmental disabilities (Down Syndrome, Developmental delay, etc.), Visually induced balance disorders, Motor disabilities (Cerebral Palsy, ataxia, etc.), Behavioral disorders, Autism spectrum disorders, ADD /ADHD ,Autism, Dyslexia and specific reading disabilities, Learning Disabilities, Computer Vision Syndrome, Vision Therapy Concepts to Consider, Peripheral awareness: focal / ambient roles, Significant findings which are good or poor prognostic indicators of vision therapy and lens application, Development, rehabilitation, prevention, enhancement, Behavioral lens application, Yoked prism rationale for treatment and application, The relationship between the visual and vestibular systems, SILO/SOLI, Visual stress and its impact on the visual system, Role of posture in vision development, comfort and performance, Disruptive therapy: Discuss this type of therapy and how it can be used as a clinical therapeutic tool., Relationship of speech-auditory to vision, How television, reading, video gaming might restrict movement, computer work, nutrition, etc., impact vision?, Perceptual Style, e.g., spatial/temporal, central/peripheral</p>	6 Hours
<u>Text Books:</u>	<p>1. Clinical management of binocular vision Mitchell Scheiman and Bruce Wick</p>	
<u>Reference Books:</u>	<p>1. Applied concepts in vision therapy: Leonard Press 2. Pediatric optometry: Jerome K Rosner</p>	
E- Learning site	<p>https://cybersight.org/portfolio/lecture-binocular-vision-part-iii-managing-binocular-vision-disorders/ https://www.aao.org/Assets/0c711d7f-503f-4cd9-b4ac-92d6ec31a718/636343503854270000/strabismus-binocular-vision-and-ocular-motility-vnoorden-pdf?inline=1</p>	

Note: Course outcome of following practical are covered in their respective theory courses

<p>Course Code: MCO351</p>	<p>Skill Enhancement Course (SEC) -9 M.Sc in Optometry - Semester-III ADVANCED CONTACT LENSES – II PRACTICAL</p>	<p>L-0 T-0 P-2 C-1</p>
<p>Course Content:</p>	<ol style="list-style-type: none"> 1. Fitting and assessment of specialized contact lenses <ul style="list-style-type: none"> • Kera-soft lenses • Rose-K lenses • Mini scleral lenses • Hybrid lenses • Orthokeratology • Scleral lenses: Dry eyes, SJS, Post PK, Post C3R, Post LASIK ectasia 2. Fitting and assessment of custom-made ocular prosthesis 3. Fitting and assessment of pediatric contact lenses 	

Note: Course outcome of following practical are covered in their respective theory courses

<p>Course Code: MCO352</p>	<p align="center">Skill Enhancement Course (SEC) -10 M.Sc in Optometry - Semester-III LOW VISION CARE AND REHABILITATION PRACTICAL</p>	<p>L-0 T-0 P-2 C-1</p>
<p>Course Content:</p>	<ul style="list-style-type: none"> • Attending in low vision care clinic and history taking. • Determining the type of telescope and its magnification (Direct comparison method & calculated method) • Determining the change in field of view with different magnification and different eye to lens distances with telescopes and magnifiers. • Inducing visual impairment and prescribing magnification. • Determining reading speed with different types of low vision aids with same magnification. <p>Determining reading speed with a low vision aid of different magnifications</p>	

Note: Course outcome of following practical are covered in their respective theory courses

Course Code: MCO353	Skill Enhancement Course (SEC) -11 M.Sc in Optometry - Semester-III VISION THERAPY PRACTICAL	L-0 T-0 P-2 C-1
Course Content:		
	1. Deals with hand-on session the basic binocular vision evaluation techniques & various vision therapy exercise	

Note: Course outcome of following practical are covered in their respective theory courses

Course Code: MCO354	Skill Enhancement Course (SEC) -12 Msc in Optometry - Semester-III CLINIC POSTING	L-0 T-0 P-12 C-6
Course Content:		
	The logbook has to be maintained and case sheets of each subject in the semester with complete management and follow up are mandatory for submission at the end of the semester. The log book needs to be signed by the supervisor during every visit. No case record will be considered without the supervisor's signature.	

Course Code: MCO401	Core Course (CC) -2 M.Sc in Optometry - Semester-IV EDUCATION AND TEACHING METHODOLOGY	L-4 T-0 P-0 C-4
Course Outcomes:	On completion of the course, the students will be:	
CO1.	Understanding the concept & terminology of Development & learning	
CO2.	Understanding the role of teachers	
CO3.	Applying different techniques of teaching	
CO4.	Analyzing different methods of teaching & their outcomes	
CO5.	Developing a holistic approach ideal method of teaching	
Course Content:		
Unit-1:	Development and Learning Learning and Teaching – Nature, Relevance and Relationship. Nature and Nurture, Growth and Maturation. Relationship between Development and Learning Developmental Influences: Development as a resultant of interactions between individual and the external environment (physical, Socio-cultural, Economic, Ecological and Technological)	6 Hours
Unit-2:	Dimensions of Individual development: Physical, Cognitive, Affective, Social and Moral their interrelationships and implications for teachers Key Cognitive Processes: Perception, Attention, Memory, Language, Thinking, Problem Solving, Emotions and Motivation. Stages of Development- Developmental tasks with focus on processes of growth and development across various stages from Infancy to Post Adolescence and their significance to Learning	8 Hours
Unit-3:	Cognition and Learning Role of a teacher in a teaching-learning context: (a) Transmitter of knowledge (b) Model (c) Facilitator (d) Negotiator (e) Learner	6 Hours
Unit-4:	Intelligence and Motivation; Defining Intelligence (Definitions given by different Psychologists) ; Nature of Intelligence and the role of Heredity and Environment	8 Hours
Unit-5:	Assessment of Intelligence (a) Individual Tests – Verbal Tests (b) Group Tests: Verbal/Non Verbal Motivation-Meaning and Needs,	6 Hours

	Role of a teacher in motivating students: Need and Strategies.	
<u>Text Books:</u>	1. Hergerhahn, B.R.(1976).An Introduction to Theories of Learning,Englewood Cliffs NJ:Prentice Hall.	
<u>Reference Books:</u>	1. Piaget J. (1997). Development and Learning. In Gauvian, M. and M. Cole. (eds.) Readings on the Development of Children. New York: W. H. Freeman	
E- Learning site	https://www.onlineeducation.com/guide/instructional-methods	

Course Code: MCO402	Core Course (CC) -3 M.Sc in Optometry - Semester-IV PROFFESIONAL PRACTICE MANGEMENT	L-4 T-0 P-0 C-4
Course Outcomes:	On completion of the course, the students will be:	
CO1.	Understanding the concept & terminology of Optometry	
CO2.	Enlisting different organization working in the welfare of Optometry	
CO3.	Understanding Personal and professional insurance	
CO4.	Applying the concepts of Accountancy and Public relations	
CO5.	Analyzing the different Methods of public relations & its importance	
Course Content:		
Unit-1:	Law & Optometry; Laws governing medical and paramedical professions; Consumer act with respect to optometry and dispensing of optical Aids; International optometry.	6 Hours
Unit-2:	Personal and professional insurance (indemnity), Employment and contacts, Partnership and alternatives, Ethics, Negligence.	8 Hours
Unit-3:	Basic Accountancy and Public relations Introduction & Terms used in accounts, Principles of accountancy. Journal & ledger, Trial Balance, Subsidiary books, petty cash book, sales register, purchase register, stock register; Bank reconciliation and Banking procedures; Depreciation.; Balance sheet and profit & loss accounts; General ideas about Income tax and sales tax.; Project report and financial inability; Costing in practice (Buying, stock-keeping, assessment of fees and costing of appliance).	6 Hours
Unit-4:	Public relations. Definitions: PR- its disfunction from publicity, propaganda & advertising; Internal and external aspects of PR; Phases of PR: analysis building, promotion of product or services, better employee, government and community relation.	8 Hours
Unit-5:	Methods of public relations: Press relations: Press release, Press conference, and Letter to editor; Printed work: Style, color & design	6 Hours
Text Books:	1. Medical Law and Ethics; Jonathon Hering; 4 th Edition;Oxford publication	

<u>Reference Books:</u>	2. Basic Corporate Accounting; Dr K M Bansal 3. Public relation and corporate communications;Parvati Mahalanbis	
E- Learning site	https://www.shu.edu/academics/graduate-certificate-in-practice-management-for-health-professionals.cfm	

Note: Course outcome of following practical are covered in their respective theory courses

<p>Course Code: MCO451</p>	<p>Skill Enhancement Course (SEC) -13 M.Sc in Optometry - Semester-IV EDUCATION AND TEACHING METHODOLOGY PRACTICAL</p>	<p>L-0 T-0 P-2 C-1</p>
<p>Course Content:</p>		
	<ol style="list-style-type: none"> 1. Develop a Power Point Presentation on a particular topic. 2. Develop a question paper for assessment 3. Analyze answers given by the learners for one particular question 	

<p>Course Code: MCO452</p>	<p align="center">Skill Enhancement Course (SEC) -14 M.Sc in Optometry - Semester-IV RESEARCH PROJECT (DISSERTATION)</p>	<p align="center">L-0 T-0 P-24 C-12</p>
<p>Course Content:</p>	<p>Dissertation work:</p> <p>A candidate is required to carry out a research study in select area of his subject, under the supervision of a faculty guide. The results of such a study shall be submitted to the College/University in the form a dissertation as per the prescribed format and within the date stipulated by the University.</p> <p>The dissertation work is aimed at training a postgraduate candidate in research methodology and techniques. It includes identification of the problem, formulation of a hypothesis, review of literature, getting acquainted with recent advances, designing of a research study, collection of data, critical analysis, and comparison of results and drawing conclusions.</p> <p>Guide:</p> <p>A Guide shall be a Post graduate in M.Optomety with at least 2 years of teaching experience or M.D Ophthalmologist. Each guide can take-up a maximum of three students per academic year. However, a co-guide can be opted wherever required with prior permission of the Institute and University. The co-guide shall also be a postgraduate teacher recognized by the University as a guide.</p> <p>Candidate shall submit synopsis to the University through the Guide and Head of the Institute on or before within third month of first semester or within date notified by the University, whichever earlier.</p> <p>Once the synopsis is approved and registered by the University no change in the topic or Guide shall be made without the prior approval of the University.</p> <p>In the event of registered Guide leaving the Institute or in the event of the death of the Guide, a change of Guide shall be permitted by the University, on the specific recommendation of the Institute.</p> <p>Schedule</p> <p>The following procedure and schedule shall be strictly followed:</p> <p>Ethical clearance</p>	

Ethical Clearance should be obtained for a study involving any procedure on human subject. The candidate should apply for the certificate to the Ethics Committee of the Institute/University, through the Guide and present the study before the Committee for clearance. A copy of the certificate should be attached along with the synopsis forwarded at the time of submission of synopsis. All such clearance should be sought within two month of the commencement of the II semester.

Submission of synopsis

Synopsis should be prepared by guide, HOD and departmental curriculum development cell and approved by the institutional ethics committee before submission to the university. The synopsis should be submitted as per the format before two month of Second semester, or within the date notified by the University, whichever is earlier. Once the synopsis is approved and registered by the university no change in the topic or Guide shall be made without the prior approval of the University.

Final submission of the dissertation

The dissertation complete in all respects and duly certified by the Guide/Co-guide, Course Co-ordinator/ HoD/ Director should be submitted it to the Controller of Examinations/ College Examination Committee as per the date specified by the University, generally two month before commencement of fourth semester University examinations.

Preparation of dissertation

The written text of dissertation shall be as per the format, shall not exceed 100 pages (cover to cover). It should be neatly typed with 1.5 line spacing on one side of the paper (A4 size: 8.27” x 11.69”) and properly bound. Spiral binding should be avoided. E-submission of the dissertation is mandatory.

Scheme of evaluation

The dissertation evaluated at the time of university examination of IV semester by a panel of examiner (Internal and External) appointed by the University.

Note: A student is required to submit four hard copies of the thesis along with the soft copy in the prescribed format given by the college of paramedical sciences.



